

ABSTRACT

LOEHMAN, JESSICA LARAINÉ. The Role of Maternal Depression and Social Support in Child Maltreatment Recurrence. (Under the direction of Dr. Mary Haskett).

Research has demonstrated that child maltreatment recurrence is predicted by many factors, including depression and informal social support. However, research has yet to examine the interactive effects of depression and social support in predicting child maltreatment recurrence. The present study attempted to address this gap in the literature by examining whether social support served as a moderator for the relation between depression and maltreatment recurrence for a sample of 219 caregiver-child dyads. The sample, drawn from the LONGSCAN database, was limited to female caregivers with children age 4 to 6 with a history of indicated or substantiated maltreatment prior to age 4. Results of logistic regression analyses controlling for the number of prior maltreatment occurrences indicated that maternal depression and informal social support significantly predicted maltreatment recurrence; however, moderation was not supported. The influence of initial maltreatment type on maltreatment recurrence also was explored, but no significant results were found. Additionally, analyses were conducted to determine if initial maltreatment type or prior maltreatment occurrences served as a moderator for the link between depression and/or informal social support and maltreatment recurrence; however, results did not support moderation. Results suggest that maternal depression is an important issue that should be addressed in interventions for child maltreatment in an effort to prevent maltreatment recurrence. Furthermore, intervention efforts should include enhancing informal social support networks for families with a history of child maltreatment to prevent recurrence.

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The Role of Maternal Depression and Social Support in Child Maltreatment Recurrence

by
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A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Psychology

Raleigh, North Carolina

2015

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DEDICATION

This dissertation is dedicated to my mother who has been my constant source of support. She taught me the importance of being of service to others, which fueled my passion for helping children and their families. Through her example, I learned that any goal can be accomplished if you put forth the effort to reach it, regardless of any obstacles. I could not have gotten this far in life without her constant love and support.

BIOGRAPHY

Jessica was born in Raleigh, North Carolina. She earned her B.A. in psychology from Meredith College in 2009 and took a year off before pursuing her graduate degree. She attended North Carolina State University for her graduate studies in school psychology and will earn her PhD in May 2015.

ACKNOWLEDGMENTS

I would not have made it through my graduate career without the help of many people along the way. First and foremost, I would like to thank my advisor, Dr. Mary Haskett, for her wonderful guidance and dedication to supporting her graduate students in all aspects of life. I also would like to thank my committee members, Drs. Scott Stage, Denis Gray, and Joan Pennell for their support and consultation during the writing of this dissertation. Additionally, I am grateful for the consultation Dr. Jonathan Kotch and Jamie Smith provided me regarding to the dataset I chose to analyze.

In regards to friends, I would like to thank my amazing school psychology peers who have provided me both professional and personal support for the past 5 years. I also have had the joy of working with a great research team over the years, which helped me tweak my dissertation into the product before you. A special thanks goes out to Natalie who has went through the dissertation process with me and made doing work on the weekends fun. Also, I would like to thank my boyfriend, Anthony, for being supportive and understanding when school work took over my free time. Finally, I would again like to thank my mother for all of her support.

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The Role of Maternal Depression and Social Support in

Child Maltreatment Recurrence

Child maltreatment is a significant problem in the United States with an estimated 686,000 unique count¹ of reported child victims in 2012. Of these child victims, 78.3% experienced neglect, 18.3% experienced physical abuse, and 9.3% experienced sexual abuse (U.S. Department of Health & Human Services, 2012). It should be noted that these statistics are often considered an under-estimation of the true rates of child maltreatment, as it is projected that 70% of cases of child maltreatment go unreported (Lipien & Forthofer, 2008).

In addition to difficulty in estimating the general rates of child maltreatment, the lack of standards for defining recurrence in the United States makes it challenging to approximate the number of recurrent cases across states (Fluke, Yuan, & Edwards, 1999; Lipien & Forthofer, 2008). Recurrence is defined as the number of subsequent re-reports to Child Protective Services (CPS), but definitions vary in what is considered a re-report (i.e., substantiated, indicated, and/or unsubstantiated). Studies have reported recurrence rates ranging from 16-67% (Fluke et al., 1999) with the greatest risk of recurrence being within the first six months of the initial report (Proctor et al., 2012). According to the U.S. Department of Health and Human Services (2012), only 27 of 51 states met the Children's Bureau's 94.6% standard of unique victims being free from multiple maltreatment reports within a six-month period. Regardless of the definition of recurrence or its reported rates, multiple victimizations from maltreatment exert a cumulative negative influence on child development (Proctor et al., 2012). Therefore, it is imperative that researchers develop a

¹ Unique count refers to counting a child once regardless of the number of reports that child is involved in.

standard definition of recurrence and understand the factors that influence it in an attempt to inform intervention efforts. The purpose of the current study was to examine factors that may be associated with maltreatment recurrence; specifically, the influence of maternal depression and social support was examined with an emphasis placed on the potential protective influence social support may have in relation to maternal depression.

Child Maltreatment: An Overview

Child maltreatment encompasses both child abuse and child neglect. Although states vary in their individual definitions of child abuse and neglect, United States federal legislation defines them as “any recent act or failure to act on the part of a parent or caretaker which results in death, serious physical or emotional harm, sexual abuse or exploitation; or an act or failure to act which presents an imminent risk of serious harm” (Child Welfare, 2008, p.2). More specifically, child neglect can be defined as the failure to provide basic physical, medical, emotional, and/or educational needs. Child abuse, on the other hand, is more complex and can involve physical, sexual, and/or emotional harm. Physical abuse includes any non-accidental injury regardless of whether or not it was intentional, such as hitting, burning, or choking. Sexual abuse consists of fondling or penetration of genitals, rape, incest, sodomy, indecent exposure, and/or sexual exploitation. Finally, emotional abuse includes impairment to the child’s emotional development and/or self-worth, which can involve threats, constant criticism, or withholding of affection (Child Welfare, 2008).

When a report of suspected child maltreatment is made to a state’s Child Protective Services agency, it is investigated and conclusions are made based on the available

evidence. There are several different conclusion codes that vary by state, but in general investigations are either designated substantiated, indicated, unsubstantiated, or inconclusive. Substantiated cases are those for which substantial evidence exists to claim that maltreatment occurred. Indicated cases, however, lack substantial evidence to claim the event occurred, but harm is still suspected. Unsubstantiated cases are those for which the evidence suggests that maltreatment did not occur. Finally, inconclusive cases are those for which a definitive decision cannot be made (Lipien & Forthofer, 2004).

Regardless of the form or substantiation status, child maltreatment negatively impacts many aspects of child development. For example, victims of child maltreatment tend to display below average cognitive abilities, both in terms of executive functioning, such as impulsivity and inflexibility (Kotch, Mueller, & Blakely, 1999); and academic performance, such as poor grades and low standardized scores on tests of achievement (Crozier & Barth, 2005; Eckenrode, Laird, & Doris, 1993; Fantuzzo, Perlman, & Dobbins, 2011; Leiter, 2007; Mallett, 2012). Additionally, many maltreated children exhibit both internalizing and externalizing behavior problems that can negatively influence their social and emotional development (e.g., Cicchetti & Lynch, 1995; Dodge, Pettit, Bates, & Valente, 1995; Egeland, Yates, Appleyard, & Van Dulmen, 2002; Fantuzzo et al., 2011; Milot, Ethier, St. Laurent, & Provost, 2010). Because child maltreatment can influence all aspects of child development, it is imperative that researchers and practitioners understand the circumstances that place children at risk for maltreatment to identify potential areas of intervention to stop these parenting practices before they become habitual or recurrent.

Maltreatment Recurrence

Although there is evidence demonstrating the deleterious effects of maltreatment on child development, these effects may be more detrimental for children who experience recurrent maltreatment. Specifically, Proctor et al. (2012) stated that “there is strong evidence that the multiple victimizations and adversities reflected by re-reports [to CPS] exert a cumulative influence on children’s short- and long-term health and behavior...” (p. 207). Therefore, it is vital that researchers understand the factors that influence recurrent maltreatment in order to prevent this cumulative effect from taking place. Yet, research in the area of child maltreatment recurrence is relatively new and complex, which has created a literature base that lacks uniformity in terms of operational definitions of recurrence and methodological approaches (Hélie & Bouchard, 2010).

A standard operational definition of maltreatment recurrence does not exist in the literature; as a result, determining the comparability of findings across studies is challenging (Lipien & Forthofer, 2004). Although maltreatment recurrence typically involves any maltreatment re-report to CPS, definitions of a re-report vary across studies. First, definitions of recurrence differ in terms of substantiation status, with some definitions including any re-report to CPS regardless of substantiation status, some limiting recurrence to indicated or substantiated re-reports, and others limiting recurrence to substantiated re-reports only. Second, recurrence definitions vary in regards to the family unit examined. For example, some definitions of recurrence include re-reports to CPS involving the same child,

whereas others focus on re-reports involving the same family and/or perpetrator but not necessarily the same child (Fluke et al., 1999).

In addition to disparities in the operationalization of maltreatment recurrence in the literature, differences in methodological approaches to studying maltreatment recurrence also make comparability across studies difficult (Hélie & Bouchard, 2010). First, large variability in sample characteristics makes generalizability and comparability challenging. For example, some studies include children in out-of-home placements (Fluke, Shusterman, Hollingshead, & Yuan, 2008; Lipien & Forthofer, 2004; Proctor et al., 2012), whereas others specifically exclude these children (DePanfilis & Zuravin, 1999; Fluke et al., 1999; Thompson & Wiley, 2009). Children who are removed from the home tend to reflect more severe cases of maltreatment than children who remain with their caregiver, potentially influencing research results because factors predicting recurrence may differ depending on the severity of maltreatment and/or the home environment (Thompson & Wiley, 2009). Additionally, the age of the children in the sample drastically varies by study. Thompson and Wiley (2009) suggested that factors that predict maltreatment recurrence may differ for infants in comparison to older children. Furthermore, Hélie and Bouchard (2010) noted in their review of the literature on child maltreatment recurrence that many studies utilizing CPS data do not account for the fact that children over the age of 15 are typically no longer protected under child maltreatment law, which may lead to underestimates of risk of recurrence for research samples including adolescents.

Second, the length of the observation period and number of re-reports to CPS included are factors that frequently differ across studies. The length of observation across studies can vary from one year (e.g., Fluke et al., 1999) to over five years (e.g., DePanfilis & Zuravin, 1999; Proctor et al., 2012; Thompson & Wiley, 2009), making comparisons of findings difficult because factors predicting recurrent maltreatment may vary over time (Hélie & Bouchard, 2010). In regards to the number of re-reports to CPS included, Proctor et al. (2012) found that factors predicting maltreatment recurrence differ as a function of the chronicity of recurrence. Specifically, factors that predict initial re-reports to CPS differed from those of chronic re-reports including children who experience maltreatment on either an intermittent or continuous basis (Proctor et al., 2012).

Third, research on child maltreatment recurrence varies based on the analytic approach used. The majority of studies examining child maltreatment recurrence utilize event history analysis (aka survival analysis) (DePanfilis & Zuravin, 1999; Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004; Thompson & Wiley, 2009); however, others rely on logistic regression (Kotch et al., 1997) or growth mixture modeling (Proctor et al., 2012). Event history analysis is often the analytic approach used because it takes into account families who do not experience recurrence during a specific time frame by including them in terms of relative risk; whereas other forms of analyses may either exclude these families or use them as a comparison group. Furthermore, event history analysis includes an estimate of hazard or probability of recurrence for a given time following the initial event (Fluke et al., 1999).

Although differences in the operationalization of child maltreatment recurrence and the methodology used to study this phenomenon exist in the literature, most authors agree that an ecological perspective is needed to understand the factors that predict maltreatment recurrence (e.g., DePanfilis & Zuravin, 1999; Hélie & Bouchard, 2010; Kotch et al., 1997; Proctor et al., 2012; Thompson & Wiley, 2009). When discussing directions for future research on maltreatment recurrence, Hélie and Bouchard (2010) stated that “these [future empirical] studies will be all the more valuable if they are conducted from a multivariate, ecological perspective that integrates factors associated with the various ‘systems’ within which children develop” (p. 421). Therefore, the current study will utilize an ecological framework in examining factors that predict maltreatment recurrence. In the following section, the literature on child maltreatment recurrence will be reviewed from an ecological lens, but must be interpreted with caution for the reasons stated above. See Table 1 for a summary of the studies reviewed according to the above issues.

Table 1

Summary of Studies on Maltreatment Recurrence Reviewed

Authors	Purpose	Sample	Definition of recurrence	Observation period	Chronicity of recurrence	Data Analytic Method
DePanfilis & Zuravin (1999)	Identify correlates of child maltreatment recurrence during CPS interventions.	Baltimore families with a substantiated case of maltreatment during 1988. Excluded children in out-of-home placements or residing with a single father. Excluded cases with multiple forms of maltreatment or sexual abuse only.	Any substantiated report of maltreatment with any child within the family while the family was receiving CPS intervention.	5 years	N/A	Event History Analysis
Fluke, Yuan, & Edwards (1999)	Determine the distribution of maltreatment cases over time; the common case characteristics associated with recurrence across states; and common service interactions.	Children from birth-17 with substantiated or indicated cases of maltreatment during 1994-1995 in 10 different U.S. states. Excluded children in out-of-home placements.	One or more subsequent substantiated or indicated maltreatment reports for same child during 1994-1995.	1 year	N/A	Event History Analysis

Table 1 (continued)

Authors	Purpose	Sample	Definition of recurrence	Observation period	Chronicity of recurrence	Data Analytic Method
Fluke et al. (2008)	Describe and model the relative risk factors associated with recurrence.	505,621 children with initial maltreatment reports in 2001-2003 across 8 U.S. states. Included children in out-of-home placements.	Any subsequent re-report to CPS for the same child regardless of substantiation during 2 year period.	2 years	Categorized children based on those who received 1 versus multiple subsequent re-reports	Event History Analysis
Lipien & Forthofer (2004)	Examine the timing of and factors related to child maltreatment recurrence.	189,375 children from birth-17 with at least 1 allegation of maltreatment during 1998-1999. Included children in out-of-home placements.	Restricted analyses to 1 st recurrence of substantiated maltreatment.	2 years	N/A	Event History Analysis

Table 1 (continued)

Authors	Purpose	Sample	Definition of recurrence	Observation period	Chronicity of recurrence	Data Analytic Method
Kotch et al. (1997)	Determine if (1) factors that predicted maltreatment in 1st year of life increased risk of maltreatment in 2nd or 3rd year of life and (2) if life event stress and social support interact to moderate risk.	788 mother-child dyads from North Carolina. 75% of sample qualified for the NC High Priority Infant Program. Only 11% of sample was reported for maltreatment.	Substantiated or unsubstantiated maltreatment during 2nd or 3rd year of life.	3 years	N/A	Logistic Regression

Table 1 (continued)

Authors	Purpose	Sample	Definition of recurrence	Observation period	Chronicity of recurrence	Data Analytic Method
Proctor et al. (2012)	Identify trajectory groups for maltreatment recurrence and which parent and child factors predict group membership.	501 children followed from age 4-12 who were reported to CPS prior to age 4 for maltreatment allegations. Included children in out-of-home placements.	Any CPS maltreatment allegation for the same child between the ages of 4-6, 6-8, 8-10, and 10-12 regardless of substantiation.	8 years	Continuous re-reports: re-reports across 3 of 4 time periods. Intermittent re-reports: alternation between low and high risk across time points. Early re-reports: substantial decrease in risk after age 6.	Growth Mixture Modeling
Thompson & Wiley (2009)	Examine the effects of modifiable psychosocial factors on risk for re-referral for children reported as abused in infancy.	149 families with an initial maltreatment allegation during infancy.	Any subsequent report to CPS for child maltreatment regardless of substantiation.	11-15 years	N/A	Event History Analysis

Maltreatment Recurrence: An Ecological Perspective

Ecological Model

Urie Bronfenbrenner (1977) described a perspective of human development that takes into account the various environmental systems of the developing person. This new line of thinking was termed the ecology of human development, which is defined as “the scientific study of the progressive, mutual accommodation, throughout the life span, between a growing human organism and the changing immediate environments in which it lives...as well as the larger social contexts...in which the settings are embedded” (Bronfenbrenner, 1977, p. 514). Bronfenbrenner divided this system of environments into four increasingly larger contexts: the microsystem, mesosystem, exosystem, and macrosystem.

A microsystem is defined as the immediate environment of the developing person, such as the home or classroom. The second level of Bronfenbrenner’s (1977) systems, the mesosystem, is described as the interactions between various microsystems, such as the relationship between work and family life. Unlike the microsystem and mesosystem, the exosystem does not necessarily contain the developing person but instead influences the structure and function of both the microsystem and mesosystem. For example, a parent’s work environment influences the level of stress a parent experiences and thus influences the quality of parenting the child experiences, making the parent’s work environment part of the child’s exosystem. Finally, the macrosystem involves the cultural values and beliefs that are manifested in the other systems (Bronfenbrenner, 1977). For

example, the American value of education allows all American children to have free access to public education.

Ecological Framework of Child Maltreatment Recurrence

Although Bronfenbrenner's (1977) ecological model included four systems, the research on child maltreatment recurrence has largely focused on factors within the child's microsystem and exosystem. Therefore, this review of the literature on child maltreatment recurrence is focused on these two systems. Although the literature reviewed below covers a variety of factors that influence child maltreatment recurrence, the current study focused on maternal depression at the microsystemic level and informal social support at the exosystemic level.

Microsystem. The microsystemic factors that have been examined in studies of child maltreatment recurrence can be categorized into child, parent, and case characteristics. In regards to child factors, child age (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004), child gender (Fluke et al., 2008), child health (Fluke et al., 2008; Lipien & Forthofer, 2004), and child ethnicity (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004) have significantly predicted maltreatment recurrence. More specifically, young children are more likely to be maltreated more than once (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004). In regards to child gender, Fluke et al. (2008) found that females had a higher cumulative percentage of re-reports to CPS than males; however, Lipien and Forthofer (2004) did not find a significant difference between genders when examining predictors of first substantiated re-report. Concerning child health, Fluke et al. (2008) found that children

with disabilities were at an increased risk for maltreatment recurrence. Additionally, Lipien and Forthofer (2004) revealed through an event history analysis that child vulnerability significantly increased the risk for maltreatment recurrence, such that the presence of child mental health problems, developmental problems, and/or child age under 6 years increased the hazard rate by 1.4 per factor.

In relation to ethnicity, results are mixed depending on how ethnicity was coded and/or analyzed. For example, Fluke et al. (2008) found that American Indian and Alaskan natives had the greatest percentage of substantiated re-reports to CPS, and African American and Hispanic children had lower rates of substantiated re-reports than Caucasian children. Fluke et al. (1999) found similar results for ethnicity, however, the differences among African American and Caucasian children varied depending on the state in question, which was not analyzed separately by Fluke et al. (2008). Pointedly, in Louisiana, North Carolina, and Vermont, differences between African American and Caucasian children were statistically significant, but this difference was not found in the other six states examined (Fluke et al., 1999). Finally, Lipien and Forthofer (2004) found that Caucasian children were more likely to experience recurrent maltreatment than were non-Caucasian children when ethnicity was dichotomized in their analyses.

In regards to parent characteristics, alcohol use (Fluke et al., 2008; Proctor et al., 2012), drug use (Fluke et al., 2008), depression (Proctor et al., 2012), and domestic violence experience (DePanfilis & Zuravin, 1999) significantly predicted child maltreatment recurrence. Furthermore, household income (Kotch et al., 1997; Proctor et al., 2012) and

parent age (Proctor et al., 2012) have been found to significantly predict child maltreatment recurrence. Specifically, parents of low income households and older parents were more likely to engage in recurrent maltreatment (Kotch et al., 1997; Proctor et al., 2012).

Finally, the microsystemic factors that have received the most attention in the literature on child maltreatment recurrence are initial maltreatment case characteristics. For example, Lipien and Forthofer (2004) and Thompson and Wiley (2009) found support for substantiation as a significant predictor of child maltreatment recurrence, such that substantiated cases were more likely to experience recurrence. Additionally, Fluke et al. (2008) and Lipien and Forthofer (2004) found that recurrence was more likely to occur within six months after the initial event.

Furthermore, many studies have found that the initial type of maltreatment experienced predicted whether or not a child underwent subsequent maltreatment (Fluke et al., 1999; Lipien & Forthofer, 2004; Proctor et al., 2012; Thompson & Wiley, 2009); however, findings are mixed in terms of which form of maltreatment predicts an increased risk for recurrence. For example, Fluke et al. (1999) and Lipien and Forthofer (2004) both found that neglected children were more likely to experience recurrence, followed by physical abuse (or threatened harm) and sexual abuse. Yet, Proctor et al. (2012) and Thompson and Wiley (2009) found that abused children were more likely to experience recurrence. Proctor et al. (2012) found that physical abuse was predictive of continuous maltreatment recurrence; whereas, Thompson and Wiley (2009) did not distinguish between different forms of abuse. The differences in findings across these four studies could be due to

the operationalization of recurrence. Specifically, Fluke et al. (1999) and Lipien and Forthofer (2004) limited their definition of maltreatment recurrence to cases indicative of harm, which may account for their similarity in findings. On the other hand, Proctor et al. (2012) and Thompson and Wiley (2009) did not limit their definition of maltreatment recurrence and found similar results.

In sum, there are a wide variety of microsystemic factors that predict child maltreatment recurrence including child, parent, and case characteristics. Although the current study focused on a parent characteristic, specifically maternal depression, other microsystemic factors were addressed based on the current literature.

Exosystem. There are two main exosystemic factors that have been examined in the literature on child maltreatment recurrence: social support and stress. Social support can be defined as informal and formal social networks that assist in meeting the everyday needs of an individual and his/her family. Formal social networks include relationships with people and/or organizations that are professional in nature. Informal social networks, on the other hand, include relationships with family, friends, and neighbors (Byrne, Rodrigo, Martin, 2012). In regards to formal social support, many studies have found that families involved with services associated with CPS are at a higher risk for maltreatment recurrence (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004). Hèlie and Bouchard (2010) explained that this relation between service receipt and maltreatment recurrence could be due to heightened monitoring of these families by CPS and/or due to the services rendered not meeting the needs of the families. Alternatively, families deemed in need of services could

represent a subset of families at higher risk for recurrence than those not needing services (Hèlie & Bouchard, 2010). In regards to informal social support, DePanfilis and Zuravin (1999) and Proctor et al. (2012) found that a lack of informal social support increased the risk for maltreatment recurrence; however, Proctor et al. (2012) found that a lack of informal social support predicted continuous maltreatment recurrence only.

In regards to stress, DePanfilis and Zuravin (1999) defined stress as three or more children in the home, young maternal age, and six or more child-bearing years (i.e., time from birth of first child to last child) and found that for each indicator of stress endorsed, the hazard rate for child maltreatment recurrence increased 1.2 times. Furthermore, they found that high levels of stress interacted with high levels of social support deficits to predict a 17% survival without maltreatment recurrence rate in their sample (DePanfilis & Zuravin, 1999). Similarly, Kotch et al. (1997) revealed an interaction between stress and social support, such that families with low levels of informal social support and high levels of stress were at a greater risk for substantiated re-reports to CPS. Together, these two studies provide support for the potential of social support serving as a protective factor for families at risk for maltreatment recurrence. The current study, however, focused on the protective role of informal social support in relation to maternal depression in families with recurrent maltreatment. The following sections will explore the literature on the roles of maternal depression and social support in parenting behaviors.

Influence of Maternal Depression on Parenting

According to the *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition* (DSM-V), a major depressive episode is characterized by a period of depressed mood and/or a loss of interest in nearly all activities that lasts for at least two weeks. Additionally, this change in mood must be accompanied by four additional symptoms to be considered a major depressive episode. These other symptoms of depression can include a change in appetite, sleep, or psychomotor activity (e.g., restlessness or slowed movement); decreased energy; feelings of worthlessness and/or guilt; difficulty concentrating or making decisions; and suicidal ideation. Finally, symptoms of depression must cause significant distress or impairment of functioning to be considered a major depressive episode (American Psychiatric Association, 2013). It is important to note that many people can experience symptoms of a major depressive episode that are impacting their overall functioning but not meet the diagnostic criteria. Therefore, it is important to consider both individuals who do and do not meet diagnostic criteria when examining the impact of depression on the everyday lives of people suffering from it.

Depression can greatly impact a mother's ability to effectively parent her children. In their review of the effects of parental depression on children, Downey and Coyne (1990) explained that "the sustained effortful behavior that it [parent-child relationship] involves is likely to prove difficult for depressed parents, especially when their children are young and exaggerated affective tone and a high tolerance for aversive behavior are required" (p. 61). The reduced energy levels and difficulties in concentration that accompany depression likely contribute to the strain depressed parents experience in maintaining consistent, effective

parenting practices (Downey & Coyne, 1990; Psychogiou & Parry, 2014). For example, depressed parents are more likely to utilize discipline strategies that are less cognitively demanding, such as enforcing obedience through harsh (e.g., yelling, hitting, threatening) rather than positive techniques or completely withdrawing when faced with problematic behavior (Downey & Coyne, 1990). Kohl, Kagotho, and Dixon (2011) provided further support for this relation between depression and parenting when they explained that moderate effect sizes have been found in the literature for the relation between maternal depression and negative parenting behaviors. Additionally, Solomon, Morgan, Asberg, and McCord (2014) found that parental internalizing problems were strongly correlated with physical abuse potential. Furthermore, parents experiencing depression tend to perceive themselves as less competent in their parenting role and tend to experience feelings of rejection and hostility towards their children. Finally, these parents have been shown to be more hostile and irritable towards their children and tend to express less positive affect than non-depressed parents (Downey & Coyne, 1990; Psychogiou & Parry, 2014).

Although parents experiencing depression tend to engage in less positive, effective parenting behaviors, Wang and Dix (2013) found that depressed mothers differed in their patterns of parenting. Specifically, they revealed three different patterns of depressive parenting: (1) low levels of intrusive (i.e., interfering and controlling) and withdrawn behaviors, (2) high levels of intrusive behaviors, and (3) high levels of intrusive and withdrawn behaviors. Interestingly, although these groups did not differ in depressive symptomology, they did differ on demographic variables. The mothers in the low intrusive,

low withdrawn group (the high functioning group) tended to be Caucasian, older, and more educated. Furthermore, the high functioning group had more financial resources, less parenting stress, more supportive marriages, and greater father involvement in parenting than the other parenting groups. Wang and Dix found that high functioning mothers were less hostile and more sensitive towards their children, and their children had fewer behavioral problems, higher social competence, and better cognitive development. Wang and Dix concluded from their study that "...among mothers above clinical cutoffs for depressive symptoms, parenting competence varies widely; is closely associated, not with depressive symptoms, but with mothers' personal resources, contextual stress, and familial support..." (p. 891). Those findings provide support for the potential moderating role of social support on the relation between maternal depression and parenting behaviors.

Maternal Depression and Child Maltreatment

Maternal depression not only increases the risk for negative parenting behaviors in general (e.g., Downey & Coyne, 1990; Psychogiou & Parry, 2014; Solomon et al., 2014; Wang & Dix, 2013), but also increases the risk of engaging in child maltreatment (e.g., Kohl et al., 2011; Kotch et al., 1999; Kotch et al., 1995; Proctor et al., 2012). In fact, Kohl et al. (2011) explained that 25% of adults entering CPS meet the diagnostic criteria for a major depressive episode in the past year, suggesting that depression is present in many families undergoing investigations for child maltreatment. However, it is likely that more than 25% of adults in CPS are experiencing depressive symptoms without meeting the diagnostic criteria.

Two studies have specifically examined the role of depression in families in CPS. Kohl et al. (2011) investigated the relation between maternal depression and changes in self-reported parenting practices after a referral to CPS for child maltreatment. This study utilized a random sample of families from child welfare agencies in 36 states who underwent a child maltreatment investigation, regardless of substantiation. Inclusionary criteria included mother as primary caregiver, child between the ages of 3 and 10, and child remained in home post-investigation. Kohl et al. collected data from families at baseline, 12, 18, and 36 months using the *Conflict Tactics Scale* (measure of parenting behavior) and the *Composite International Diagnostic Interview-Short Form* (measure of depression). Of the mothers participating in this study, 21% met the diagnostic criteria for a major depressive episode at one of the four time points, 60% never reported a major depressive episode, and 6% reported a major depressive episode at all time points.

Kohl et al. (2011) examined the relation between maternal depression and changes in parenting behaviors over time and results indicated that depressed mothers were 1.8 times more likely to engage in neglectful behaviors than non-depressed mothers. Furthermore, the odds of self-reporting neglect for depressed mothers was three times that of non-depressed mothers at baseline and 18 months, and the odds of self-reporting emotional maltreatment for depressed mothers was two times that of non-depressed mothers at each time point. However, depression status and harsh parenting were not significantly related in this study. Harsh parenting frequently co-occurred with neglect and emotional maltreatment in this sample; therefore, it is possible that harsh parenting was unrelated to maternal depression in

isolation but not in combination with other negative parenting practices. In sum, results from this study suggest that maternal depression is one factor that distinguishes differences in positive and negative parenting practices among families involved in CPS for child maltreatment allegations.

Depression also has been found to distinguish between parents who engage in child abuse among family social work caseloads. Specifically, Sheppard (1997) investigated the role of maternal depression in child abuse. Participants in this study included predominately Caucasian birth or adoptive mothers on child and family social work caseloads. Mothers completed the *Beck Depression Inventory* and their social workers completed the *Depression Social Assessment Schedule*, which measures case status (e.g., location of child, abuse status), associated problems with depression (e.g., health, relationships with other adults, parenting), and interventions currently in place for the family. Results indicated that 36% of the sample was experiencing depression and 75% of severely depressed mothers were involved with CPS. Furthermore, child abuse was significantly more likely in families with mothers suffering from depression.

Although there is evidence to support the relation between maternal depression and child maltreatment (e.g., Kohl et al., 2011; Kotch et al., 1999; Kotch et al., 1995), particularly in families involved in CPS (Kohl et al., 2011; Sheppard, 1997), little research has been conducted to investigate whether maternal depression in CPS families is predictive of recurrent child maltreatment. Proctor et al. (2012) conducted the only study thus far to find a significant relation between maternal depression and child maltreatment recurrence, which

may be due to the methodological issues present in maltreatment recurrence research discussed previously. The current study aimed to address this gap in the literature, by examining the influence of maternal depression in families at risk for child maltreatment recurrence.

Influence of Social Support on Parenting

Social support is one of many contextual factors that influence parenting and overall family functioning. Social support is defined as informal and formal social networks assisting in meeting the everyday needs of an individual and his/her family (Byrne et al., 2012). Typically, social support is classified into three different forms: instrumental support, emotional support, and informational support (Lyons, Henly, & Schuerman, 2005; Taylor, 2010). Instrumental support includes providing an individual and/or family with tangible resources, such as financial assistance, clothing, food, or child care. Emotional support occurs when an individual is reassured by another person that s/he is cared for by others. For example, an individual who attends a funeral with a friend for a person s/he did not know provides emotional support for the friend who is currently experiencing grief. Finally, informational support involves providing information to another person to help him/her solve a problem and can include referrals to other sources of support, such as instrumental (Taylor, 2010).

Social support and its various forms are a result of the efforts of two distinct social networks: formal and informal. Formal social networks include relationships with people and/or organizations that are professional in nature. For example, formal social

networks are typically comprised of schools, work environments, community organizations, and public assistance organizations/programs. Informal social networks, on the other hand, include relationships with family, friends, and neighbors (Byrne et al., 2012). Informal social networks can be formed through a variety of activities, such as forming friendships with other parents on a playground or developing relationships with members of a religious organization (Lindsey et al., 2012). The current study focused on informal social networks in relation to maltreatment recurrence because research thus far has largely focused on formal social networks and it is important to establish the relevance of informal networks as well.

There is evidence to support the importance of social support in fostering positive parenting skills and healthy family relationships. For example, MacPhee, Fritz, and Miller-Heyl (1996) explained that “supportive interactions with others reduce negative affect, enhance self-esteem, and increase self-efficacy beliefs that affect persistence with difficult tasks, such as parenting” (p. 3280). Furthermore, Lyons et al. (2005) found that mothers who reported higher levels of support used more positive parenting practices than mothers with lower levels of support. Additionally, Mackenzie, Kotch, and Lee (2011) posit that “social support may be particularly important not in times of low-stress, but when families are facing a high degree of challenge” (p. 1645). In fact, social support has been found to be one of the strongest protective factors against child maltreatment (Byrne et al., 2012). Specifically, Martin, Gardner, and Brooks-Gunn (2012) explained that there was an inverse relation between social support and child maltreatment, such that parents with poor social support were two times more likely than parents with strong support to maltreat their children in the

first six years of life. McCurdy (2005) also found that child abuse potential was influenced by social support, such that increases in partner support and use of formal support programs decreased child abuse risk.

Maternal Depression and Social Support

Two studies have specifically examined the relation between maternal depression and social support among parents who engaged in child maltreatment. Martin et al. (2012) utilized data from the Project on Human Development in Chicago Neighborhoods, which was a multilevel, longitudinal study of child and adolescent development. Analyzing data from baseline and 2.5 years later, the authors examined the extent to which parental depression, as measured by the *International Diagnostic Interview-Short Form*, mediated the relation between baseline levels of social support, as measured by the *Provision of Social Relations Scale*, and maltreatment at follow-up, as measured by the *Conflict Tactics Scale*. Controlling for household income, caregiver education, family size, caregiver marital status, and the gender and age of both the child and caregiver, results indicated that depression partially mediated the relation between social support and child maltreatment. Specifically, social support at baseline was negatively correlated with caregiver depression at follow-up, which was positively correlated with child maltreatment at follow-up. However, depression only accounted for 16% of the relation between social support and child maltreatment, indicating that this relation is complicated by other unexamined factors.

Lyons et al. (2005) also examined the relation between depression and social support in maltreating families. Specifically, this study investigated the links among stress

(financial strain and major life events), maternal depression, informal social support, and positive and negative parenting practices using data from the Evaluation of Family Preservation and Reunification Programs. The Evaluation of Family Preservation and Reunification Programs was a large scale experimental study of families with children at risk for foster care placement who were randomly assigned to receive family preservation services or treatment as usual. Results indicated that the mean depression scores for the sample were similar to the non-clinical normative sample of the SCL-90; however, many participants reported experiencing some symptoms of depression. For this sample, mothers who reported higher levels of social support tended to report lower levels of depression and used more positive parenting practices. Furthermore, regardless of the level of support available, higher levels of stress were significantly predictive of higher levels of depression. Finally, increases in social support were predictive of reductions in depression and in positive parenting practices. Lyons et al. speculated that this decrease in positive parenting practices might have been due to supporters encouraging negative parenting practices as a result of their own vulnerabilities and parenting challenges. However, it is possible that the interview questions used were not reliable measures of the variables in question, leading to contradictory findings. In sum, both Martin et al. (2012) and Lyons et al. (2005) provided evidence to suggest that maternal depression and informal social support are negatively related, such that higher levels of social support are associated with lower levels of depression.

Current Study

Although there is evidence to support the influential roles of maternal depression and social support in initial episodes of child maltreatment, little research has been conducted to determine if these factors continue to be predictive of maltreatment recurrence. Instead, research on child maltreatment recurrence to date has largely focused on demographic and case characteristics as predictive factors. Proctor et al. (2012) found that both maternal depression and informal social support significantly predicted child maltreatment recurrence; however, social support was only a significant predictor for families engaging in continuous recurrence. Furthermore, DePanfilis and Zuravin (1999) also found a significant relation between informal social support and child maltreatment recurrence, providing further evidence for the influential role of social support. The purpose of the present study was to build upon this limited evidence for maternal depression and informal social support as predictive factors for child maltreatment recurrence by examining whether social support interacts with depression to serve as a potential protective factor for families at risk for recurrent maltreatment.

Previous research on the role of maternal depression and social support in child maltreatment has found these variables to not only predict maltreatment, but also to be correlated with each other (Lyons et al., 2005; Martin et al., 2012). Therefore, it is possible that parental depression and social support may interact in predicting child maltreatment recurrence. In an effort to determine if this interactive relation exists between maternal depression and social support, the current study used data from the Longitudinal Study of Child Abuse and Neglect (LONGSCAN). Specifically, the current study involved analysis of

data from the age 4 interview of LONGSCAN because previous research has indicated that younger children are more likely to experience recurrent abuse (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004) and because recurrence tends to happen shortly after the initial event (Fluke et al., 2008; Lipien & Forthofer, 2004). Therefore, for families with substantiated or indicated child maltreatment allegations by age 4, the current study sought to determine if the interaction of maternal depression and informal social support at age 4 predicted recurrent maltreatment by age 6. Informal social support was the focus of the current study to determine if these more voluntary relationships (as opposed to required relationships with formal organizations) influence maternal depression and maltreatment recurrence. Furthermore, a series of research questions related to the initial type of maltreatment experienced were explored to identify potential relations to depression and social support and to clarify the mixed findings found in the current literature in regards to which form of maltreatment is most prone to recurrence.

Hypotheses

1. Maternal depression will be a significant predictor of maltreatment recurrence.
Specifically, mothers experiencing higher levels of depression will be more likely to engage in recurrent maltreatment.
2. Informal social support will be a significant predictor of maltreatment recurrence, such that families with higher levels of social support will be less likely to recurrently maltreat their children.

3. The relation between maternal depression and maltreatment recurrence will be moderated by the mother's informal social support, as indicated by a significant interaction between maternal depression and social support.
4. Children who initially experienced neglect will be more likely to experience maltreatment recurrence than children who experienced abuse.

Research Questions

1. Does the type of initial maltreatment experienced moderate the relation between maternal depression and maltreatment recurrence?
2. Does the type of initial maltreatment experienced moderate the relation between informal social support and maltreatment recurrence?

LONGSCAN Overview

LONGSCAN is a consortium of longitudinal studies aimed at understanding the antecedents and consequences of child maltreatment. This consortium is comprised of five independent study sites (Baltimore, Chicago, San Diego, Seattle, and North Carolina) with different research aims but shared data collection, procedures, and measures to allow for analyses across sites. Children at each study site varied in their risk status and experience of maltreatment. For the purposes of the current study, data from Chicago (Midwest site), Seattle (Northwest site), and North Carolina (South site) were used because these sites specifically examined families involved in CPS for child maltreatment as opposed to families at-risk for maltreatment or families involved in the foster care system (Larrabee & Lewis, 2011).

The Midwest site sample was comprised of 245 parent-child dyads, two-thirds of which included families reported to CPS. Of the families involved with CPS, half were receiving six months of comprehensive services and the other half only received follow-up from CPS after the maltreatment report. Therefore, the Midwest site included three groups of roughly 82 child-parent dyads each: a control group, a comprehensive services group, and a follow-up from CPS group. The Northwest site, on the other hand, included a sample of 254 children age birth - 4 years, along with their primary caregiver, who were considered at moderate risk after a child maltreatment report to CPS. Of this sample, 60% were later classified as having experienced substantiated maltreatment (Larrabee & Lewis, 2011).

Finally, the sample for the South site included 243 parent-child dyads who were identified as eligible for North Carolina's High Priority Infant Program from 1986-1987 (Runyan et al., 1998). Eligibility for the North Carolina High Priority Infant Program included low birth weight, low maternal age, significant medical problems, and significant social problems, such as single parent household and parental substance use (Kotch et al., 1997). Participants also were selected based on CPS involvement. Specifically, a 1:2 recruitment ratio was employed to create a group of high risk children with CPS reports within the first four years of life and a matched control group without CPS involvement. Participants were matched on child gender, child age, race, and family composition (Runyan et al., 1998).

LONGSCAN Procedure

LONGSCAN is a consortium of longitudinal studies with five independent study sites that shared measures, operational definitions of constructs, data collection strategies, data entry, and data management. However, individual study sites were allowed to supplement the common battery of measures with additional instruments that were relevant for their independent research objectives. Multi-informant data collection via interviews and ongoing CPS record reviews began in 1991 when children were age 4 and follow-up data collection occurred at ages 6, 8, 12, 14, 16, and 18 (Larrabee & Lewis, 2011).

In an effort to maximize sample retention, annual contact interviews were conducted via telephone to track families and increase retention rates. During these contact interviews, researchers gathered complete contact information for families including caregivers' place of employment and information for three additional people who were in frequent contact with the families. Furthermore, participants were sent birthday and holiday cards inviting them to update contact information and participants who updated their information were sent thank-you gifts. Families also were provided project newsletters, pens, and magnets with project telephone numbers to enhance contact with participants between data collection periods. Finally, sample retention was enhanced by allowing families to move from one study site to another. If families moved out of a study location but not near another, they continued to receive annual phone calls and data collection was conducted via phone if interviewers could not travel to them. These sample retention efforts resulted in an average 75% retention rate across study sites (Larrabee & Lewis, 2011).

Method

Study Sample

The analytic sample ($N = 219$) was derived from three study sites ($N = 490$) of the full LONGSCAN sample ($N = 1,354$). From the three sites of interest (Midwest, Northwest, South), participants without substantiated or indicated cases of maltreatment from birth-6.9 years were excluded ($N = 175$). Then, participants whose first report of maltreatment occurred after the child's fourth birthday were excluded ($N = 43$). Next, participants who were missing both depression and social support scores ($N = 22$) were removed because they did not have the necessary information to be included in analyses of hypotheses. Next, male caregivers were removed from the analytic sample ($N = 18$), in order to focus the analyses on female caregivers. Finally, participants who were foster mothers ($N = 13$) were removed from the analytic sample to reduce potential confounding factors such as short-term custody and increased levels of support from CPS.

The analytic sample consisted of all female primary caregivers with a mean age of 31.85 ($SD = 8.80$; range 18-72) at the age 4 interview. The majority of caregivers identified as the child's biological mother (77%) and an ethnic minority (54%). Additionally, 43% of the sample identified as single and 27% as married. In regards to education and employment, the mean number of years of education was 11.49 ($SD = 2.15$; range 4-20) and 38% of caregivers reported being homemakers. Furthermore, 34% of caregivers' annual family income fell within the \$5,000-10,000 range. In regards to the children included in the analytic sample, 53% were female and the majority of children were identified as an ethnic

minority (64%). Although all children were 4 years old when the study measures were collected, the age at which they first experienced maltreatment varied from birth to 3.92 years with a mean age of 1.29 years ($SD = 1.27$). For more detailed information on the demographic profile of the sample, refer to Tables 2 (caregiver characteristics) and 3 (child characteristics).

A series of Chi-Square analyses were conducted to determine if the analytic sample significantly differed from participants in the included site sample (Midwest, Northwest, South) and/or the excluded site sample (East and Southwest) who were excluded from analyses. Significant chi-square results ($\chi^2 (2) = 10.38, p = 0.006$) indicated that the analytic sample had fewer male caregivers than expected; however, this difference was predictable given the focus of the study on female caregivers. In regards to the caregiver's relationship to the child, a significant chi-square ($\chi^2 (24) = 193.24, p < 0.001$) revealed that the analytic sample had more biological mothers and stepmothers, and less foster mothers and biological fathers than expected; again this was not surprising given the sample selection criteria. In terms of ethnicity, the analytic sample had significantly more Caucasians and significantly less African Americans than expected ($\chi^2 (12) = 67.96, p < 0.001$). In regards to income, the analytic sample had significantly more families with an annual income of \$5,000-10,000 and significantly less families with annual incomes of \$35,000-40,000 and \$40,000-45,000 than expected ($\chi^2 (20) = 53.28, p < 0.001$). In regards to child demographics, the analytic sample had significantly more Caucasian and multiracial children and significantly less African American children than expected ($\chi^2 (12) = 75.34, p < 0.001$).

To determine if there were significant differences between samples in regards to caregiver age and years of education, an ANOVA was conducted using a Welch's F statistic to account for the difference between sample sizes (Field, 2009). A significant ANOVA revealed that the analytic sample was significantly older than the included site sample and significantly younger than the excluded site sample ($F(2, 572.35) = 68.87, p < 0.001$). In conclusion, the analytic sample differed significantly from the LONGSCAN participants who were excluded from analyses in regards to caregiver gender, caregiver relationship to child, caregiver and child ethnicity, annual family income, and caregiver age. Therefore, generalizability of the present study findings to the LONGSCAN sample at large will be limited due to these demographic differences between samples.

Table 2

Sample Demographics: Caregiver Characteristics

	Frequency	Percent of Sample
Relationship to child (<i>N</i> = 203)		
Biological Mother	169	77.2%
Adoptive Mother	4	1.8%
Grandmother	16	7.3%
Stepmother	2	0.9%
Other Female Relative	12	5.5%
Ethnicity (<i>N</i> = 207)		
Caucasian	100	45.7%
African American	80	36.5%
Hispanic	11	5.0%
Native American	3	1.4%
Asian	2	0.9%
Multiracial	8	3.7%
Other	3	1.4%

Table 2 (continued)

	Frequency	Percent of Sample
Marital Status ($N = 207$)		
Single	95	43.4%
Married	60	27.4%
Divorced	36	16.4%
Separated	14	6.4%
Widowed	2	0.9%
Employment Status ($N = 207$)		
Homemaker	84	38.4%
Employed full-time	33	15.1%
Other*	31	14.2%
Unemployed, looking for work	30	13.7%
Employed part-time	29	13.2%

Note. * Employment status was recoded to combine categories that represented less than 10% of the sample (i.e., student, retired, disabled).

Table 2 (continued)

	Frequency	Percent of Sample
Annual Family Income ($N = 206$)		
<\$5,000	18	8.2%
\$5,000-10,000	74	33.8%
\$10,000-15,000	47	21.5%
\$15,000-20,000	24	11%
\$20,000-25,000	20	9.1%
\$25,000-30,000	10	4.6%
\$30,000-35,000	4	1.8%
\$35,000-40,000	0	0%
\$40,000-45,000	0	0%
\$45,000-50,000	1	0.5%
>\$50,000	8	3.7%

Table 3

Sample Demographics: Child Characteristics (N = 219)

	Frequency	Percent of Sample
Gender		
Female	117	53.4%
Male	102	46.6%
Ethnicity		
African American	82	37.4%
Caucasian	78	35.6%
Multiracial	43	19.6%
Hispanic	13	5.9%
Native American	1	0.5%
Asian	1	0.5%
Other	1	0.5%

Measures

Review of Child Protective Services (CPS) Reports. Participants' CPS reports were coded using the Modified Maltreatment Classification System (Barnett, Manly, Cicchetti, 1993; English & LONGSCAN Investigators, 1997). This coding system classifies various dimensions of CPS reports using systematic criteria, such as maltreatment type (e.g., physical, sexual, neglect), risk factors involved in allegation (e.g., substance abuse, domestic violence, caregiver mental illness), and CPS conclusions regarding the allegation (e.g., substantiated, indicated, inconclusive, etc.) among many other dimensions (English & LONGSCAN Investigators, 1997). All LONGSCAN coders were trained to 90% agreement with a "gold standard" coder (LONGSCAN, 1997). For the purposes of the current study, conclusion codes were used to determine abuse status prior to age 6, with substantiated and indicated cases included in analyses because both of these classifications are indicative of harm. Furthermore, the type of maltreatment experienced across incidents prior to age 4 was utilized in analyses as a categorical variable defined as physical abuse, sexual abuse, emotional abuse, neglect, a combination of abuse and neglect, or a combination of abuse types. Finally, the incident date of each substantiated or indicated event was used to calculate the age of the child at the time of the incident.

Reliability was assessed for 5% of randomly selected cases from the five LONGSCAN sites. Kappa coefficients were conducted for the coding of type of maltreatment allegations, type of maltreatment findings, and conclusion codes. Results indicated that reliability ranged from moderate ($\kappa > 0.4$) to almost perfect ($\kappa > 0.8$) for all

coding categories. Interclass correlations were conducted for the coding of the number of codeable allegations and number of codeable findings and resulted in coefficients of 0.79 and 0.75, respectively (LONGSCAN, 2005).

Center for Epidemiologic Studies Depression Scale. The Center for Epidemiologic Studies Depression Scale (CES-D) is a 20-item self-report measure of depressive symptoms that was designed for use with the general population. Items are rated on a 4-point scale to indicate the degree to which each item bothered the individual over the past week, ranging from 0 (rarely or none of the time: less than 1 day) to 3 (most or all of the time: 5-7 days). Although factor analysis of the CES-D has been conducted, Radloff (1977) argued against placing emphasis on these factors because all items are related to symptoms of depression. Instead, Radloff (1977) suggested using total scores (range 0-60) as a measure of the degree of depressive symptomology with higher scores being indicative of higher levels of symptomology. Therefore, for the purposes of the current study, total scores from the CES-D were used in analyses. Original analyses of this scale indicated “high internal consistency, acceptable test-retest stability, excellent concurrent validity by clinical and self-report criteria, and substantial evidence of construct validity” (Radloff, 1977, p. 400).

LONGSCAN administered the CES-D to primary caregivers at child ages 4, 6, 12, and 14. For the purposes of the current study, data from the age 4 interview were used. Cronbach’s alphas were calculated for age 4 interviews per study site and ranged from 0.86-0.91 across sites, indicating strong internal consistency. To evaluate the validity of the CES-D, LONGSCAN researchers correlated this scale with the Everyday Stressors Index and

reported history of alcohol use. Results indicated that the CES-D was significantly correlated with the Everyday Stressors Index ($r = .57$). Furthermore, caregivers who reported a history of alcohol use were significantly more depressed according to chi-square analyses. Because the CES-D was significantly related to measures associated with depression, it was deemed a valid measure for use in LONGSCAN data collection (Hunter et al., 2003).

Duke-UNC Functional Social Support Questionnaire. The Duke-UNC Functional Social Support Questionnaire (FSSQ) is a 14-item self-report assessment of the perceived quantity and types of social support available to an individual (Hunter et al., 2003). Respondents rate items based on a five-point scale ranging from 1 (much less than I would like) to 5 (as much as I would like); therefore, higher scores indicate higher levels of perceived social support (Broadhead, Gehlbach, DeGruy, & Kaplan, 1988). LONGSCAN used a slightly modified version of the FSSQ due to the poor internal consistency of the original Instrumental Support subscale. LONGSCAN included 7 of the original 14 items that demonstrated good reliability and validity. Three additional items were added to the modified FSSQ to better measure instrumental support, including “help when I need transportation”, “help with cooking and housework”, and “help taking care of my children.” Therefore, the modified FSSQ consisted of 10 items and three subscales, including confidant support, affective support, and instrumental support. For the purposes of the current study, total scores (range 10-50) from the age 4 interview were used.

LONGSCAN researchers conducted Cronbach’s alphas to assess the reliability of the modified FSSQ. The measure was internally consistent with Cronbach’s alphas ranging from

0.81-0.92 across time points and study sites. In regards to validity, LONGSCAN researchers correlated the age 4 FSSQ with the age 4 Family APGAR (measure of family satisfaction) scores and found a significant but low correlation, suggesting that the assessments measure different aspects of social support (Hunter et al., 2003).

Results

Preliminary Analyses: Descriptive Statistics and Covariates

Prior to testing the hypotheses of the current study, descriptive statistics were computed to provide contextual information to assist with the interpretation of analyses. First, frequency counts were conducted to determine how many participants' children experienced maltreatment recurrence between the ages of 4 and 6 and results indicated that 22% of the sample experienced recurrent maltreatment. In regards to the type of maltreatment experienced by the children in the sample, 65.3% of the cases of initial maltreatment involved neglect (see Table 4 for frequencies of maltreatment type). In regards to independent variables, the mean depression score for the sample was 14.78 ($SD = 11.55$; range 0-59) with 36.5% of the sample obtaining scores of 16 or higher, which is generally used as a cut-off point to indicate high depressive symptoms (Hunter et al., 2003). Additionally, depression was not normally distributed in this sample, because it was both significantly skewed and kurtotic (skewness $z = 6.15$; kurtosis $z = 2.43$). For social support, the sample had a mean of 36.14 ($SD = 9.35$; range 10-50). Social support also was not normally distributed in this sample, because it was significantly skewed (skewness $z = -3.59$; kurtosis $z = -0.40$).

A series of chi-square analyses were conducted to determine if caregiver and/or child demographic characteristics, study site, or variables related to maltreatment recurrence in prior research (domestic violence, child disability status, and the number of maltreatment occurrences prior to age 4) should serve as covariates. Results indicated the number of maltreatment occurrences prior to age 4 (single vs. multiple occurrences) approached significance at the 0.05 level; thus, this variable was entered as a covariate in subsequent analyses. For the study sample, 60% experienced only one instance of maltreatment prior to age 4. See Table 5 for chi-square results for all variables analyzed. A correlation matrix also was conducted to determine if continuous variables, including the number of years of education a caregiver completed, caregiver age, child age at initial maltreatment, and alcohol use should serve as covariates. Because none of the continuous variables included in the correlation matrix were normally distributed, Spearman's Rho was used to determine if these variables were significantly related to maltreatment recurrence. Results suggested that none of these variables were significantly related to maltreatment recurrence (see Table 6).

Originally, data analysis using hierarchical linear modeling (HLM) was going to be conducted to account for the fact that the data included people nested within different geographic locations. However, due to singularity among the dummy coded geographic location variables, the HLM analyses would not compute. Because there was no variability found within geographic location, HLM was no longer appropriate and logistic regression analyses were conducted instead to address hypotheses.

Table 4

Frequencies of Type of Maltreatment Experienced prior to age 4

Maltreatment Type	Frequency	Percent of Sample
Neglect	143	65.3%
Neglect/Abuse Combination	32	14.6%
Physical Abuse	15	6.8%
Sexual Abuse	14	6.4%
Emotional Abuse	10	4.6%
Combination of Abuse	5	2.3%
Types		

Table 5

Chi-Square Results for Potential Covariates and Maltreatment Recurrence

Potential Covariate	χ^2	<i>df</i>	<i>p</i>
Study Site	2.46	2	0.292
Caregiver Ethnicity	6.32	6	0.389
Relationship to Child	6.64	4	0.156
Marital Status	1.69	4	0.793
Employment Status	5.59	4	0.232
Family Annual Income	5.02	8	0.755
Physical Domestic Violence	0.01	1	0.981
Child Gender	0.75	1	0.387
Child Ethnicity	10.48	6	0.106
Child Disability Status	12.52	7	0.085
Multiple Maltreatment Occurrences	3.62	1	0.057

Note. Multiple Maltreatment Occurrences reflects whether a child experienced one or multiple instances of maltreatment prior to age 4.

Table 6

Spearman's Rho Correlation Coefficients of the Relation between Potential Covariates and Maltreatment Recurrence

Variable	Recurrence	<i>p</i>
Caregiver Age	-0.12	0.127
Years of Education	-0.11	0.102
Alcohol Use	0.03	0.715
Child Age at Initial Maltreatment	0.05	0.447

Analysis of Hypotheses

To test the study hypotheses, a series of logistic regression analyses were conducted. However, prior to conducting analyses of hypotheses, the assumptions of logistic regression, including linearity and multicollinearity with continuous variables, were examined to determine if any assumptions were violated. To test whether or not depression and social support were linearly related to the log of maltreatment recurrence, a logistic regression was conducted with predictor variables and the interactions of the log of these variables with themselves (e.g., depression x log of depression) (Field, 2009). Results of this analysis indicated that the interaction variables were not significant, suggesting that the assumption of linearity was met. Multicollinearity was assessed by conducting a linear regression with all continuous predictor variables in the model, including the interaction term between depression and social support, and examining the VIF, tolerance, and collinearity diagnostics (Field, 2009). Results indicated that depression, social support, and the interaction term were collinear because they all had high variance proportions on the same small eigenvalue (84%, 93%, and 75%, respectively). However, this result is not surprising given that the variables were entered into the model twice, once as a predictor and once as part of the interaction term. To correct for this multicollinearity, the depression and social support variables were centered by subtracting the variable mean from each participant's score; the interaction term was then created using the centered variables. Finally, residual statistics (i.e., standardized residuals, deviance statistics, Cook's distance, DFBeta, and leverage statistics) of all models indicated that no cases had undue influence on any model.

To test the first hypothesis that depression would serve as a significant predictor of maltreatment recurrence, a logistic regression was conducted controlling for the number of occurrences of maltreatment a child experienced prior to age 4 (see Table 7). Results indicated both the number of maltreatment occurrences prior to age 4 and maternal depression were significant predictors for distinguishing between children who did and did not experience maltreatment recurrence between the ages of 4 and 6 ($\chi^2 (2) = 9.53, p = 0.009$). Specifically, children who experienced multiple occurrences of maltreatment prior to the age of 4 were 2.09 times more likely to experience recurrent maltreatment than were children with a single maltreatment report prior to the age of 4. Furthermore, children of caregivers with higher levels of depression were 1.03 times more likely to experience recurrent maltreatment than were children of caregivers with lower levels of depression. Therefore, the hypothesis that depression would significantly predict maltreatment recurrence was supported.

A similar logistic regression model controlling for the number of maltreatment occurrences prior to age 4 was conducted to test the second hypothesis that social support would serve as a significant predictor of maltreatment recurrence (see Table 7). Again, results indicated that the number of occurrences of maltreatment prior to age 4 was predictive of whether or not children experienced recurrent maltreatment ($\chi^2 (2) = 7.98, p = 0.019$). Specifically, children who experienced multiple occurrences of maltreatment prior to the age of 4 were 2.19 times more likely to experience recurrent maltreatment than were children with a single maltreatment report prior to the age of 4. Social support also significantly

predicted maltreatment recurrence and suggested that children of caregivers with higher levels of social support were 0.96 times less likely to experience recurrent maltreatment than were children of caregivers with less social support. Therefore, results supported the hypothesis that social support would significantly predict maltreatment recurrence.

To test the third hypothesis that social support would serve as a moderator for the relation between depression and maltreatment recurrence, a logistic regression was conducted controlling for the number of maltreatment occurrences prior to age 4 (see Table 7). Furthermore, depression and social support were centered prior to conducting this model to correct for multicollinearity. Results indicated that both the number of maltreatment occurrences prior to age 4 and maternal depression continued to be significant predictors of whether or not a child experienced maltreatment recurrence ($\chi^2(4) = 12.57, p = 0.014$). Specifically, children who experienced multiple occurrences of maltreatment prior to the age of 4 were 2.35 times more likely to experience maltreatment recurrence than were children who experienced only one instance of maltreatment prior to age 4. Furthermore, children of caregivers with higher depression scores were 1.03 times more likely to experience recurrent maltreatment than were children of less depressed caregivers. However, social support was not a significant predictor of maltreatment recurrence in this model. Finally, the interaction between depression and social support was not significant; thus, the moderation hypothesis was not supported.

Finally, to test the fourth hypothesis that children who experienced neglect prior to age 4 would be more likely than children who experienced abuse prior to age 4 to experience

recurrence, a logistic regression was conducted controlling for the number of maltreatment occurrences experienced prior to age 4. Dummy variables were created for the type of maltreatment experienced (neglect as the reference group) prior to conducting analyses. Results indicated that the model did not significantly predict whether or not children experienced maltreatment recurrence between the age of 4 and 6 ($\chi^2 (6) = 3.82, p = 0.701$). Therefore, the data did not support the final study hypothesis.

Table 7

Logistic Regression Results: Predictors of Maltreatment Recurrence

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Depression as a Main Effect</i>				
<i>(N = 205)</i>				
Constant	-2.61 (0.36)	36.82	<0.001	0.12
Multiple Maltreatment Occurrences	0.74 (0.35)	4.42	0.036	2.09
Depression	0.03 (0.01)	5.40	0.020	1.03
<i>Social Support as a Main Effect</i>				
<i>(N = 204)</i>				
Constant	-0.26 (0.65)	0.16	0.693	0.77
Multiple Maltreatment Occurrences	0.79 (0.35)	5.04	0.025	2.19
Social Support	-0.04 (0.02)	4.15	0.042	0.96

Table 7 (continued)

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Social Support as a Moderator for</i>				
<i>Depression (N = 190)</i>				
Constant	-1.63 (0.27)	37.20	<0.001	0.20
Multiple Maltreatment Occurrences	0.86 (0.37)	5.41	0.020	2.35
Depression	0.03 (0.02)	3.78	0.052	1.03
Depression x Social Support	0.002 (0.001)	1.60	0.205	1.00

Analysis of Research Questions

The research questions of the present study sought to determine if the type of maltreatment experienced prior to age 4 moderated the relation between depression and maltreatment recurrence and/or the relation between social support and maltreatment recurrence. In regards to testing the potential moderating effects of maltreatment type for the relation between depression and maltreatment recurrence, a series of logistic regressions were conducted each assessing the potential moderating effect of one maltreatment type dummy variable with neglect as the reference category. Results of all models did not provide support for maltreatment type serving as a main effect or moderator for the relation between depression and maltreatment recurrence (see Table 8). Although all models obtained a significant chi-square, results only provided additional support for the predictive role of depression and/or the number of maltreatment occurrences experienced prior to age 4, as found in the tests of hypotheses described above. Residual statistics of these models indicated that no cases had undue influence on any model.

Similarly, a series of logistic regressions was conducted to determine if maltreatment type moderated the relation between social support and maltreatment recurrence. Again, results of all models did not provide support for maltreatment type serving as a main effect or moderator for the relation between social support and maltreatment recurrence (see Table 9). Although three models obtained a significant chi-square, results only provided additional support for the predictive role of social support and/or the number

of maltreatment occurrences experienced prior to age 4, as found in the tests of hypotheses. Residual statistics of these models indicated that no cases had undue influence on any model.

Table 8

Logistic Regression Results: Maltreatment Type as a Moderator for the Relation between Depression and Maltreatment Recurrence (N = 205)

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Model 1 ($\chi^2 (4) = 11.04, p = 0.026$)</i>				
Multiple Maltreatment Occurrences	0.68 (0.35)	3.68	0.055	1.97
Depression	0.03 (0.01)	4.52	0.033	1.03
Physical Abuse	-1.07 (1.27)	0.70	0.402	0.34
Physical Abuse x Depression	0.10 (0.14)	0.47	0.493	1.10
<i>Model 2 ($\chi^2 (4) = 10.50, p = 0.033$)</i>				
Multiple Maltreatment Occurrences	0.70 (0.35)	3.94	0.047	2.01
Depression	0.03 (0.02)	4.31	0.038	1.03
Sexual Abuse	-0.55 (0.96)	0.34	0.562	0.58
Sexual Abuse x Depression	0.07 (0.08)	0.71	0.399	1.07
<i>Model 3 ($\chi^2 (4) = 9.78, p = 0.044$)</i>				
Multiple Maltreatment Occurrences	0.77 (0.36)	4.63	0.031	2.16
Depression	0.03 (0.02)	4.81	0.028	1.03
Emotional Abuse	0.45 (0.94)	0.23	0.633	1.57
Emotional Abuse x Depression	0.002 (0.05)	0.001	0.977	1.00

Table 8 (continued)

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Model 4 ($\chi^2 (4) = 11.75, p = 0.019$)</i>				
Multiple Maltreatment Occurrences	0.72 (0.36)	4.16	0.041	2.06
Depression	0.06 (0.03)	5.11	0.024	1.06
Neglect	0.40 (0.40)	0.98	0.321	1.49
Neglect x Depression	-0.04 (0.03)	1.53	0.216	0.96
<i>Model 5 ($\chi^2 (4) = 10.83, p = 0.029$)</i>				
Multiple Maltreatment Occurrences	0.76 (0.37)	4.25	0.039	2.14
Depression	0.03 (0.02)	2.76	0.097	1.03
Neglect/Abuse Combination	-0.28 (0.54)	0.26	0.611	0.76
Neglect/Abuse x Depression	0.04 (0.04)	1.08	0.299	1.04
<i>Model 6 ($\chi^2 (4) = 16.56, p = 0.002$)</i>				
Multiple Maltreatment Occurrences	0.84 (0.36)	5.55	0.018	2.32
Depression	0.04 (0.01)	6.37	0.012	1.04
Other Combination	-14.33 (12079.85)	0.00	0.999	0.00
Other Combination x Depression	-3.70 (2177.06)	0.00	0.999	0.03

Table 9

Logistic Regression Results: Maltreatment Type as a Moderator for the Relation between Social Support and Maltreatment Recurrence (N = 204)

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Model 1 ($\chi^2 (4) = 14.07, p = 0.007$)</i>				
Multiple Maltreatment Occurrences	0.72 (0.35)	4.22	0.040	2.06
Social Support	-0.04 (0.02)	5.07	0.024	0.96
Physical Abuse	-19.92 (13331.81)	0.00	0.999	0.00
Physical Abuse x Social Support	0.03 (1119.40)	0.00	1.00	1.03
<i>Model 2 ($\chi^2 (4) = 8.21, p = 0.084$)</i>				
Multiple Maltreatment Occurrences	0.77 (0.35)	4.84	0.028	2.17
Social Support	-0.04 (0.02)	3.96	0.047	0.96
Sexual Abuse	-0.41 (0.92)	0.20	0.652	0.66
Sexual Abuse x Social Support	-0.01 (0.10)	0.10	0.920	0.99
<i>Model 3 ($\chi^2 (4) = 9.67, p = 0.046$)</i>				
Multiple Maltreatment Occurrences	0.84 (0.36)	5.51	0.019	2.32
Social Support	-0.03 (0.02)	2.86	0.091	0.97
Emotional Abuse	0.38 (1.06)	0.13	0.722	1.46
Emotional Abuse x Social Support	-0.07 (0.09)	0.57	0.449	0.94

Table 9 (continued)

	<i>B (SE)</i>	Wald	<i>p</i>	Odds Ratio
<i>Model 4 ($\chi^2 (4) = 8.81, p = 0.066$)</i>				
Multiple Maltreatment Occurrences	0.81 (0.35)	5.27	0.022	2.25
Social Support	-0.03 (0.03)	0.89	0.344	0.97
Neglect	0.31 (0.38)	0.66	0.418	1.36
Neglect x Social Support	-0.01 (0.04)	0.08	0.784	0.99
<i>Model 5 ($\chi^2 (4) = 8.19, p = 0.085$)</i>				
Multiple Maltreatment Occurrences	0.84 (0.37)	5.17	0.023	2.31
Social Support	-0.04 (0.02)	3.51	0.061	0.96
Neglect/Abuse Combination	-0.23 (0.51)	0.20	0.653	0.80
Neglect/Abuse x Social Support	-0.001 (0.06)	0.001	0.980	1.00
<i>Model 6 ($\chi^2 (4) = 13.44, p = 0.009$)</i>				
Multiple Maltreatment Occurrences	0.86 (0.36)	5.84	0.016	2.36
Social Support	-0.04 (0.02)	5.00	0.025	0.96
Other Combination	-115.67 (58244.01)	0.00	0.998	0.00
Other Combination x Social Support	9.78 (4868.10)	0.00	0.998	17746.6

Post hoc Analyses

Because the number of occurrences of maltreatment experienced prior to age 4 proved to be a significant predictor of whether or not a child experienced recurrent maltreatment by age 6, post hoc analyses were conducted to determine if the number of occurrences prior to age 4 moderated the relation between depression and maltreatment recurrence and/or the relation between social support and maltreatment recurrence. A significant logistic regression analysis ($\chi^2(3) = 10.22, p = 0.017$) of the moderating effects of the number of maltreatment occurrences on the relation between depression and maltreatment recurrence revealed that the number of maltreatment occurrences continued to significantly predict whether or not a child experienced recurrent maltreatment ($B = 0.67, SE = 0.36, Wald = 3.74, p = 0.053$). Specifically, children who experienced multiple occurrences of maltreatment prior to the age of 4 were 1.97 times more likely to experience maltreatment recurrence. However, results did not support moderation because the interaction between depression and the number of maltreatment occurrences prior to age 4 was not significant ($B = 0.02, SE = 0.03, Wald = 0.68, p = 0.409$). Furthermore, results did not support depression as a significant predictor for whether or not children experienced recurrent maltreatment ($B = 0.02, SE = 0.02, Wald = 1.39, p = 0.238$). Residual statistics of this model indicated that no cases had undue influence on the model.

Similarly, a significant logistic regression analysis ($\chi^2(3) = 9.88, p = 0.020$) of the moderating effects of the number of maltreatment occurrences prior to age 4 on the relation between social support and maltreatment recurrence revealed that the number of

maltreatment occurrences continued to significantly predict whether or not a child experienced recurrent maltreatment ($B = 0.75$, $SE = 0.35$, $Wald = 4.58$, $p = 0.032$). Specifically, children who experienced multiple occurrences of maltreatment prior to the age of 4 were 2.11 times more likely to experience maltreatment recurrence than those who only experienced one instance of maltreatment prior to age 4. However, results did not support moderation because the interaction between social support and the number of maltreatment occurrences prior to age 4 was not significant ($B = -0.05$, $SE = 0.04$, $Wald = 1.85$, $p = 0.174$). Furthermore, results did not support social support as a significant predictor for whether or not children experienced recurrent maltreatment ($B = -0.02$, $SE = 0.02$, $Wald = 0.40$, $p = 0.530$). Residual statistics of this model indicated that no cases had undue influence on the model.

Discussion

Child maltreatment is a significant problem in the United States that has detrimental effects on child development. For children who experience recurrent maltreatment, these deleterious effects on development are even more pronounced because multiple victimizations exert a cumulative negative influence (Proctor et al., 2012). Therefore, it is imperative for researchers to understand factors that may influence the likelihood that a child will experience maltreatment recurrence in an effort to prevent these negative impacts on development.

Although previous studies on child maltreatment recurrence have largely focused on demographic factors, some studies have found evidence for the predictive influence of

maternal depression (Proctor et al., 2012) and informal social support (DePanfilis & Zuravin, 1999; Proctor et al., 2012) on child maltreatment recurrence. Additionally, there is evidence to suggest that the type of maltreatment experienced initially is predictive of maltreatment recurrence (Fluke et al., 1999; Lipien & Forthofer, 2004; Proctor et al., 2012; Thompson & Wiley, 2009). The purpose of the present study was to further explore maternal depression, social support, and type of initial maltreatment experienced as predictors of maltreatment recurrence using data from three sites of the LONGSCAN database. Furthermore, the present study was designed to explore whether social support served as a buffer to reduce the risk for maltreatment recurrence among mothers with higher levels of depression.

Prior to discussing the results of the current study, it is important to reiterate that although there are some common findings among studies of maltreatment recurrence, comparing findings across studies is often difficult due to differences in the definition of maltreatment recurrence and methodological approaches (Hélie & Bouchard, 2010). Therefore, it is important to compare the present study to previous research in regards to these issues prior to comparing findings. The present study defined maltreatment recurrence as the experience of one or more substantiated or indicated cases of maltreatment for the same child between the ages of 4 and 6. The study definition of maltreatment recurrence is most closely aligned with that of Fluke, Yuan, and Edwards (1999), who defined maltreatment recurrence as one or more subsequent indicated or substantiated maltreatment reports for a child during a one-year period. All other studies of maltreatment recurrence that were reviewed differed from the present study in their definition of recurrence by using a

different unit of analysis (i.e., any child in the same family vs. the same child); not restricting the definition to cases that were indicated or substantiated; and/or limiting the definition to the first instance of recurrence (DePanfilis & Zuravin, 1999; Fluke et al., 2008; Lipien & Forthofer, 2004; Kotch et al., 1997; Proctor et al., 2012; Thompson & Wiley, 2009). These inconsistencies in study definitions of maltreatment recurrence greatly influence which predictors will result in significant results across studies because they are examining different aspects of maltreatment recurrence.

In regards to methodology, the present study utilized a sample that was restricted to female caregivers, children identified as having experienced an indicated or substantiated case of maltreatment prior age 4 and up to age 6, and children who were not residing in foster care. This sample was different from samples used in other studies of maltreatment recurrence reviewed because other studies did not exclude male caregivers and included a wider age range of children (DePanfilis & Zuravin, 1999; Fluke, Yuan, & Edwards, 1999; Fluke et al., 2008; Lipien & Forthofer, 2004; Kotch et al., 1997; Proctor et al., 2012; Thompson & Wiley, 2009). Additionally, some previous studies included children in foster care (Fluke et al., 2008; Lipien & Forthofer, 2004; Proctor et al., 2012). These differences in sample selection makes comparability across studies difficult because there is evidence to suggest that factors that influence maltreatment recurrence differ based on child age and home environment (Thompson & Wiley, 2009). Yet, despite these differences between the study sample and those of previous research, the inclusionary criteria for the present study was utilized to create a sample of relatively young children who are more prone to

maltreatment recurrence (Fluke et al., 2008; Fluke et al., 1999; Lipien & Forthofer, 2004) and female caregivers who are more prone to depression than males (American Psychiatric Association, 2013) and often are considered to be the child's primary caregiver. Children in foster care were excluded to limit the potential confounding variables that coincide with foster care, such as frequent changes in caregivers and additional resources that are provided to foster parents.

In addition to differences between samples, studies of maltreatment recurrence also differ in terms of the length of the observation period and the data analytic method used. The present study utilized a two-year observation period to capture maltreatment recurrence rates, similar to that of Fluke et al. (2008) and Lipien and Forthofer (2004); however, other studies utilized longer observation periods (DePanfilis & Zuravin, 1999; Kotch et al., 1997; Proctor et al., 2012; Thompson & Wiley, 2009). These differences in length of observation make comparing findings across studies difficult because factors predicting recurrent maltreatment may vary over time (Hélie & Bouchard, 2010). In regards to data analytic methods, the present study relied on logistic regression to predict the odds of maltreatment recurrence, similar to Kotch et al. (1997). Other studies of maltreatment recurrence relied on event history analysis to determine recurrence patterns in relation to time and/or predictors of risk of recurrence (DePanfilis & Zuravin, 1999; Fluke, Yuan, & Edwards, 1999; Fluke et al., 2008; Lipien & Forthofer, 2004; Thompson & Wiley, 2009). Logistic regression was selected as the data analytic method for the present study to determine what factors predicted actual maltreatment recurrence rather than the risk of recurrence.

Predictors of Maltreatment Recurrence

It was predicted that maternal depression and the experience of neglect during initial maltreatment experiences would increase the odds of experiencing maltreatment recurrence, whereas social support would decrease these odds. Furthermore, it was hypothesized that social support would moderate the relation between depression and maltreatment recurrence. Results provided support for two of these four hypotheses; specifically, maternal depression significantly increased the odds of maltreatment recurrence and social support significantly decreased these odds.

In regards to depression, findings suggested that children of female caregivers with higher levels of depression were more likely to experience recurrent maltreatment than children of caregivers with lower levels of depression. This result supports the growth mixture modeling findings of Proctor et al. (2012) that early re-reports of child maltreatment were influenced by maternal depression. However, the significant finding for depression was contrary to the findings of Kotch et al. (1997) and Thompson and Wiley (2009) who did not find support for the predictive effects of depression on maltreatment recurrence. This difference in study findings is likely due to study differences in definitions of maltreatment recurrence. Both Kotch et al. (1997) and Thompson and Wiley (2009) utilized a different definition of maltreatment recurrence than the present study; specifically, neither study restricted the definition of recurrence to indicated or substantiated cases. Thus, it is possible that substantiation alters the predictive effects of depression on maltreatment recurrence, which suggests that parental mental health may only be a factor for indicated and

substantiated cases of maltreatment. Thus, children experiencing multiple indicated or substantiated cases of maltreatment are more likely to have parents with poor mental health, specifically depression. Therefore, it will be important for mental health assessments and related services for those parents suffering from mental illness to become part of the services provided for/required of parents engaging in child maltreatment in an effort to reduce the risk of maltreatment recurrence.

In regards to informal social support, the present study found that children of female caregivers with higher levels of social support were less likely to experience recurrent maltreatment than children of caregivers with lower levels of social support. This result supports prior findings of DePanfilis and Zuravin (1999) and Proctor et al. (2012); thus, the present study provided further support for the protective influence of mothers' informal social support on the risk of recurrence of maltreatment of their children. Therefore, it will be important for CPS and other community agencies to consider incorporating sources of informal social support in efforts to prevent child maltreatment recurrence. For example, Melton (2014) described the *Strong Communities* program that involved volunteers and community organizations working together to foster a sense of community and "hospitality" in which parents have rich, natural sources of support in their neighborhoods and wider communities and can access those supports as needed without the fear of stigma. Results from a three-year controlled longitudinal study found that *Strong Communities* parents reported less parental stress and greater social support; accessed help from others more frequently; and engaged in more positive parenting and less disengaged and/or neglectful

parenting (Melton, 2014). Thus, interventions aimed at embedding greater social support for families within communities may serve to enhance parenting practices and reduce the risk of child maltreatment patterns from developing.

Finally, although not a direct hypothesis or research question of the present study, analyses of covariates indicated that the number of maltreatment occurrences prior to age 4 was a significant predictor of maltreatment recurrence. Results across models suggested that children who experienced multiple instances of maltreatment prior to age 4 were more likely to experience maltreatment recurrence than children who only experienced one instance of maltreatment prior to age 4. The predictive quality of the number of occurrences of maltreatment was also examined in DePanfilis and Zuravin (1999), however, they did not find that the number of prior maltreatment occurrences predictive of maltreatment recurrence. This difference in findings may be due to differences between samples, specifically the age range of the children included in analyses. It is possible that the number of prior maltreatment occurrences is more important for younger children because as children age, the risk of maltreatment recurrence tends to decline (Fluke et al., 2008). As one way to protect against a vicious pattern of child maltreatment from developing for young children, policy makers should continue to increase funding for programs such as Nurse-Family Partnership (Olds, 2006) that support new mothers to decrease risk factors for child maltreatment. Nurse-Family Partnership is an evidenced-based program that provides support for first-time mothers through ongoing home visits with registered nurses who, among other

things, provide mothers with the support needed to competently care for their children (Nurse-Family Partnerships, 2011).

Additional Findings

Contrary to expectations, caregivers' perceived level of social support did not serve to buffer the effects of depression on recurrence of maltreatment of the caregivers' children. Because other studies of maltreatment recurrence have not examined the interactive effects of social support and depression, comparability is not possible. However, research on general parenting techniques has found support for the interactive effects of social support and depression on parenting behaviors (Lyons et al., 2005; Wang & Dix, 2013). Specifically, prior research suggested that parents with higher levels of social support reported lower levels of depression and used more positive parenting practices (Lyons et al., 2005). The lack of similar findings in a maltreatment sample suggests that for these higher risk families, social support may not be sufficient to buffer against the effects of depression on parenting. This difference may be due to higher risk families having lower levels of social support than lower risk families, thus restricting the power of social support to buffer against the effects of depression for higher risk families. Alternatively, for families with a history of child maltreatment, the effect of depression on parenting practices may be too strong to be buffered against.

Second, initial maltreatment type, specifically neglect, did not significantly predict maltreatment recurrence nor did it alter the effects of depression or social support on maltreatment recurrence. However, previous research on maltreatment recurrence often has

found the initial type of maltreatment to be predictive of recurrence (Fluke et al., 1999; Lipien & Forthofer, 2004; Proctor et al., 2012; Thompson & Wiley, 2009). This difference in findings may be due to a variety of factors, such as the categorization and rate of initial maltreatment types across studies and differences in sample selection. For example, Lipien and Forthofer (2004) used a sample of children up to age 15 whose rates of initial maltreatment type included 36% neglect, 18% physical abuse, and 40% threatened harm; whereas, the current study included a sample of children up to age 4 whose rates of initial maltreatment type included 65% neglect, 15% combination of neglect and abuse, 7% physical abuse, 6% sexual abuse, 5% emotional abuse, and 2% combination of abuse types. Based on these differences, maltreatment type may be relevant in predicting maltreatment recurrence for older children rather than younger. Alternatively, the inclusion of threatened harm versus actual maltreatment may have influenced Lipien and Forthofer's results because comparatively, actual maltreatment is more likely to have an influence on recurrence than threatened maltreatment.

Furthermore, the present study considered all instances of maltreatment prior to age 4 as contributing to the initial type of maltreatment experienced, whereas other studies only considered the first maltreatment experience in defining initial maltreatment type. This difference in definition of initial maltreatment may have influenced results because the first maltreatment type experienced may be a more sensitive indicator for predicting maltreatment recurrence than considering four years' worth of maltreatment. Therefore, these vast differences in the definition, categorization, and rate of maltreatment types combined with

different sample characteristics are likely the reason for differing findings in regards to the predictive quality of initial type of maltreatment. Because studies differ greatly in the definition and coding of initial maltreatment type, it is not possible to make a definitive conclusion that maltreatment type is related to maltreatment recurrence. In fact, it may be a disservice to families with a history of child maltreatment to focus on initial type as an indicator of recurrence because it may lead service providers to focus intervention efforts on one or two types of maltreatment rather than attempting to prevent all types of maltreatment from recurring.

Finally, post-hoc analyses were conducted to determine if prior maltreatment occurrences served as a moderator for depression and/or social support in predicting maltreatment recurrence. Results did not support the moderating effects of the number of maltreatment occurrences prior to age 4 for either depression or social support. This finding is similar to the other moderation models conducted, suggesting that for this sample, the individual factors examined do not interact to predict maltreatment recurrence and instead are more meaningful predictors when considered independently. In other words, findings suggest that depression, social support, and number of prior maltreatment occurrences predicted maltreatment recurrence regardless of contextual factors (e.g., initial type of maltreatment). Therefore, depression and social support should be addressed in all families receiving services for child maltreatment in an effort to prevent recurrence.

Study Limitations and Future Directions

There are several limitations of the present study that may have influenced the results. First, the sample was restricted to female caregivers with children with a history of indicated and/or substantiated maltreatment in early childhood. Furthermore, the majority of the caregivers were unmarried, unemployed, and of relatively low income households. Therefore, the generalizability of study findings is limited to populations with similar characteristics. It is possible that given a different population, results of the present study may be changed; thus, future research should utilize a more diverse sample (e.g., male caregivers, older children, etc.) to determine if the results of the present study generalize to other populations. For example, Wilson and Durbin (2010) found that fathers who were experiencing depression were more likely to engage in negative parenting practices; thus, depression may serve as a significant predictor of maltreatment recurrence for fathers as well as mothers.

Second, the investigator relied on single measures of constructs that were completed by the same rater, which may have biased results because participants may have been reluctant to admit experiencing symptoms of depression or low levels of social support and/or lacked the insight to provide realistic responses. Future studies should utilize a multi-method, multi-rater approach to better represent the constructs of interest. Similarly, some measures of control variables, specifically measures of domestic violence and substance use, were limited to a few questions on a brief survey, which could account for the lack of influence these variables had on maltreatment recurrence. If more sensitive, reliable

measures of these issues were available, results may have indicated that they should have been controlled for in analyses. Third, the study limited the observation period to two years, which limits the degree to which we gain an understanding of relations among variables over longer periods of time and across different ages of children. It is possible that the lack of moderation found in the current study could be explained by the research design utilized because moderation may be dependent on time. For example, it is possible that the effects of social support accumulate over time, such that brief periods of high social support are not enough to buffer against the effects of depression on maltreatment recurrence. Therefore, future studies should examine the relations among variables over longer periods of time to determine if moderation is a function of time.

There are several areas that warrant further research to build upon the results from the present study. For example, future research should examine whether or not evidence-based treatments for depression, such as cognitive behavior therapy (see Butler, Chapman, Froman, & Beck, 2005), prevent maltreatment recurrence for families with a history of child maltreatment. Similarly, interventions that increase informal social support, such as *Circle of Parents* (Circle of Parents, 2014), should be explored as a possible addition to intervention efforts for families engaging in child maltreatment to determine if increases in informal social support prevent maltreatment recurrence. Finally, researchers should seek to identify mediators for the relation between depression and maltreatment recurrence to further inform intervention efforts.

Conclusion

Although the present study was not without limitations, it added to the current knowledge base surrounding maltreatment recurrence. Specifically, combined with findings from prior research, results from this study provided evidence that maternal depression and informal social support influence the likelihood that young children with a history of maltreatment will experience another episode of abuse or neglect within a few years. Together these findings suggest that caregivers with children who have experienced maltreatment should be screened for depression and provided appropriate evidence-based treatments for depression in an effort to lower the risk of their children experiencing repeated maltreatment. According to the California Evidence-Based Clearinghouse for Child Welfare (2015), some examples of treatments for adult depression that are well-supported by research include cognitive behavior therapy, mindfulness-based cognitive therapy, and interpersonal psychotherapy. Furthermore, informal social support networks, such as those provided by *Circle of Parents* (a research-based intervention) (Circle of Parents, 2014) should be explored further to determine if they can be included as an intervention strategy for families with children who have experienced maltreatment. Finally, findings from the present study suggest that children with a history of prior maltreatment experiences are more likely to experience maltreatment recurrence, which supports findings from previous research. Therefore, it will be important for child protective services and other agencies involved with children experiencing multiple instances of maltreatment to pay close attention to and

provide intensive intervention for these families in an effort to prevent the child from being repeatedly exposed to abuse and/or neglect.

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