

The Effect of Material Hardship on Child Protective Service Involvement

By

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DEDICATION

To my lovely husband and parents

# The Effect of Material Hardship on Child Protective Service Involvement

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This study used four waves of survey data on 1,135 families from the Illinois Families Study. Utilizing a longitudinal and prospective study design, this study explores the following issues within low-income populations: (1) whether material hardships are associated with child protective services (CPS) investigation; (2) whether the effect of material hardship on child maltreatment differs by the type of child maltreatment; and (3) whether psychological distress mediates the association between material hardship and child maltreatment. Pooled logistic regressions and fixed effects logistic regressions were used. Although results from pooled logistic regressions suggested that caregivers who experienced material hardship are more likely to be involved in CPS, estimates from fixed effect models that adjust for selection bias indicated that changes in material hardship status has a strong effect on CPS investigation. In general, neglect investigations are responsive to types of hardship such as housing and food, while physical abuse investigations are responsive to levels of hardship regardless of specific type of hardship. The association between material hardship and CPS involvement are not fully explained by depressive symptoms or parenting stress. The study results suggest that to prevent child maltreatment, it might be more effective to address the family's unmet material needs by offering economic support programs.

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## CHAPTER 1

### INTRODUCTION

After the passage of the federal Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) in 1996, cash assistance for the poor under Temporary Assistance for Needy Families (TANF) became a capped block grant,<sup>1</sup> so it became more difficult for poor families to access cash assistance (Blank, 2002). Other provisions of PRWORA, such as a 60-month lifetime limit on TANF benefits, heavier reliance on grant sanctions, and state options of family caps on assistance with the birth of additional children, have further eroded the basic safety net for the poor.

In addition, the recent Great Recession has contributed to increasing child poverty to 22 percent, with the number of children living in poverty reaching 16.4 million in 2010 (Department of Health and Human Services, 2011). More than 8 million children are at serious risk of being evicted or losing their homes (Isaacs, 2012) with about 1.6 million children experiencing homelessness or doubling up with other families (Bassuk, Murphy, Coupe, Kenney, & Beach, 2011). Moreover, about 20 percent of households with children had food insecurity in 2010 (Coleman-Jensen et al., 2011). Coupled with America's current economic situation, the diminishment of cash transfers and the increased rates of unmet needs warrant a closer look at the role of material hardship in child maltreatment.<sup>2</sup>

Although child maltreatment occurs in all economic classes, it is well known that children from poor families are at greater risk than wealthier children for child maltreatment.

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<sup>1</sup> AFDC was an entitlement program, so every eligible family, in theory, could receive cash assistance. However, under TANF block grants, even eligible families can be waitlisted or denied service based on state resources.

<sup>2</sup> Child maltreatment is overarching term that includes several types of abuse or neglect including physical abuse, sexual abuse, emotional abuse, and neglect. Child maltreatment is used interchangeably with child abuse and neglect.



Several empirical studies have found inverse associations between income level and child maltreatment in the general population (Berger, 2005; Brown, Cohen, Johnson, & Salzinger, 1998; Chaffin, Kelleher, & Hollenberg, 1996; Gelles, 1992). A large body of studies has shown an association between various indicators of low socioeconomic status and child maltreatment or Child Protective Services (CPS) involvement (Berger, 2004; Gil, 1970; Kotch, Browne, Dufort, Winsor, & Catellier, 1999; Lee & Goerge, 1999; Lindsey, 1994). Children from families that have received cash welfare benefit such as AFDC or TANF are at higher risk of being maltreated or reported to CPS than families that have not received these benefits (Brown et al., 1998; Jones & McCurdy, 1992; Martin & Lindsey, 2003; Needell, Cuccaro-Alamin, Brookhart, & Lee, 1999). Unemployed parents are more likely to maltreat their children than employed parents (SideHolden, Willis, & Corcoran, 1992; Sidebotham, Heron, Golding, & Team, 2002). In particular, father's unemployment is associated with child physical abuse (Gillham et al., 1998). Also, a relationship between single parenthood and child maltreatment has been well established (Berger, 2005; Chaffin et al., 1996; Gells, 1992; Mersky, Berger, Reynolds, & Gromoske, 2009; Sedlack & Broadhurst, 1996).

The association between poverty and child maltreatment has been supported not only through individual level studies but also through aggregate level studies. Community studies have shown that children who live in neighborhoods with high poverty rates and a high density of single mother families are more likely to be maltreated or to be involved in CPS than children in higher income neighborhoods with a lower density of single mother families (Coulton, Korbin, Su, & Chow, 1995; Drake & Pandey, 1996; Earnst, 2001; Freisthler, Bruce, & Needell, 2007). Also, the generosity of state welfare benefit as well as unemployment rates and proportion of

poor children (measured as family income less than 75% of the poverty line) are related to state child welfare caseloads (Paxson & Waldfogel, 1999, 2002, 2003).

Even though this considerable body of research shows a relationship between poverty and child maltreatment, it is still unclear whether this relationship is causal and how poverty is associated with child maltreatment (Berger & Waldfogel, 2011). Most of the previous studies have used cross sectional data, retrospective data, and/or clinical samples (i.e., samples already involved with CPS or highly selective at-risk samples such as substance abuse treatment group). Such study designs and samples make it difficult to ascertain the temporal association between poverty and the onset of maltreatment or may result in biased correlations between poverty and child maltreatment. The present study overcomes this issue by using a prospective, longitudinal research design, and advanced analysis method, enabling the identification of risk factors that temporally precede child maltreatment outcomes. Also, there is lack of empirical research on whether poverty is directly associated with child maltreatment or other factors mediate the association between poverty and child maltreatment. To unravel the pathway between poverty and child maltreatment, this study tests the mediating effect of psychological factors on the association between poverty and child maltreatment.

Furthermore, most studies on poverty and child maltreatment have defined poverty in terms of income. However, income alone does not tell much about economic strains, material situation, or living conditions families face or the economic resources families have at their disposal (Ashiabi & O'Neal, 2007; Nelson, 2011; Oullette, Burstein, Long, & Beecroft, 2004). For example, families with the same income level may have different experiences of economic strain as a result of other types of economic factors such as assets, in-kind welfare benefits, informal monetary support from family and friends, debt, cost of living, working costs, and

health insurance costs (Citro, 1995; Iceland, 2003; Iceland & Bauman, 2007). Given the limitations of an income-based measure, this study utilizes material hardship as an indicator of economic constraint. Material hardship measures can supplement existing income-based poverty measures by providing a more direct indicator of physical living conditions and the unmet basic needs of families after they exhaust all of their resources (Beverly, 2000; Federman et al, 1996; Iceland & Bauman, 2007; Mayer & Jencks, 1989). Thus, investigating the effects of material hardship on the risk of child maltreatment may provide more insight about how specific experiences of impoverishment affect the risk of child maltreatment.

It is known that there are common and distinct risk factors associated with different types of child maltreatment (Brown et al., 1998; Mersky et al., 2009; Peter et al, 1986). However, the majority of studies on the association between poverty and child maltreatment have used a composite measure of any type of child maltreatment. Investigating associations between poverty and different types of child maltreatment (i.e. any child maltreatment, abuse, or neglect) can provide some insight into whether poverty affects all types of child maltreatment or specific types of child maltreatment.

In sum, this study explores the within-group variation of poverty experiences in terms of material hardships as they relate to maltreatment risk within low-income populations. This exploration can further our understanding of how poverty may influence child maltreatment risk. Specifically, this study explores the following issues within low-income populations: (1) whether material hardships are associated with CPS outcomes; (2) whether the effect of material hardship on child maltreatment differs by the type of child maltreatment; and (3) whether psychological factors mediate the association between material hardship and child maltreatment.

## CHAPTER 2

### BACKGROUND AND PREVIOUS RESEARCH

In this chapter, I first provide background information about child maltreatment. Next, I summarize what is known about the association between poverty and child maltreatment. Finally, I highlight several important gaps in current knowledge.

#### BACKGROUND

##### *Definition of Child Maltreatment*

There is no universal definition of child maltreatment. The federal government provides a minimum definition of child maltreatment through the Child Abuse Prevention and Treatment Act (CAPTA), and each state has its own statutory definitions that expand on the CAPTA definition. According to CAPTA, child maltreatment means “at minimum, 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” (CAPTA, 2003, p. 44). The absence of a universal definition has been recognized as an obstacle for obtaining reliable statistics on the incidence of child maltreatment at the national level.

Generally, child maltreatment is classified by four categories: physical abuse, sexual abuse, emotional abuse, and neglect (Children’s Bureau, 2003). Physical abuse results when a parent or caretaker causes physical injury or harm to a child (whether intended or unintended), often through some form of punishment or discipline (e.g., hitting, burning, or shaking). Sexual abuse involves fondling or engaging in a variety of sexual acts with a child, including

exhibitionism and commercial exploitation (e.g., child prostitution or pornography). Emotional abuse results from action or omissions of behavior that is likely to result in mental or psychological harm to the child. Child neglect is generally defined in terms of a failure to provide for a child's physical (e.g. food, shelter, clothing, and supervision), educational, medical, or emotional needs.

### *Prevalence of Child Maltreatment versus Child Protective Services Involvement*

During 2010, 3.3 million CPS referrals, including 5.9 million children, were estimated in the United States. About 3.6 million children received an investigation or alternative response following a report of child maltreatment. Among them, about 700,000 children were found to be victims of child maltreatment. The victimization rate was about 10 per 1,000 children in the population. The most common types of maltreatment were neglect (78.3%), followed by physical abuse (17.6%) and sexual abuse (9.2%). Most of the children (81.3%) were maltreated by their parents. Of all victims, 1,560 children died (U.S. Department of Health and Human Services, 2012).

The prevalence of child maltreatment when based on maltreatment reports should be viewed cautiously, as CPS involvement differs from actual child maltreatment (Lee, Kotch, & Cox, 2004; Trocme, 2008). There are possibilities that false negative and false positive errors occur in CPS reporting and decision making processes, false positives occurring when a report is made to the CPS agency (including screening or substantiation decisions) when maltreatment did not occur and false negatives occurring when no report is made to CPS, or when reports are screened out or are unsubstantiated, when maltreatment did occur. In other words, being involved in CPS does not necessarily mean that child maltreatment occurred, and, at the same

time, not being involved does not mean that child maltreatment did not happen. Moreover, it has long been noted in the child maltreatment literature that low income children are overrepresented at various stages of CPS involvement (Gil, 1970; Lindsey, 2004; Pelton, 1981). However, it is not clear whether low income children are more likely to be maltreated or are more likely to be reported (Paxson & Waldfogel, 1999). Some studies suggest that low income families are more likely to be involved in CPS because 1) caregivers of low income families simply do not have enough resources to take care of their children, 2) economic strain affects parenting behavior, 3) low income families have greater exposure to mandatory reporters such as welfare workers, and 4) bias toward low income families may be a factor when people make CPS reports (Drake & Pandey, 1996; ; Jonson-Reid, Drake, & Kohl, 2009; McDaniel & Slack, 2005; Miller-Perrin & Perrin, 1999; Pelton, 1994; Waldfogel, 2004). Taken together, the risk of being maltreated can be said to differ from the risk of being reported to CPS.

## **PREVIOUS RESEARCH**

### **Selection of Studies for Review and Review Method**

As the preceding section noted, most previous studies used cross-sectional data, retrospective data, and/or clinical samples. To better understand the role of poverty in child maltreatment, this study disregards studies with these forms of possible bias and focuses instead on studies that relied on prospective and longitudinal study designs. Additionally, this study reviews only studies using CPS outcomes. Although using CPS involvement as a proxy for child maltreatment can be viewed as a limitation, the results of studies using CPS outcomes are more comparable than studies using parenting behaviors, in which the type of definition of maltreatment varies widely across studies. This literature review section synthesized current

knowledge about the association between poverty and CPS involvement within low income samples using a systematic literature review method (Littell, 2009). The studies included in this review adhered to the following guidelines: a) involved a low income sample, b) had a longitudinal study design wherein income/material hardship was measured prior to CPS involvement, c) included a measure of income or material hardship, and d) used CPS involvement as an outcome variable regardless of data source (either administrative data or self report survey). Even though a study may have met all inclusion criteria, if the study used aggregate units of analysis, it was excluded.<sup>3</sup> Also, studies about the recurrence of CPS reports within samples selected at the point of an initial CPS report have been excluded.

For peer reviewed articles and non-published dissertations written in English between 1975 and 2008 within major databases, including ISI, Web of Science, PsycINFO, and PubMed, the following search terms were used: “child and (maltreat\* or abuse or neglect)” in combination with, “poverty or impoverishment or low income or poor”, and “longitudinal or prospective”. Eleven studies were selected for review: nine studies with measures of income and eight studies with measures of material hardship, and six studies overlapped in both categories. Table 1 lists the selected studies in alphabetical order with a description of sample, measures of income, material hardships, and CPS involvement, control variables, and the effect of income and material hardships on CPS involvement in low-income populations.

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<sup>3</sup> Even though aggregate level studies can provide useful information on the association between poverty rates and CPS involvement, the use of aggregated units of analysis does not allow for an assessment of the role of family level poverty in CPS involvement (Aber, Bennett, Conley, & Li, 1997; Lee & Geroge, 1999).

Table 1. The association between t Income/ Material hardships and CPS Involvement in Low Income Families

Study	Sample	Measures of Income	Measures of Material hardship	Control Variables	Measures of CPS Involvement	Results
Courtney et al. (2005)	W-2 (Wisconsin's TANF program) applicants in Milwaukee County (N=1075)	<b>Earning</b> (Time varying- Ratio of UI earnings for past 4 quarters divided by poverty threshold adjusted for family size)	<b>1) Housing hardship</b> (Two dummy variables for current housing situation: i) double-up ii) homeless) <b>2) Number of material hardship</b> (A continuous variable for experiencing the number of hardships in the past year such as food hardship, difficulty to pay rent/ mortgage, utilities discontinued, eviction/homeless)	<b>1) Demo</b> (race, gender, no. of children, age of caregiver, any nonresident children, marital status) <b>2) Government assistance &amp; SES</b> (employment, education, past welfare receipt, welfare receipt with sanction status during past month, uninsured child) <b>3) Parent well-being &amp; parenting</b> ( physical health, domestic violence, parenting stress, depression, substance use) <b>4) Prior CPS involvement</b>	Investigated child maltreatment reports for respondent's children as alleged victim after 1999 application through September 2001	Earning (N) ; Number of material hardship Y(+); Housing hardship ( N)
Cox et al. (2003)	Low SES and high-risk families who are participants in the Southern LONGSCAN site study (N= 219)	<b>Income-to-needs ratio</b> (Tertiles: bottom third, middle third, and top third of distribution)		<b>1) Demo</b> (race, teen mom, & no. of children ) <b>2) Government assistance &amp; SES</b> (education, welfare receipt) <b>3) Parent well-being &amp; parenting</b> (domestic violence, social support, childhood maltreatment, negative life event , family functioning, & religious involvement, mental health, depression, substance abuse)	Child maltreatment report for occurrence of reports during a 4 year period. 1 year before and 1 year after each interview.	Income Y (-)



<b>Study</b>	<b>Sample</b>	<b>Measures of Income</b>	<b>Measures of Material hardship</b>	<b>Control Variables</b>	<b>Measures of CPS Involvement</b>	<b>Results</b>
Dworsky et al. (2007)	W-2 (Wisconsin's TANF program) applicants in Milwaukee County (N=1075)	<b>Earnings</b> (Time varying- Ratio of UI earnings for past 4 quarters divided by poverty threshold adjusted for family size)	<b>1) Housing hardship</b> ( A dichotomous variable for current housing situation either double-up or homeless) <b>2) Number of material hardship</b> (A continuous variable for experiencing the number of hardships in the past year such as using a food pantry, difficulty to pay rent/ mortgage, utilities discontinued, eviction/homeless, not afford cloths or shoes)	<b>1) Demo</b> (race, no. of children, age of caregiver, child age, child gender, any nonresident children, marital status) <b>2) Government assistance</b> (past welfare receipt, welfare receipt with sanction status during past month, uninsured child, employment, education) <b>3) Parent well-being &amp; parenting</b> (parent physical health, domestic violence, parenting stress, number of events, depression, substance use) <b>4) Child</b> ( child's behavior problem) <b>5) Prior CPS involvement</b>	Investigated child maltreatment reports for respondent's children as alleged victim between 1999 application and December 2005	Earning (N ); Number of material hardship Y(+); Housing hardship (N)
Epstein (2002)	Low income mothers with Medi-Cal funded prenatal care, California Yolo county (N =637)		<b>1) Housing hardship</b> (A dichotomous variable for housing problems during prenatal period such as unstable or transient housing (i.e. emergency shelter, car, or motel) or crowded households with 6 or more) <b>2) Food hardship</b> (A dichotomous variable for need emergency food assistance or other service during prenatal period)	<b>1) Demo</b> ( race, no. of children, age of caregiver, child gender, parent's countries of origin, marital status) <b>2) Government assistance &amp; SES</b> (welfare receipt, problems related to finances, mobility) <b>3) Parent well-being &amp; parenting</b> (partner relationship, attempted suicide, domestic violence, negative life event, childhood abuse, depression, substance use, learning disability) <b>4) Child well-being</b> ( child physical health) <b>5) Prior CPS involvement</b>	Substantiated abuse reports, substantiated neglect reports, and substantiated maltreatment reports from child birth (1998 ~1999) through January 2001	Housing hardship Y(+ ) for maltreatment and neglect but (N) for abuse; Food hardship Y(+ ) for abuse but (N) for neglect and maltreatment

Study	Sample	Measures of Income	Measures of Material hardship	Control Variables	Measures of CPS Involvement	Results
McDaniel et al. (2005)	Caregivers who are currently or recently receiving TANF from Illinois (N =1137)	<b>Income</b> (Quartiles- less than \$4999, \$5000-\$7499, \$7500-\$12,499, more than \$12.500)		<b>1) Demo</b> (race, no. of children, age of caregiver, teen mom, new birth, residence, marital status) <b>2) Government assistance &amp; SES</b> (, employment, education, moved, welfare receipt) <b>3) Parent well-being &amp; parenting</b> (domestic violence, economic stress, parenting stress, social support, childhood maltreatment, arrest, mental health, substance use, learning disability) <b>4) Child well-being</b> ( physical health, expelled) <b>5) Prior CPS involvement</b>	investigated report whether a respondent in each month was investigated following the wave 1 interview through December 2001 (16 months ~26 months- mean 20months)	Income Y (-)
Nam et al. (2006)	Welfare recipients living in a Michigan city (N=541)	<b>Income-to-needs ratio</b> (The family's income divided by the poverty line. The income-to-need ratio variables at the four interviews were averaged)		<b>1) Demo</b> (race, no. of chi, age of caregiver, teen mom, marital status) <b>2) Government assistance &amp; SES</b> (employment, education, transportation problems, child care problem, welfare receipt while growing up, neighborhood problem) <b>3) Parent well-being &amp; parenting</b> (physical health, domestic violence, parenting stress, social support, childhood maltreatment, foster care experience, crime, mastery, depression, learning disability) <b>4) Child well-being</b> (physical health)	Self-reported investigated child maltreatment reports and supervised child maltreatment cases which collected at the third and fourth interview on the questions such as " has child protective services ever contacted you about any of your children? ", "was there ongoing supervision by CPS because of these contacts?	Income Y (-) for investigation ; (N) for supervised cases

Study	Sample	Measures of Income	Measures of Material hardship	Control Variables	Measures of CPS Involvement	Results
Ovwigbo et al. (2003)	Children of TANF leaver in Maryland (N=17,441)	<b>Earnings</b> ( Time varying monthly earning from quarterly recorded UI earnings)		<b>1) Demo</b> (no. of children, age of caregiver, child age, child gender, relationship to case head) <b>2) Government assistance &amp; SES</b> (employment, current welfare , past welfare, Medicaid, food stamp, sanction code)	Indicated or substantiate child maltreatment reports for respondent's children as alleged victim for 12 months follow up period of their exit from TANF	Earnings Y (-)
Shook (1999)	welfare recipients in the Chicago metropolitan (N=137)	<b>Income-to-needs ratio</b> ( less than 50% of poverty threshold in sampling month)	<b>Material hardship</b> (A dichotomous variable for experiencing one of hardship in past 3 months such as eviction threat, food shortage, or utility shut-off )	<b>1) Demo</b> (race, no. of ch, age of caregiver, teen mom) <b>2) Government assistance &amp; SES</b> (employment, cumulative welfare, lost welfare income with work status) <b>3) Parent well-being &amp; parenting</b> ( physical health, domestic violence, parenting skill, financial support, childhood maltreatment, negative life event, self efficacy, substance use, learning disability) <b>4) Child well-being</b> (child physical health) <b>5) Prior CPS involvement</b>	Indicated report or child welfare case opening within one year	Income Y(-) ; Material hardship Y(+)

<b>Study</b>	<b>Sample</b>	<b>Measures of Income</b>	<b>Measures of Material hardship</b>	<b>Control Variables</b>	<b>Measures of CPS Involvement</b>	<b>Results</b>
Slack et al. (2003)	Caregivers who are currently or recently receiving TANF from Illinois (N =1261)	<b>Income-to-needs ratio</b> (household income from 1 to 15 ranging from less than "\$2500" to "\$50,000 or more" with 2500 increments and then divided by the number of current household members)	<b>Housing hardship</b> ( A dichotomous variable for experiencing one of four housing hardships in the past year such as homelessness, evictions, doubling-up with family or friends, or difficult to pay rent or mortgage)	<b>1) Demo</b> ( race, no. of children, child age, residence, marital status) <b>2) Government assistance &amp; SES</b> ( employment, cumulative welfare, total wages 1995, welfare with employment status) <b>3) Parent well-being &amp; parenting</b> (physical health, parenting stress, social support, depression, substance use, learning disability) <b>4) Child well-being</b> (child physical health) <b>5) Prior CPS involvement</b>	Investigated child maltreatment reports during about one year	Income (N) ; Housing hardship Y(+)
Slack et al. (2004)	Welfare recipients who had at least one child 3 years of age or younger at the point of this initial interview in Illinois (N=554)	<b>Income</b> (household income from 1 to 15 ranging from less than "\$2500" to "\$50,000 or more" with 2500 increments)	<b>1) Material Hardship</b> (A dichotomous variable for experiencing one of hardship in past year such as difficulty paying rent, eviction, or utility shutoffs)	<b>1) Demo</b> (race, no. of children, age of caregiver, teen mom, child gender, residency, marital status) <b>2) Government assistance &amp; SES</b> (employment , education, cumulative welfare, proportion of qrts with earnings) <b>3) Parent well-being and parenting</b> ( physical health domestic violence, economic stress, parenting stress, parental warmth, spank, frequent TV viewing, parenting skill, social support, depression, substance use, learning disability) <b>4) Prior CPS involvement</b>	Investigated neglect reports after IFS-CWB wave1 interview date (2001) through March 2003	Income (N); Material hardship(N)

Study	Sample	Measures of Income	Measures of Material hardship	Control Variables	Measures of CPS Involvement	Results
Slack et al. (2007)	Caregivers currently or recently receiving TANF from Illinois (N=1260)		<p><b>1) Housing hardship</b> (A dichotomous variable for experiencing one of hardship in past year such as eviction, doubling up with other families, or difficulty to pay rent) <b>2) Food hardship</b>(A continuous variable which measure composed of five items that are adapted from the U.S. Department of Agriculture’s Core Food Security Module. Examples of items; “In the past year, how often did you cut the size of your meals or skipmeals because there wasn’t enough money for food?”; “In the past year, how often were you unable to feed your children a balanced mealbecause there wasn’t enough money for food?”)</p>	<p>1) <b>Demo</b> (race, no. of children, teen mom, residence, marital status) 2) <b>Government assistance &amp; SES</b> ( employment, education, cumulative welfare receipt, TANF reduction, earnings of \$300 more, No. of quarters with earnings of \$300 more before wave1, informal work, Medicaid stopped, food stamp reduced, sanction with income supplementation status ) <b>3) Parent well-being &amp; parenting</b> (physical health, parenting stress, social support, depression, substance use, learning disability) <b>4) Child well-being</b> (child physical health) <b>5) Prior CPS involvement</b></p>	Investigated neglect reports, investigated physical abuse reports, and indicated maltreatment report after wave1 interview date (1999) through March of 2003	Food hardship (N ) for neglect, physical abuse, and indicated maltreatment; Housing hardship Y(+) for physical abuse but (N) for neglect and indicated maltreatment

- Key code for the cells: Y = Yes, statistically significant;  
N = No, not statistically significant  
+/- = Direction of the association

## **Income and CPS involvement**

Nine studies were included in the review of the role of income in CPS involvement among low income populations (Cox, Kotch, & Everson, 2003; Courtney, Dworsky, Piliavin, & Zinn, 2005; Dworsky, Courtney, & Zinn, 2007; McDaniel & Slack, 2005; Nam, Meezan, & Danziger, 2006; Ovwigho, Leavitt, & Born, 2003; Shook, 1999; Slack, Holl, Lee, McDaniel, Altenbernd, & Stevens, 2003; Slack, Holl, McDaniel, Yoo, & Bolger, 2004). All reviewed studies used administrative CPS data to measure CPS involvement with one exception; Nam et al. (2006) used caregiver self-reports of their CPS involvement. The majority of the reviewed studies used welfare recipient samples, except Cox et al. (2003), which used a low SES sample. Even though the majority of studies used a welfare sample, there were variations in the sample: two studies used welfare applicants (Courtney et al., 2005; Dworsky et al., 2007); five studies used current or recent welfare recipients (McDaniel et al., 2005; Nam, et al., 2006; Shook, 1999; Slack et al., 2003, 2004) and one study used welfare leavers (Ovwigho et al., 2003).

## *Earnings and CPS Involvement*

Three studies explored the relationship between earnings and CPS involvement. Using children of TANF leavers in Maryland, Ovwigho et al. (2003) explored the roles of earnings in indicated or substantiated maltreatment reports for a 12 month follow-up period after caregivers exited TANF. The study found that higher earnings, measured as a monthly time varying variable, significantly decreased the risk of being indicated or substantiated for maltreatment. In contrast to Ovwigho et al. (2003), the studies of Courtney et al. (2005) and Dworsky et al. (2007) did not find an inverse association between earnings-to-needs ratio, measured by the ratio of UI earnings for the past 4 quarters divided by the poverty threshold, and CPS involvement. Both

studies used the Milwaukee W2 (TANF program of Wisconsin) applicant sample. While Courtney et al. (2005) used first and second wave interviews covering approximately 2 years of CPS report observation time, Dworsky et al. (2007) used the first, second, and third wave interviews with about 6 years of CPS report observation time. In both studies, earnings-to-needs ratio and investigated child maltreatment reports had an inverse association at the bivariate level, but these associations were not statistically significant after controlling for other confounding factors such as marital status, depressive symptoms, substance use, parenting variables, welfare receipt and other demographic factors.

The possible reasons for the inconsistent findings between Ovwigho et al. (2003) and Courtney et al. (2005) / Dworsky et al. (2007) could be the different levels of CPS involvement, such as substantiation versus investigation, CPS report observation periods, or monthly earnings versus yearly earnings. However, given that the significant associations between earnings and CPS involvement during bivariate analysis in both Courtney et al. (2005) and Dworsky et al. (2007) became insignificant during multivariate analysis (in which a rich set of variables was controlled), we may be able to consider an alternative explanation on these inconsistent findings: omitted variables bias. Compared to Courtney et al. (2005) and Dworsky et al. (2007), studies in which combined data from both survey and administrative data were used, Ovwigho et al. (2003) used only administrative data, which means that it lacked family, parenting, and child-related variables. In particular, Ovwigho et al. (2003) did not control for a number of important caregiver characteristics that are known to be associated with both child maltreatment and earnings, such as depressive symptoms, substance use, and education. Furthermore, the study did not use any advanced methodology to control for the omitted variable bias. Thus, the relationship

between earnings and CPS involvement found by Ovwigho et al. (2003) might be biased due to omitted variables.

### *Income and CPS Involvement*

Six studies explored the relationship between income/income-to-need ratios and CPS involvement. The findings of the reviewed studies are inconsistent. Using the first wave of Illinois Families Study (IFS) data, consisting of randomly selected welfare recipients in Illinois, Slack et al. (2003) observed families' investigated maltreatment reports over the course of about 11 months, finding that the income-to-need ratio was not associated with investigated maltreatment reports. Within a subgroup of IFS, caregivers with at least one child 3 years of age or younger at the point of the initial interview, Slack et al. (2004) predicted the role of income in the investigated neglect reports which were observed for about 20 months. Like the finding of Slack et al. (2003), this study also found that income was not a significant predictor of neglect. In contrast to these two studies, McDaniel & Slack (2005), using first and second wave IFS data with an observation period of approximately 20 months, found that income is inversely associated with investigated maltreatment reports. The study reported that families in the top income quartile were 69% less likely to be investigated than families in the bottom quartile.

Two other studies that dichotomized income or divided income distribution into tertiles showed consistently that income or income-to-need ratio is a predictor of CPS involvement. Using a welfare recipient sample in the Chicago area, Shook (1999) observed the indicated maltreatment reports or child welfare case openings within one year. The study found that families with an income less than 50 % of the poverty threshold in the sample month were over three times more likely to be involved with CPS. Also Cox et al. (2003), in their study of a low



income sample in North Carolina, showed that the families at the bottom third of the income distribution were 78% more likely to be reported than the families at the middle third points on the distribution; the families in the top third were 73% less likely to be reported than the families of the middle third of the distribution.

Nam et al. (2006) used a continuous measure of income; at each interview, they divided the family's income by the poverty line and averaged the results to obtain the average income-to-needs ratio. This study used the data from Women's Employment Survey, made up of randomly selected welfare recipients in Michigan. Using mothers' self-report, CPS involvement was measured either by being investigated by CPS without further involvement or by being supervised by CPS after the initial investigation though at the fourth interviews. This study showed that family's average income-to-needs ratio over a long period was inversely associated with both types of CPS involvement; however, it was statistically significant for only investigated maltreatment reports.

### *Types of Child Maltreatment*

Surprisingly, only one study (Slack, 2004) explored the effect of income on a particular type of child maltreatment (i.e., neglect). This is surprising given that previous studies have repeatedly shown that neglect among various types of child maltreatment is most strongly associated with poverty (Brown et al 1998; Chaffin et al., 1996; Zuravin & Greif, 1989). Slack et al. (2004) reported that income was not associated with investigated neglect reports, controlling for other factors. All other reviewed studies combined all forms of CPS report into one category: child maltreatment. Within the reviewed studies, it is difficult to ascertain whether

income affects the risk of CPS involvement of child physical abuse, sexual abuse, emotional abuse, or neglect differently.

### *Summary*

In sum, although earnings or income seem to be associated with CPS involvement at the bivariate level, whether earnings or income is a predictor of CPS involvement is thus far inconclusive. The inconsistent findings from these studies might be due to differences of CPS report observation periods (from 12 months in Ovwigho et al. (2003) to 70 months in Dworsky et al. (2007) or included control variables. An alternative explanation could depend in part on variability across studies as to how income is operationalized. In general, income was not significantly associated with CPS involvement in the studies where income was measured as linearly. However, the reviewed studies suggest one consistent finding: the poorest families (those who are, for example, below 50% of poverty threshold, in the bottom third of the sample's income distribution or in the bottom quartile of the sample's income distribution) are more likely to be involved with CPS. These findings may suggest that the association between income and child maltreatment may not be linear.

### **Material Hardships and CPS involvement**

Eight studies included in the review shed light on the role of material hardship in CPS involvement. All studies utilized administrative CPS records to measure family CPS involvement. The majority of the reviewed studies used welfare recipient samples, except Epstein (2002) who used low income mothers with Medi-Cal funded prenatal care.

### *Composite Measures of Material Hardship*

Four studies used a composite measure of material hardship. Shook (1999) and Slack et al. (2004) measured material hardship as a dichotomous variable, while Courtney et al. (2005) and Dworsky et al. (2007) used a continuous variable, summing the number of hardships. Shook (1999) measured material hardship as whether the respondent experienced, in the past 3 months, an eviction threat, a food shortage, or a utility shut off.<sup>4</sup> According to Shook (1999), families experiencing any of these hardships were over four times more likely to have an indicated maltreatment report or opened child welfare case. In contrast, Slack et al. (2004) did not find a statistically significant relationship between investigated neglect reports and material hardship. In this study, material hardship was measured as whether a respondent experienced difficulty paying rent, eviction, or utility shutoffs in the past 12 months.

Courtney et al. (2005) and Dworsky et al. (2007) found that families who experienced multiple hardships were at higher risk of being investigated for maltreatment and each additional economic hardship increased the chance of being investigated by about 10 percent. Both studies used a summed number of material hardships that respondents experienced in the past 12 months such as difficulty paying rent, having utilities shut off, having phone service disconnected, being evicted, doubling-up, or becoming homeless, and not being able to afford clothes or shoes.

### *Types of Material Hardship*

With composite measures of material hardship, we cannot know which specific hardship affects the risk of CPS involvement. Despite diverse ways in which families experience material hardships, only two specific dimensions of hardship such as housing and food hardship were considered in the reviewed studies.

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<sup>4</sup> In this study, material hardship was called “environmental hardship”.

### Housing Hardships

Along with a composite measure of material hardship, Courtney et al. (2005) and Dworsky et al. (2007) explored the effect of current housing situation on CPS involvement.<sup>5</sup> Both studies compared the risk of being investigated by CPS between families who experience doubling up or homelessness and families who own their own residences or rent, and neither study found an association. While these two studies operationalized housing hardships using current housing status, Slack et al. (2003) measured it as whether families experienced homelessness, eviction, doubling-up, or difficulty paying rent/ mortgage in the past 12 months. This study found that the risk of CPS investigation for maltreatment was twice as likely for families experiencing housing hardship than those who did not experience housing hardship.

The role of housing hardship in CPS involvement differs by types of child maltreatment or type of CPS involvement. Slack, Lee, & Berger (2007), in their study of current or recent welfare recipients in Illinois, explored the role of housing hardship using three different measures of CPS involvement: investigated neglect reports, investigated physical abuse reports, and indicated reports of child maltreatment over an observation period of approximately 4 years. Housing hardship, measured by eviction, doubling-up with other families, or inability to pay rent in the past 12 months, was associated with only physical abuse reports not neglect reports or indicated reports. In contrast to Slack et al. (2007), Epstein (2002) showed that housing hardship was associated with both substantiated neglect and substantiated child maltreatment, but not with substantiated abuse. Epstein (2002) recruited low income women with Medi-Cal funded prenatal care at local hospitals and measured housing hardship by asking, at the initial assessment during the prenatal period, whether respondents were experiencing unstable or transient housing, such

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<sup>5</sup> The authors of these two studies called it as “housing situation” not housing hardship. However, the measure of housing condition is similar to other housing hardship measures so I included it.

as emergency shelters, cars, or motels, or experiencing crowded households with over six persons. CPS involvement was observed from a child's birth until the child was approximately two years old.

The inconsistent findings on the effect of housing hardship may be attributed to the difference in the operationalization of the construct or the timing of experiencing housing hardship. In general, past housing hardship is more likely to affect the risk of CPS involvement rather than current housing hardship. These results might be interpreted as the effects of housing hardship on CPS involvement do not occur immediately and a long enough time needs to be revealed its effect on CPS outcomes.

### Food Hardships

Another individual dimension of hardship that the reviewed studies explored was food hardship. Only two studies investigated the effect of food hardship on CPS involvement (Epstein, 2002; Slack et al, 2007). Epstein (2002) found that families who experienced the need for emergency food were eight times more likely to be substantiated for abuse than families without this need. However, food hardship was not associated with substantiated neglect or substantiated maltreatment in general. Slack et al. (2007) measured family food hardship using five food items adapted from the U.S. Department of Agriculture's Core Food Security Module.<sup>6</sup> Neither investigated neglect reports, nor investigated physical abuse reports, nor indicated child maltreatment reports was associated with food hardships that families experienced in the past 12 months. This finding may be due to the lack of variation in food hardship among the sample, as

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<sup>6</sup> Example items: "In the past year, how often did you cut the size of your meals or skip meals because there wasn't enough money for food?" and "In the past year, how often were you unable to feed your children a balanced meal because there wasn't enough money for food?"

the mean score of food hardship was 5.98 with 1.78 standard deviation within a range of 5 to 15 (in which a higher score signifies greater hardship).

### *Types of Child Maltreatment*

Only three studies investigated the role of material hardships in predicting abuse and neglect (Epstein, 2002; Slack et al., 2004, 2007). The reviewed studies show that housing hardship is associated with substantiated neglect reports, that housing hardship is associated with investigated physical abuse reports, that food hardship is associated substantiated abuse reports.

### *Summary*

The lack of consensus on the definition and operationalization of material hardship makes it difficult to compare results across studies. Each study used different dimensions of hardship in operationalizing the material hardship index: a food shortage, an eviction threat, or a utility shut-off (Shook, 1999); difficulty paying rent, eviction, or utility shutoff (Slack et al., 2004); lack of food or clothing; difficulty paying rent, mortgage, or other important bills; utility or phone shutoff; using a food pantry; and eviction, doubling-up, or homelessness (Courtney et al, 2005; Dworsky et al, 2007). The measure of material hardship of Slack et al. (2004) is similar to the measures of housing hardship in the other reviewed studies (Slack et al., 2003; Slack et al., 2007).

Even when studies explore the same dimension of material hardship (i.e. housing, food), the specific measures differ. For example, the operationalization of housing hardship varies: doubling-up or homelessness (Courtney et al, 2005; Dworsky et al., 2007); difficulty paying rent or mortgage, eviction, doubling-up, or homelessness (Slack et al., 2003); difficulty paying rent,

eviction, or doubling up (Slack, 2007); staying at an emergency shelter, car, or motel, or staying in crowded households with over six people (Epstein, 2002).

In addition, two studies (McDaniel & Slack, 2005 & Slack et al., 2004) explored the role of perceived material hardship on CPS involvement using four items such as “My financial situation is better than it’s been in a long time,” “I worry about not having enough money in the future,” “These days I can generally afford to buy the things we need,” and “There never seems to be enough money to buy something or go somewhere just for fun”. However, these four items are not a common measure of material hardship. Although there is no consensus on measuring material hardship, the most common focus is on actual living conditions and physical needs rather than subjective conditions (Ouellette, Burstein, Long, & Beecroft, 2004). The four items used to measure perceived material hardship do not reflect the unmet actual physical conditions a family experience; rather, these items measure subjective self-assessment of economic conditions or economic stress.<sup>7</sup>

Given diverse measures of material hardship and CPS involvement, it is not easy to compare the results across reviewed studies. However, there are common findings. Families who experience multiple material hardships are at higher risk of being involved with the CPS. Rather than current housing hardships, past housing hardships that families have undergone are associated with CPS involvement.

### **Income, Material Hardship, and CPS involvement**

Income may affect CPS involvement directly: low income parents may simply lack the resources to meet their children’s material needs. However, income may also affect CPS

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<sup>7</sup> Since I considered the four items as economic stress, I did not review the results in material hardship section, rather I address it in the other risk factors for CPS involvement section.

involvement indirectly: the effect of income on CPS outcome may be due to its effect on the material hardship. With the reviewed studies, I explore the direct and indirect effects of income through material hardship.

Among the eleven reviewed studies, four studies included only income/earnings, two studies included only material hardships, and five studies included both income and material hardship<sup>8</sup>. Income/earnings was inversely associated with CPS outcomes in all four studies in which material hardship was not controlled (Cox et al., 2003; McDaniel & Slack, 2005; Nam et al., 2006; Ovwigho et al., 2003). Material hardship measures were associated with CPS outcomes in the studies without income measures (Epstein, 2002; Slack et al., 2007). In the studies that included both income and material hardship, income/earnings was not associated with CPS involvement, though material hardship was consistently associated with CPS involvement (Courtney et al., 2005; Dworsky et al., 2007; Slack et al., 2003, 2004).

Only one study includes income and material hardship sequentially, which makes it possible to test the mediating effects (based on Baron and Kenney's (1986) approach) of material hardships. Shook (1999) found that material hardship partially mediated the effect of income on CPS involvement: income was significantly associated at first, but after material hardship measures were entered, the size of coefficient of income decreased (while it was still statistically significant) and material hardship was associated with CPS outcome. The results of this study suggest that low income affects CPS involvement in part through its effects on material hardship. In sum, material hardship does not fully explain the association between income and CPS involvement. Income may directly affect CPS involvement, and it may indirectly affect CPS involvement through material hardships or some other unmeasured factors. Furthermore, even

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<sup>8</sup> To make comparison simple, I will not specify types of child maltreatment, the levels of CPS involvement (i.e. reported, investigated, or substantiated), and types of material hardship. The results of income and material hardship effect in each study are results controlling confounding factors.



after controlling income, material hardship is associated with CPS involvement. However, given that only one study explored the association income, material hardship, and CPS involvement, care is needed when trying to generalize the finding.

### **Other Risk Factors for CPS Involvement**

Here, other risk factors in low income populations that may lead to CPS involvement are explored. Table 2 shows an extensive set of risk factors, and this section will review the findings related to those risk factors of key interest (i.e., welfare receipt, employment, psychological stress, and parenting).

#### *Receipt of and Loss of Cash Welfare*

The majority of reviewed studies investigated whether cash welfare (AFDC /TANF) receipt increases the risk of CPS involvement. In contrast to previous research that asserted that families who receive welfare benefits over a longer period of time are more likely to be involved with CPS (Jones & McCurdy, 1992; Needell, et al., 1999), all reviewed studies, but Ovwigho (2003) that explored the effect of cumulative months of cash welfare on CPS involvement, did not find evidence of the inverse association between these two variables (Shook, 1999; Slack et al., 2003; Slack et al., 2004; Slack et al., 2007). However, the findings of reviewed studies on the role of current TANF receipt in CPS involvement were mixed: Cox et al. (2003), Epstein (2002), McDaniel & Slack (2005), and Slack et al. (2003) found that families who receive welfare are more likely to be involved in CPS, while Ovwigho et al. (2003), Courtney et al. (2005), and Dworsky et al. (2007) found no such association. One of the possible reasons for this inconsistent finding could be differences in the samples resulting from diverse TANF policies

across states. Each study's sample was recruited from a single state following the passage of welfare reform. Given that welfare policies vary across states, the characteristics of TANF recipients may differ by state. Additionally, the generosity of state welfare benefits could result in the different effects of TANF receipt on CPS involvement.

Further, some studies explored the association between sanctions and CPS involvement. Three studies found no evidence that sanctions had an effect on the risk of CPS involvement (Courtney et al., 2005; Dworsky et al., 2007; Nam et al., 2006). As the authors mentioned, the reasons for sanctions vary and sanctions themselves do not necessarily equate to income loss. For example, a participant may get a job or live with a partner who can provide financial resources, and, thus, no longer be interested or ineligible for cash assistance. To compare the risk of CPS involvement by case closing code, Ovwigho et al. (2003) classified the case closing codes as work sanction, no reapplication, income above limit or started work, and requested closure. The study found that families whose cases closed due to work sanctions are at higher risk of being involved in CPS than families whose cases closed due to other reasons. When the closing code is "income above limit" or "started work", the risk of CPS involvement is much lower than for families of other closing codes.

Two studies investigated the role of loss of welfare income with subsequent work or income supplementation on CPS involvement. Shook (1999) reported that families with losses of more than \$75 in AFDC without subsequent work are more likely to be involved in CPS compared to families with intact grants without subsequent work. Slack et al. (2007) measured TANF benefit decline and whether a 50% or more reduction in TANF assistance is offset by combined earnings and food stamps. According to fixed effects analysis results, sanctions without income supplementation are associated with neglect reports; other grant reductions

without income supplementation are associated with indicated reports of child maltreatment. In sum, when a TANF benefit reduction was not offset by other income supplementation, the risk of CPS involvement increased. As the authors mentioned, these results can be interpreted to suggest that worsened conditions of poverty increase the risk of CPS involvement.

### *Employment*

There are inconsistent findings on the role of caregiver employment in CPS involvement. Courtney et al.(2005), Nam et al.( 2006), Slack et al. (2003), and Slack et al.(2004) found that caregivers who work are less likely to be involved in CPS, while Dworsky et al.(2007), McDaniel & Slack (2005), Ovwigho et al.(2003), and Slack et al.(2007) found no association. The possible reasons for these inconsistent findings are different samples, different employment measures (i.e., proportion of employment during observation period, current employment, previous year employment, or employment with more than \$300 in earnings), different control variables or interaction with other variables. For example, Nam et al. (2006) found that the relationship between employment and CPS involvement differed by previous work experience, as the risk of welfare recipients without prior work experience to be investigated by the CPS increased as the percentage of working months increased, while the risk of those with prior work experience decreased.

In addition, unmeasured characteristics associated with employment leads to differences in CPS involvement. Although the reviewed studies showed inconsistent findings for the effect of employment, the reviewed studies that controlled income showed more consistent findings: employment was associated with lower levels of CPS involvement. Similarly, there are inconsistent findings regarding the role of TANF receipt on CPS involvement. However, studies

that controlled income showed consistent findings: TANF receipt was associated with higher levels of CPS involvement. These results suggest that even though families have the same income level, unmeasured family characteristics associated with different income sources may affect CPS involvement.

### *Other Risk Factors*

Two studies investigated the role of economic stress in CPS involvement using four items from the Minnesota Family Investment Program Survey<sup>9</sup>. Slack et al. (2004) found that caregivers' perceived economic stress was a predictor of investigated neglect reports. Caregivers who perceived their financial situations as being less adequate and who were pessimistic toward their future economic conditions were found to have a higher risk of becoming involved in neglect report investigations than caregivers who perceived their financial situations were adequate and were optimistic about their future economic conditions. In this study, income and material hardship (i.e., experience of difficulty paying rent, eviction, or utility shutoffs) were not associated with risk of neglect investigations. The results suggest that the economic stress felt by caregivers is more likely to influence investigated neglect reports than income level or objective experience of material hardship. On the other hand, McDaniel & Slack (2005) found no association between perceived economic strain and investigated maltreatment reports. The results from these two studies may be interpreted as showing that economic stress may affect investigated neglect reports but not overall investigated maltreatment reports. An alternative explanation could depend in part on the sample difference: Slack et al. (2004) used families with

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<sup>9</sup> As discussed previous section, those four questions are “My financial situation is better than it’s been in a long time,” “I worry about not having enough money in the future,” “These days I can generally afford to buy the things we need,” and “There never seems to be enough money to buy something or go somewhere just for fun”. Although authors names them as material hardship or perceived hardship, the four questions are close to the concept of economic stress.

at least one child 5 years of age or younger while McDaniel & Slack (2005) used families with children. Thus, the results may be interpreted as the effect of economic stress on CPS involvement may affect more on families with younger children.

Depression has been considered as a major risk factor for CPS involvement. However, there were inconsistent findings in the reviewed studies. Depression was not associated with CPS involvement in five studies, while three other studies found a positive association between depression and CPS involvement. In addition, in these three studies, the relationship between caregiver depression and CPS involvement was found to be inconsistent with respect to type and reason for CPS involvement. For example, depression was associated with abuse reports but with neither neglect nor investigated maltreatment in Slack et al. (2007), with substantiated neglect but not with substantiated abuse or substantiated maltreatment in Epstein (2002), and with investigated maltreatment for children under 4 years old but not with all children or for children younger than 12 years old in Dworsky et al. (2007).

In contrast to previous findings, several factors were not associated with CPS involvement or showed mixed results. Social support has been widely recognized as a protective factor against child maltreatment (Brayden, Altemeier, Tucker, Dietrich, & Vietze, 1992;; Kotch et al., 1999; Martin, 2000). However, it was not associated with CPS involvement in the all reviewed studies, except in Slack et al. (2007), who found that social support was inversely associated with neglect reports but not physical abuse reports or indicated maltreatment. Domestic violence parental substance use, and parenting stress are considered risk factors for CPS involvement (Barth, 2009, English, 1998; Kotchet al, 1997; Lee Kotch, & Cox., 2004). However, there were inconsistent findings in the reviewed studies. For example, Courtney et al. (2005) and Slack et al. (2007) found a positive association between parenting stress and CPS

involvement, while Dworsky et al. (2007), McDaniel & Slack (2005), Nam et al. (2006), Slack et al. (2003), and Slack et al. (2004) found no association.

Reviewed studies showed consistently that previous CPS involvement is one of the strongest predictors of additional CPS involvement. In addition, as previous research has demonstrated, families with a larger number of children have been linked to increased involvement with the CPS in the most of reviewed studies.

Table 2. Risk Factors for CPS Involvement for Low Income Families

	<b>Cox</b>	<b>Courtney</b>	<b>Dworsky</b>	<b>Epstein</b>	<b>McDaniel</b>	<b>Nam</b>	<b>Ovwigbo</b>	<b>Shook</b>	<b>Slack</b>	<b>Slack</b>	<b>Slack</b>
	2003	2005	2007	2002	2005	2006	2003	1999	2003	2004	2007
<b>Demographic</b>											
Black	N	N	Y(-)	N	N	Y(-)	O	N	Y(-)	N	O
Married	O	N	N	(Y-)	N	N	O	O	N	N	N
Cohabiting	O	O	O	O	O	Y(+)	O	O	N	Y(+)	N
Number of children	N	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)
Age of caregiver	O	Y(-)	N	N	N	N	Y(-)	N	O	N	O
Teen parenthood	Y(+)	O	O	O	O	N	O	N	O	Y(-)	N
Child age	O	O	N	O	O	O	N	O	Y(-)	O	O
Child gender (male)	O	O	N	N	O	O	N	O	O	Y(-)	O
<b>Socioeconomic</b>											
Income	Y(-)	O	O	O	Y(-)	Y(-)	O	Y(-)	N	N	O
Earnings	O	N	N	O	O	O	Y(-)	O	O	O	O
Material hardship	O	O	O	O	O	O	O	Y(+)	O	N	O
Food hardship	O	O	O	Y(+)	O	O	O	O	O	O	N
Housing hardship	O	N	N	Y(+)	O	O	O	O	Y(+)	O	Y(+)
Number of hardship	O	Y(+)	Y(+)	O	O	O	O	O	O	O	O
Welfare receipt (current)	Y(+)	N	N	Y(+)	Y(+)	O	N	O	Y(+)	O	O
Past/ cumulative welfare receipt	O	O	O	O	O	O	Y(+)	N	N	N	N
Medicaid	O	O	O	O	O	O	N	O	O	O	N
Food stamp	O	O	O	O	O	O	Y(+)	O	O	O	N
Employment	O	Y(-)	N	O	N	Y(-)	N	O	Y(-)	Y(-)	N
Education level	Y(-)	N	N	N	N	N	O	O	O	Y(-)	N

	<b>Cox</b>	<b>Courtney</b>	<b>Dworsky</b>	<b>Epstein</b>	<b>McDaniel</b>	<b>Nam</b>	<b>Ovwigbo</b>	<b>Shook</b>	<b>Slack</b>	<b>Slack</b>	<b>Slack</b>
	2003	2005	2007	2002	2005	2006	2003	1999	2003	2004	2007
<b>Parent well being / parenting</b>											
Physical health (good)	O	N	N	O	O	N	O	N	N	N	Y(-)
Mental health	N	O	O	O	N	O	O	O	O	O	O
Depressive symptoms	N	N	Y(+)	Y(+)	O	N	O	O	N	N	Y(+)
Economic stress	O	O	O	O	N	O	O	O	O	Y(+)	O
Substance abuse	N	Y(+)	N	Y(+)	N	O	O	N	N	N	Y(+)
Domestic violence	Y(+)	N	N	Y(+)	N	N	O	N	O	N	Y(+)
Learning disability	O	O	O	Y(+)	Y(+)	Y(+)	O	N	N	Y(+)	Y(+)
Parenting stress	O	Y(+)	N	O	N	N	O	O	N	N	Y(+)
Parenting skills & behavior (positive)	O	O	O	O	O	O	O	N	O	Y(-)	O
Social support	N	O	O	O	N	N	O	N	N	N	Y(-)
Childhood maltreatment	N	O	O	O	Y(-)	N	O	N	O	O	O
Negative life event	N	O	O	Y(+)	Y(+)	Y(+)	O	Y(+)	O	O	O
Previous CPS involvement	O	Y(+)	Y(+)	O	Y(+)	O	Y(+)	Y(+)	Y(+)	Y(+)	Y(+)
<b>Children</b>											
Physical health (good)	O	O	N	N	N	N	O	Y(+)	N	O	N

- Notes: Summary of net of covariates
- Key code for the cells: Y = Yes, statistically significant;  
N = No, not statistically significant  
O = Omitted/not included in analysis  
+ / - = Direction of the association



### **Limitation of Previous Studies**

Although there are a substantive number of studies that have explored the association between poverty and CPS involvement, there are only a handful of studies that utilize longitudinal and prospective data designs including income or material hardship measures. Even among those studies, income or material hardships as well as other caregiver characteristics were measured only one time. There is the possibility of an inverse association between parental characteristics, such as mental health, which can affect income or material hardship. It is important, therefore, to use a longitudinal study design and get measures at several points in time to ensure the order of timing.

The results of the reviewed studies on the relationship between income/material hardship and CPS outcomes could be influenced by selection bias. The association between income /material hardship and CPS involvement might be spuriously driven by other factors which affect both poverty and CPS involvement such as substance abuse, depressive symptoms, or impulsivity. To adjust the problem of omitted variable biases, most of the reviewed studies used regressions with extensive control variables correlated with income/material hardship and CPS involvement. However, even though these studies control for a rich set of factors for demographic, family, caregiver, and child characteristics, it is still possible that there are other unobserved confounders (Currie, 2005). In addition, controlling unobserved heterogeneity with extensive controls is likely to underestimate the causal effect of income/material hardship on CPS outcome. Given that the reviewed studies used controlling confounding variables strategy, future studies using an experimental design or other rigorous analysis methods to account for selection bias are needed to draw strong conclusions about the effect of income/material hardships on CPS involvement.

Even though the reviewed studies suggest an association between income or material hardships and CPS involvement, few studies explored the pathway between poverty and child maltreatment. Income or material hardship can be linked directly to CPS involvement due to a lack of financial resources to meet basic needs or indirectly through economic stress, depressive symptoms, parenting stress, or other mechanisms. However, only two studies explored these relationships: (McDaniel & Slack, 2005; Slack et al., 2004). More research is needed to draw strong conclusions about how income/material hardship is associated with CPS involvement.

Although the reviewed studies have incorporated material hardship measures in the analysis, material hardships were not the focus of the studies; rather they constituted a control variable. Thus, there is lack of discussion on the implication of the association between material hardship and CPS involvement. In addition, few reviewed studies explored the association between types of material hardship and types of CPS involvement and none of them explored the role of medical hardship or utilities hardship, which have been identified as core dimensions of material hardship.

## CHAPTER 3

### THEORETICAL FRAMEWORK

In this section, I explore a theoretical framework appropriate for analyzing child maltreatment in relation to economic factors: Family Economic Stress Theory (FEST). I review the main concepts and assumptions of the FEST model, extend the model for child maltreatment, and then discuss the strengths and limitations of FEST by explaining the association between material hardships and child maltreatment. Finally, I suggest conceptual models of the influences of material hardship on child maltreatment and on CPS involvement.

#### **Description of FEST**

The agricultural crisis of rural Midwestern America in the 1980s, including farm foreclosures, wage declines, unemployment, and reduced work hours, was the impetus for FEST (Conger, et al., 1992). Conger and his colleagues sought to discover the process that links the economic hardships<sup>10</sup> families face with children's behavioral outcomes. According to FEST, economic hardships are unlikely to have direct effects on children. Instead, the effects of economic hardships on children are mediated through their effects on economic pressures, parental mental health, conflict between parents, and parenting. FEST proposed that families go through a succession of stress processes, initiated by the economic hardships themselves, which have subsequent psychological impacts on the parents, which eventually impact the children (Conger et al, 1992). Figure 1 illustrates the proposed series of impacts.

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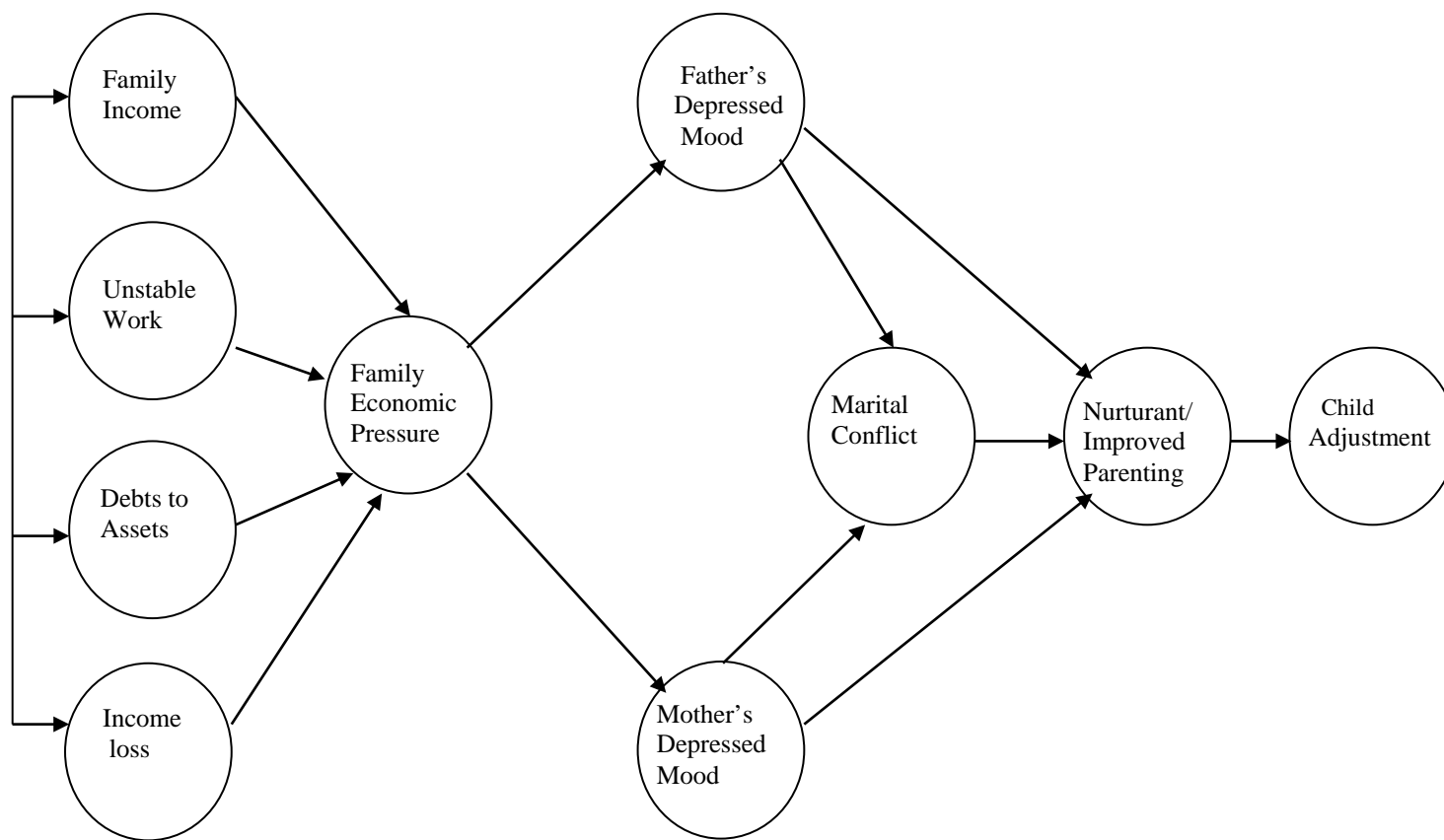
<sup>10</sup> The concept of economic hardships of FEST model is somewhat different from material hardships. It is similar like income poverty. The concept of economic pressures of FEST model is analogous to material hardships. Although the terms are confusing, I just used them as FEST model has used.

Economic hardships, in terms of family income, unstable work, debts to assets, or income loss, influence the economic pressures that families face. Economic hardships impact parents psychologically through economic pressure, which reflects parental awareness of and response to economic conditions families face (Parke et al, 2004). FEST proposes that economic pressures include a) unmet basic needs such as food, shelter, and clothing, b) the inability to make ends meet (e.g., by not being able to pay bills or by not having money left over at the end of the month), and c) cutbacks on everyday expenses such as health insurance or utility costs.

According to this model, economic hardship will not impact parental distress until the economic problems begin to “disrupt daily living” (Conger et al, 1992, p. 527). For example, even when a family faces economic hardships, such as being poor, being unemployed, or experiencing income loss, they may not generate enough economic pressure if the family economy can be maintained by other economic resources such as assets, other family members’ financial support, or welfare receipt (Solantus, Leinone, Punamaki, 2004). In fact, the model proposes that economic pressure plays a more critical role in affecting family functioning than do absolute levels of income (Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004).

The next step of the FEST model suggests that heightened economic pressure deteriorates parental psychological well being, resulting in emotional instability, depressive symptoms, and pessimism about the future. The FEST model assumes that depressive symptoms are the principal mechanism through which family economic conditions influence marital relationships and parenting (Conger et al, 1992). Parental depressive symptoms can affect parenting both directly and indirectly through marital interaction. Depressive symptoms generally increases angry

Figure 1. FEST Conceptual Model (Conger et al, 1992, p 528)



responses, impatience, defensiveness, and less affection or withdrawal of supportive behaviors (Downy & Coyne, 1990; Fiske & Peterson, 1991). These emotional conditions impact marital relationships as well as parent-child relationships.

These psychological consequences of economic hardship impact parenting practice and result in effects on their children. Depressed parents show lower levels of responsiveness, less effective strategies in controlling and disciplining children's behaviors, diminished parental warmth, and increased hostility and punitive behavior

(Downy & Coyne, 1990; Gershoff, Aber, Raver, & Lennon, 2007; McLoyd, 1990).

Empirical evidence supports this proposed family stress processes, in which economic hardship affects children's behavior through economic pressure, depressive symptoms, marital conflict, and parenting (Mistry, Lowe, Benner, & Chien, 2008; Yeung, Linver, & Brooks-Gunn, 2002). Studies have found that the FEST model fits various race and ethnicity groups. The FEST model was originally used to test the effect of economic hardship on children's adjustment in two biological parent families of European descent in rural areas (Conger et al, 1992). However, Conger and his colleagues extended the models to African American families in both urban and rural contexts with diverse family structures (e.g., single mother families, grand parent families, families in which there is one biological parent and his/her partner) (Conger et al., 2002). They found a similar mediating process accounted for the impact of economic hardship on African American families. Comparison studies of single parent families with two parent families showed that single parent families go through similar family processes of economic hardship. However, the depressive symptoms of single parents has been found to be directly related to

parenting behavior, while parental depressive symptoms in two parent families is indirectly related to parenting through marital conflict (Mistry et al., 2002; Yeung et al., 2002).

### **The Application of FEST to Research on the Effects of Poverty on Child Maltreatment**

Even though FEST has been commonly used for studies of child development and behavior outcomes, the basic concepts and assumptions are also relevant to the association between poverty and child maltreatment. FEST provides a useful conceptual framework for understanding the pathways by which income and material hardship influence child maltreatment. Many empirical studies have illustrated the existence of a relationship between economic hardship and emotional distress or depressive symptoms (Ashiabi & O'Neal, 2007; Horowitz, 1984; Wu, 1996), depressive symptoms and marital quality (Davila, Bradbury, Cohan, & Tochulk, 1997; Conger et al, 2002 ; Goodman & Gotlib, 2002), and depressive symptoms and parenting (McLoyd, 1990; Minkovitz et al., 2005), all of which are relationships the FEST model theorizes. Moreover, even though the FEST model does not link parenting to child maltreatment, several studies have shown that elevated levels of punitive parenting or reduced parental warmth are associated with child maltreatment (Azar, 2002; Bolger et al., 1998; Brown et al., 1998; Koenig, Cicchetti, & Rogosch, 2000).

In sum, the FEST model allows us to posit an effect between material hardship and child maltreatment. Experiencing economic hardship (i.e. income poverty) increases the level of economic pressure (i.e. material hardship) as a result of being unable to make ends meet, which, in turn, heightens feelings of stress and depressive symptoms, affecting harsher parenting or withdrawal of child care directly or indirectly through conflicts in the marital relationship.

Although FEST provides insight into how income poverty and material hardship are associated with economic pressure, depressive symptoms, and parenting, which have been considered predictors of child maltreatment, there are many limitations of the model. First, experiencing economic pressure may reflect particular parental characteristics. Parents' ability to cope with inadequate income through such means as self efficacy, effective financial management, or ability to pool other resources from family, friends, their neighborhood, or the government, can alleviate the economic pressures parents experience (Edin & Lein, 1997; Mistry et al., 2008).

Second, FEST considers only indirect effects of economic hardship on child outcomes. It does not consider the direct effect of it on parenting or on child maltreatment. Economic hardship could affect child maltreatment directly due to a family's lack of economic resources (Pelton, 1994). For example, a parent in poverty parent may not provide adequate housing, secure food, a safe home environment, or adequate supervision because they simply do not have enough money to provide these basic goods or services for children. Therefore, the FEST model should be expanded to allow for direct effects.

Third, FEST posits inseparable associations between the mediating factors of economic pressures, depressive symptoms, and parenting. However, there are other pathways between economic hardship and child maltreatment that are not mediated by these factors. For example, child neglect may be the result of a rational choice in allocating limited family resources in terms of money, time, and energy than the result of parental stress caused by economic hardship. Children from poor families are more likely to be neglected by their parents through their parents' lack of investment in children's basic needs (Berger, 2004). When parents in poverty consider the costs associated with caring for children, if the costs are higher than the benefit in



terms of return on investment in children, parents in poverty are less likely to invest their limited resources in children (Becker, 1962). In addition, economic hardship might impact child abuse indirectly through parenting strategies not mediated by parental depressive symptoms. Parents in poverty who do not have enough economic resources to use as a financial incentive such as giving allowance or buying toys to change their children's behavior might choose punitive discipline as a way to control children's behavior (Berger, 2007). Therefore, the FEST model should be expanded to allow for a direct link between economic hardship and parenting behavior.

Finally, FEST does not consider reciprocity among economic hardship and mediating factors, supposing a unidirectional pathway from income to child outcomes. For example, although the model posits that economic pressure influences parental depressive symptoms, the opposite relationship is also feasible; a high level of parental depressive symptoms might affect parental employment, which, in turn, influences a family's economic condition.

### **Modifying FEST: Alternative Pathways of Poverty Influences on Child Maltreatment and CPS Involvement**

Revising the FEST model (see Figure 2), I propose an integrative model that allows for the exploration of how family income and material hardship impact child maltreatment both directly and indirectly through parental depressive symptoms and parenting quality. As can be seen in Figure 2, unlike the original FEST model, which does not posit any direct link, I suggest that income and material hardship might directly affect child maltreatment.

Like the FEST model, I suggest mediating processes linking income and child maltreatment through material hardship, parental depressive symptoms and parenting.<sup>11</sup> As

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<sup>11</sup> When I modified the FEST model, I simplified some components and process. For example, I used only "income" rather than listing the types of economic hardship ( i.e. unstable work, income loss) and I combined "father's

income and material hardship adversely influence parental depressive symptoms, so does parental depressive symptoms, in turn, affect child abuse and neglect directly or indirectly through parenting. In addition, income and material hardship may affect parenting and also child abuse and neglect through parenting behavior. Furthermore, parental depressive symptoms may influence income and material hardship rather than the reverse. Thus, I suggest including the opposite causal direction between depressive symptoms and income/material hardship. Given the assumption that the processes of CPS involvement might differ from actual child maltreatment, I propose a model (see Figure 3) to explain how family income and material hardship affect CPS involvement.<sup>12</sup>

Child maltreatment, as discussed earlier, has been shown to significantly affect CPS involvement. However, some proportion of child maltreatment will not be noticed by CPS (Miller-Perrin & Perrin, 1999). Many factors influence child maltreatment reports: type or severity of child maltreatment, personal values and definitions of child maltreatment, biased perceptions of racial or ethnic groups or poor families, visibility of families to mandated reporters, and state resources. Furthermore, there are many factors that affect the likelihood of a case investigation: severity of allegation, sufficient information to identify reported families, state definition of child maltreatment, and agency's budget and capacity to handle cases. Finally, many factors influence the decision of substantiation: severity of allegation, CPS worker and agency's value, state's definition of substantiation, and agency resources to handle cases. However, some cases of CPS involvement are not related to actual child maltreatment events.

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depressed mood" and "mother's depressed mood" into "parental depressive symptoms" and excluded "marital conflict".

<sup>12</sup> The pathways from income by child abuse and neglect are the same in Figure 2 and Figure 3. To make the model parsimonious, I placed parental mental health and parenting together and child neglect and abuse together.

For example, reporters' false judgments on occasion (i.e. bruise on child's arm) can cause non-maltreating families to become involved with CPS.

Figure 2. The Effect of Income and Material Hardship on Child Maltreatment

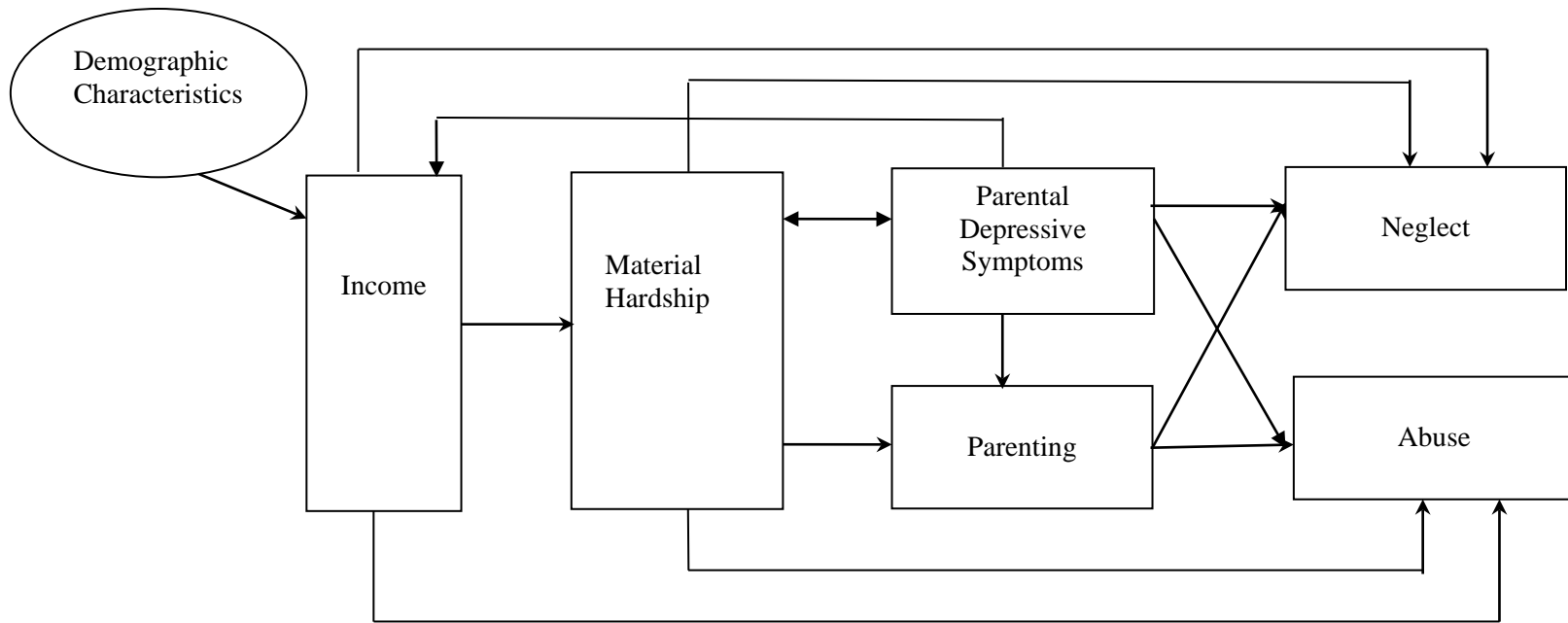
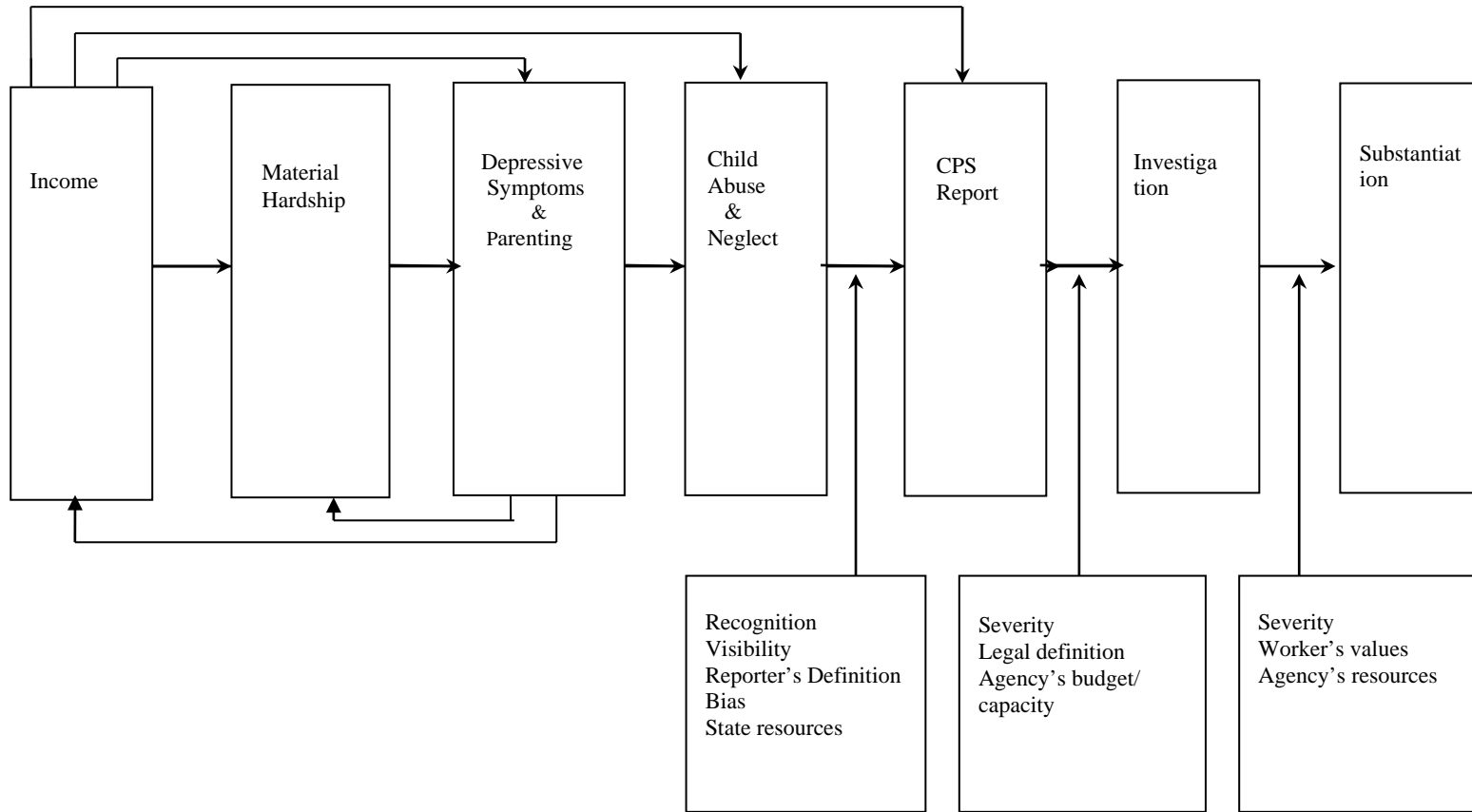


Figure 3. Child Maltreatment and CPS Involvement



## CHAPTER 4

### METHODOLOGY

#### **Data and Sample**

The data for the current study were obtained from the Illinois Families Study (IFS). IFS is a longitudinal panel study of a random sample of TANF recipients of the 1998 Illinois welfare caseload. A stratified random sampling design was used to ensure a sufficient number of welfare recipients from smaller and non-urban Illinois counties, as well as the large, metropolitan Chicago area (Lewis et al., 2000).

The IFS participants represent 75% of the state's total 1998 welfare recipient population. Among 1,899 of the original sample, 1,363 caregivers (a 72% response rate) completed the wave 1 survey in late 1999 and 2000. After the wave 1 survey, three follow-up annual in-person surveys were conducted: the second survey in 2001 (n=1,183, 87% retention rate); the third survey in 2002 (n=1,072, 79% retention rate); and the fourth survey in 2004 (n=967, 71% retention rate).

Among the 1,363 wave 1 participants, 1,261 (93%) provided consent to access administrative data related to the primary caregiver and their children. Survey data were linked to the administrative data on Child Protective Service events from the Illinois Department of Children and Family Services (IDCFS) through a probabilistic linking process that included the information of survey respondents and their children (i.e., social security numbers, names, and birth dates) (Jaro, 1989; Newcombe, 1988). The IDCFS data includes information about the date of each report, maltreatment allegations (i.e., abuse or neglect), and the final decision of the

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investigation (substantiated or not). This work was conducted by the Chapin Hall Center for Children at the University of Chicago.

The current study utilizes data from all four survey waves combined with administrative child protection records. The survey data has an abundance of information that can be used to control for potential confounding variables. In addition, the longitudinal study design of the IFS survey combined with the timing information associated with CPS events (i.e., allegation report date) assures the correct temporal order of predictors and outcomes, meaning that all explanatory variables from the surveys precede the occurrence of CPS reports.<sup>13</sup>

Among the 1,363 wave 1 participants, the final sample for this study consists of 1,135 families who consented to link their survey data with administrative data, and who participated in at least two survey waves,<sup>14</sup> yielding 4,237 person-wave observations. Table 3 shows the differences between included and excluded cases at wave 1. As shown in Table 3, the included cases have a higher proportion of Non-Hispanic Black, female, cohabitants, a larger number of children, and children under the age of 5; have higher rates of TANF receipt; and are more likely to experience domestic violence and a higher level of parenting stress than the excluded cases. The included cases are also less likely to have poor health conditions, and they were younger when the first birth of their child occurred than the excluded cases. These group differences suggest that the included cases may be at greater risk of CPS report than the excluded cases. However, there is no statistical difference in terms of material hardship, income-to-need ratio, and psychological distress between the included cases and the excluded cases.

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<sup>13</sup> Even in reviewed studies using a longitudinal design, the temporal order between specific risk factors and onset of CPS involvement was not clear at times, resulting in possible reverse causality.

<sup>14</sup> To use fixed effect analysis, cases need to be observed at least twice.

Table 3. Comparison of Included and Excluded Cases (weighted)

Description	All (N=1,363)		Included cases (N=1,135)		Excluded cases (N=228)	
	% or Mean	SE	% or Mean	SE	% or Mean	SE
<b>Demographics</b>						
Race/ethnicity						
Non-Hispanic Black**	77.90		79.54		71.77	
Non-Hispanic White *	8.24		7.24		11.65	
Hispanic *	13.86		13.22		16.58	
Female ***	96.39		97.30		92.46	
Age	31.60	0.29	31.51	0.25	32.14	0.47
Age at first birth *	19.94	0.16	19.81	0.14	20.49	0.25
Marital status						
Single	84.65		84.78		84.52	
Married	10.30		9.49		12.98	
Cohabiting *	5.06		5.73		2.50	
Number of kids ***	2.48	0.05	2.55	0.04	2.23	0.08
Kids under 5 years old***	53.23		55.84		42.55	
HS or GED	58.92		59.24		57.59	
Work	50.08		51.06		47.76	
TANF receipt *	52.47		53.72		47.24	
Income-to-need ratio	0.54	0.02	0.54	0.02	0.55	0.03
<b>Wellbeing &amp; Parenting</b>						
Social support	10.17	0.08	10.20	0.07	10.05	0.13
Mastery	21.46	0.15	21.48	0.13	21.41	0.24
Poor health **	22.96		21.17		28.88	
Physical domestic violence *	4.51		5.16		2.05	
Substance abuse	2.90		2.59		3.94	
Parenting stress *	13.79	0.15	13.91	0.13	13.34	0.25
Parental warmth	17.65	0.09	17.68	0.08	17.58	0.15
<b>Hardship</b>						
Housing	29.25		28.77		30.48	
Utility	41.68		42.59		37.53	
Medical	20.58		20.91		20.15	
Food	34.27		33.86		36.51	
Total number of hardship	1.92	0.08	1.93	0.07	1.89	0.12
Any hardship	67.37		67.15		68.41	
<b>Psychological distress</b>						
Depressive symptoms	17.94	0.30	18.04	0.25	17.46	0.48
Perceived economic stress	11.25	0.09	11.28	0.08	11.14	0.16

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05



Multiple imputation techniques are employed to impute values for variables with missing data. Using Stata 12's MICE (Multiple Imputation using Chained Equations), 5 complete data sets were imputed for the final sample (N=1,135).

## **Measures<sup>15</sup>**

### *Dependent Variables*

To measure CPS involvement, investigated CPS reports in which the survey respondents are the alleged perpetrator were used. CPS involvement was measured at four time points: between wave 1 and wave 2, between wave 2 and wave 3, between wave 3 and wave 4, and between wave 4 and September 2003.<sup>16</sup> Three CPS outcomes are modeled: any investigated reports of maltreatment (i.e. neglect, physical abuse, or sexual abuse), any investigated physical abuse reports, and any investigated neglect reports. Each CPS outcome measure was operationalized to be a dichotomous variable (0=no investigated report, 1=investigated report).

### *Material Hardship*

As discussed previously, a lack of consensus exists on the definition and operationalization of material hardship. Some researchers use types of hardship, such as food hardship and housing hardship, while others use an index of material hardship, either by summing all hardships or by dichotomizing at least one hardship. For this study, both types of hardship and index measures were used. For types of hardship, the most commonly used dimensions of hardship were utilized: food, housing, utilities, and medical hardship (Bauman, 1998; Danzinger et al., 2000). First, a dichotomous variable for food hardship was assigned a 1 if the respondent answered

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<sup>15</sup> See Table 4 for full operational definition of measures.

<sup>16</sup> September 2003 is the last month of available administrative data on child maltreatment reports.

"sometimes" or "often" to any of the 4 USDA food security questions available in the IFS (i.e., cut or skipped caregiver meals; reliance on a few kinds of low-cost foods; inability to feed child a balanced meal; cut or skipped child meals). Second, a dichotomous variable for housing hardship was assigned a 1 if the respondent reported experiencing difficulty paying rent, doubling up, eviction, or homelessness in the past 12 months at their interview. Third, utility hardship was assigned a 1 if the respondent reported experiencing difficulty paying the utility or phone bill. Fourth, a dichotomous variable for medical hardship was assigned a 1 if family members needed to visit the doctor but could not afford the expense. In addition, two composite material hardship indices were included. The "total number of material hardships" was the summed score of all individual material hardships (i.e., difficulty paying rent; doubling up; eviction; homelessness; difficulty paying utility bills; disconnected phone services; cut or skipped caregiver meals; reliance on a few kinds of low-cost foods; inability to feed child a balanced meal; cut or skipped child meals; inability for family members to visit the doctor). Finally, a measure of "any material hardship" was measured with a dichotomous variable if any of the above-mentioned 11 material hardships were experienced.

### *Covariates*

The selection of covariates was based on the results of a systematic literature review (see Table 2 in Chapter 2) and a recently published systematic literature review on the risk factors of child maltreatment (Stith, et al., 2009). Except for select demographic variables (race/ethnicity, caregiver age at wave 1 interview, and caregiver age at first birth), all variables were time varying variables and measured at each wave.

Socio-Demographic Variables: Socioeconomic variables included race/ethnicity (dummy variables for each: non-Hispanic Black [reference group], non-Hispanic White, and Hispanic and other race/ethnicity); female; caregiver age at wave 1 interview (continuous variable); caregiver age at first birth (continuous variable); marital status (dummy variables for single [reference group], married, and cohabitant); number of children under 18 in the household (continuous variable); having children under age five; education (binary variable, 1 for having high school degree or GED); current working status; current TANF receipt; and income-to-needs ratio (continuous, total household income divided by the number of household members and then adjusted by official U.S. poverty thresholds of interview years, with a higher score equating to higher income).

Parent Well-Being Variables: Parent well-being variables included social support (summed score of 4 items of perceived availability of social support, with a higher score equating to higher social support); mastery skills (summed score of 8 items, higher score equating to higher levels of mastery); mother's poor physical health (1 for fair or poor, 0 for good, very good, or excellent health condition); domestic violence (1 for severe physical domestic violence, such as being hit, slapped, or kicked by her partner or spouse in the past year); alcohol and drug abuse (1 for trying to get help or participate in alcohol or drug abuse programs).

Parenting Variables: Parenting variables included parenting stress (assessed with eight items from the Parenting Stress Index, a continuous variable, with a higher score equating to higher stress); parental warmth (continuous variable, with a higher number equating to higher warmth).

Psychological Distress Variables: Psychological distress variables included perceived economic stress (continuous variable, with a higher score equating to higher stress); depressive symptoms (measured by the 12-item CES-D scale, continuous, with a higher score equating to more depressive symptoms).

Table 4. Operational Definitions of Measures

Variable	Types of variables	Operational definition
<b>Dependent Variables</b>		
Any report	Dichotomous	Any investigated CPS allegation (neglect, physical abuse, or sexual abuse) in which the respondent was the subject of the alleged perpetrator
Neglect	Dichotomous	Investigated neglect allegation in which the respondent was the subject of the alleged perpetrator
Abuse	Dichotomous	Investigated abuse allegation in which the respondent was the subject of the alleged perpetrator
<b>Socio-demographic Variables</b>		
Race/ethnicity	Dichotomous	Non-Hispanic Black (reference group), Non-Hispanic White, and Hispanic/other
Caregiver age	Continuous	Caregiver age at wave 1 interview
Caregiver age at first birth	Continuous	Caregiver age at first birth
Marital status	Dichotomous	Single (reference group), Married, Cohabitation
Number of children	Continuous	All children under age 18 for whom respondent was primary caregiver at some time in past 12 months
Education	Dichotomous	Have a high school Dichotomous variable level diploma or have you passed a high school equivalency test (GED)
Employment	Dichotomous	Currently working for pay
TANF receipt	Dichotomous	Currently receiving welfare or TANF benefit

Income-to-needs ratio	Continuous	Total household income categorized in \$2,500 increments from less than \$2,500 to \$50,000 or more divided by the number of household members
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### Well-Being & Parenting Variables

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Social support	Continuous (Summed scores from the 4 items)	<p>a) When you need someone to listen to your problems when you're feeling low, are there ...</p> <p>b) When it comes to people who encourage you in meeting your goals, are there ...</p> <p>c) When you need help with small favors, are there ...</p> <p>d) When you need someone to loan you money in an emergency, are there ...</p> <p>* 1=no one ; 2=too few; 3=enough people</p>
Mastery skill	Continuous	<p>a) At this time I am meeting the goals I set for myself. Do you...</p> <p>b) I can't think of many ways to reach my current goals.</p> <p>c) Right now I see myself as being pretty successful.</p> <p>d) There are very few ways around the problems I am facing right now.</p> <p>e) At the present time I am energetically pursuing my goals.</p> <p>f) If I should find myself in a jam I could think of many ways to get out of it.</p> <p>g) I have confidence in my ability to meet my goals.</p> <p>k) I am able to do things as well as most other people. *</p> <p>1=strongly disagree; 2=somewhat disagree; 3=somewhat agree; 4=strongly agree</p>
Mother's poor health	Dichotomous (1="poor" or "fair")	<p>Overall, would you say your health is</p> <p>* 1=poor; 2=fair; 3=good; 4=very good; 5=excellent</p>

Domestic violence	Dichotomous (1="yes" to any of the listed items)	In the past 12 months, has any current or former spouse or partner. .. a) Hit, slapped, or kicked you b) Thrown or shoved you onto the floor, against a wall, or down stairs c) Hurt you badly enough that you went to a doctor or clinic
Alcohol and drug abuse	Dichotomous (1="yes" to any of the listed items)	In the past 12 months, a) Participated in an alcohol or substance abuse treatment program b) Tried to get help for alcohol or drug use, either on your own or with the help of someone else
Parenting stress	Continuous (Summed scores from the 8 items)	How often do you feel a) You have too little time to spend by yourself b) Wish you didn't have so many responsibilities c) Children you care for get on your nerves d) Your children are making too many demands on you e) Are not as good as a parent as would like to be f) Being a parent is much more work than pleasure g) You are doing everything you can to give your children a good life h) Tired, worn out, or exhausted from raising a family * 1=never; 2=once in awhile; 3=often; 4=very often
Parental warmth	Continuous (Summed scores from the 12 items)	How often do you a) Praise your children by saying something such as "good for you" b) And your children laugh together c) Do something special with your children that they enjoy d) Play sports, hobbies, or games with your children e) Hug or kiss your children, or tell them that you love them * 1=never; 2=once in awhile; 3=often; 4=very often

Hardship Variables		
Housing hardship	Dichotomous (1="yes" to any of the listed items)	In the past 12 months, has there been a time when you 1) couldn't pay the full amount of the rent or mortgage 2) were evicted from home or apartment for not paying the rent or mortgage 3) had to move in with family or friends to reduce expenses 4) stayed at a homeless shelter, lived in a car or abandoned building, or lived on the streets
Utility hardship	Dichotomous (1="yes" to any of the listed items)	In the past 12 months, has there been a time when you 5) "had service turned off by the gas or electric company, or the oil company wouldn't deliver oil because payments were not made" 6) "had phone service turned off or went without a phone because you couldn't afford it"
Medical hardship	Dichotomous	In the past 12 months, has there been a time when you or your children 7) needed to see a doctor or go to the hospital but couldn't afford to
Food hardship	Dichotomous (1="sometimes" or "often" to any of the listed items)	In the past 12 months, how often did you/were you because there wasn't enough money for food? 8) cut the size of your meals or skip meals 9) have to rely on only a few kinds of low-cost foods to feed your children 10) were you unable to feed your children a balanced meal 11) cut the size of your children's meals or skip them meals * 1=never; 2=sometimes; 3=often
Total number of hardship	Continuous	Summed score of above 11 material hardship items
Any hardship	Dichotomous variable	Any of above 11 material hardship items

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**Psychological distress**


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Depressive symptoms	Continuous (Summed scores from the 12 items)	How often you felt this way during the last week only a) I was bothered by things that usually don't bother me. b) I did not feel like eating; or my appetite was poor. c) I had trouble keeping my mind on what I was doing. d) I felt depressed. e) I felt that everything I did was an effort. f) I felt that I couldn't shake the blues, even with help from family and friends. g) I felt fearful. h) My sleep was restless. i) I talked less than usual. j) I felt lonely. k) I felt sad. l) I could not "get going." * 1=less than 1 day; 2=1-2 days; 3=3-4 days; 4=5-7 days
Perceived economic stress	Continuous (Summed scores from the 4 times)	a) My financial situation is better than it's been in a long time b) I worry about having enough money in the future c) These days I can generally afford to buy the things we need d) There never seems to be enough money to buy something or go somewhere just for fun * 1= strongly disagree; 2=somewhat disagree; 3=somewhat agree; 4=strongly agree

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**Analytic Strategy**

First, correlational analyses were conducted to assess the strength and direction of the association between material hardship and CPS outcomes and psychological distress indicators.

Second, bivariate analyses were conducted to compare the mean differences between families

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with CPS reports and families without CPS reports on a host of characteristics using t-tests (continuous variables), or chi-square tests (dichotomous variables). Third, multivariate analyses were conducted to estimate the relationship between material hardship and CPS involvement using pooled logistic regressions. Fourth, to account for unobserved heterogeneity and to compare the results from the pooled logistic regressions, caregiver-specific fixed effects regressions were used. In addition, mediating effect tests of psychological distress on the association between material hardship measures and CPS outcomes were conducted, following the approach of Baron and Kenny (1986). In all analyses, a weight variable was used to adjust for regional stratification and non-response to each survey wave.

The most popular analytic method in the reviewed studies is event history analysis, either discrete time event history or Cox proportional hazard models. The reviewed studies that use event history analysis predict the first occurrence of CPS involvement after a baseline interview. These models estimate the probability of CPS involvement occurring within a specific time point ( $t$ ), given that CPS involvement has not occurred prior to time  $t$  during the observation period (Allison, 1984). This type of analysis is appropriate if the research interest centers on the occurrence and timing of events (Allison, 1984). However, the main focus of this study is whether a CPS event occurred between survey waves and not specifically when the event occurred. In addition, unlike the reviewed studies, whose focus variables vary by month or quarter (i.e. monthly welfare receipt), the focus variable of this study, material hardship, was measured in annual surveys asking about the previous 12 months' experiences. In this case, then, event history analysis does not provide an advantage over the standard logit model, which measures whether CPS involvement occurred during the observation period.

Therefore, the relationship between material hardship and CPS involvement was analyzed using two logistic regression models: pooled logistic regression models and fixed effects logistic regression models. Pooled logistic regression models were first estimated, and then to explore whether associations found in the pooled logistic models were driven by other unmeasured characteristics, fixed effect logistic regression models were used.

### *Pooled Logistic Regression Models*

IFS panel data has repeated observations on the same families for several time periods. Pooled logistic regression, in which observations were pooled across waves to predict the odds of being involved with CPS, was used. The pooled logit models take the form:

$$\text{logit}(\text{CPS})_{it} = \beta_0 + \text{TC}_i\beta_1 + \text{TV}_{it}\beta_2 + \text{HRDSHP}_{it}\beta_3 + \text{PSYSOC}_{it}\beta_4 + u_{it} \quad (1)$$

where  $i$  represents caregiver ( $i=1, \dots, N$ );  $t$  represents wave ( $t=1, 2, 3, \text{ and } 4$ );  $\text{CPS} = 1$  means a caregiver has investigated CPS reports;  $\text{TC}$  is a vector of time-constant predictors such as race and age at first birth;  $\text{TV}$  is a vector of time-varying predictors (i.e., marital status, economic variables, parent well-being variables, and parenting variables);  $\text{HRDSHP}$  is a vector of material hardship variables;  $\text{PSYSOC}$  is a vector of psychological distress variables.

In addition, to test whether key mediators (i.e. economic stress and depressive symptoms) help to explain associations between material hardships and CPS involvement, models were estimated in steps beginning with material hardship measures, adding socio-demographic variables, wellbeing variables, and parenting variables at Step 2, and adding psychological distress variables at Step 3. Several pooled logit models were estimated using model (1) for each material hardship measure and for three CPS outcomes. Repeated observations tend to be positively correlated, but the pooled logit ignores the correlation and treats within-cluster

observations the same as between-cluster observation and underestimates the true standard error (Agresti, 2002; Wooldridge, 2006). To account for the correlation between repeated responses, cluster standard errors were used.

### *Fixed Effects Logistic Models*

In order to account for omitted variable bias and unobserved static caregiver characteristics, caregiver-specific fixed effects logistic regression models were used. Unlike pooled logit, fixed effect models assume that unobserved heterogeneity may be correlated with explanatory variables. The fixed effect model is specified in the following:

$$\text{logit}(\text{CPS}_{it}) = \beta_0 + \text{TC}_i\beta_1 + \text{TV}_{it}\beta_2 + \text{HRDSHP}_{it}\beta_3 + \text{PSYSOC}_{it}\beta_4 + \alpha_i + \varepsilon_{it}$$

where  $\alpha_i$  indicates constant unobserved caregiver specific characteristics (i.e., unobserved heterogeneity). Utilizing repeated measures of the same individual and exploring within-person changes in the fixed effect model, all observed and unobserved time constant characteristics are removed from the model. Thus, CPS involvement is a function of observed time variant covariates. Thus, eventually, the fixed effect model takes the following form:

$$\Delta \text{logit}(\text{CPS}_i) = \Delta \text{TV}_i\beta_1 + \Delta \text{HRDSHP}_i\beta_2 + \Delta \text{PSYSOC}_i\beta_3 + \Delta \varepsilon_i \quad (2)$$

Like the pooled logit models, all models were estimated in steps to test the mediating effect of psychological distress on the association between material hardship and CPS outcomes. Several fixed effects model were estimated using model (2) for each material hardship measure and for the three CPS outcomes. In addition, to check whether the unobserved characteristics of caregivers affect the association between material hardship and CPS outcomes, the estimators of the fixed effect models were compared to the estimators of the pooled logit models.

## CHAPTER 5

### FINDINGS

#### Descriptive Statistics

Table 5 presents descriptive statistics for the pooled analysis sample by CPS investigation status. The majority of the respondents were female (97%), non-Hispanic Black (79%), and non-cohabitating single (82%). About 68% of respondents had a high school diploma or GED degree. Almost half of respondents worked, and about 30% of respondents received TANF. The mean income-to-need ratio is 0.77 (lower than 1 indicates poverty). Approximately six percent of respondents reported severe physical domestic violence and about three percent of mothers reported alcohol or drug abuse (AODA).

A considerable number of respondents experienced material hardship: more than 60% of the sample reported experiencing at least one hardship. In terms of the types of hardship, food hardship was the most frequently reported (32%), although a similar number of respondents reported experiencing housing hardship (29%) and utilities shut off (27%). Sixteen percent of the sample experienced unmet medical needs.

Over the study period, 15% of respondents had investigated maltreatment reports, with 11% of respondents having neglect reports and nine percent of respondents having physical abuse reports.

The bivariate analyses show the differing characteristics between respondents whose maltreatment reports were investigated during the study period and those whose reports were never investigated. In most cases, the differences between the two groups were in the expected directions and significant. The respondents with investigated maltreatment reports had more

Table 5: Sample Descriptives (Weighted Means and Frequencies)

Description	All (N=4,237)		CPS-Involved cases (N=697)		Non-involved cases (N=3,540)	
	% or Mean	SE	% or Mean	SE	% or Mean	SE
<b>Demographics</b>						
Race/ethnicity						
Non-Hispanic Black	78.62		79.47		78.49	
Non-Hispanic White ***	7.32		11.09		6.63	
Hispanic ***	14.06		9.44		14.87	
Female ***	97.21		93.25		97.93	
Age **	31.58	0.18	30.78	0.32	31.73	0.14
Age at first birth ***	19.83	0.09	20.38	0.16	19.73	0.07
Marital status						
Single	81.80		79.77		82.19	
Married *	10.87		8.29		11.31	
Cohabiting ***	7.34		11.94		6.50	
Number of kids ***	2.56	0.03	3.36	0.06	2.42	0.02
Kids under 5 years old						
HS or GED ***	67.93		56.01		70.02	
Work ***	49.91		33.66		52.91	
TANF receipt ***	29.33		39.59		27.49	
Income-to-need ratio***	0.77	0.01	0.62	0.03	0.79	0.01
<b>Wellbeing &amp; Parenting</b>						
Social support ***	10.44	0.05	9.99	0.08	10.52	0.04
Mastery ***	21.41	0.09	20.86	0.15	21.51	0.06
Poor health	20.01		18.86		20.19	
Physical domestic violence ***	5.87		11.60		4.83	
Substance abuse ***	3.46		8.05		2.62	
Parenting stress ***	13.55	0.10	14.58	0.18	13.37	8.00
Parental warmth	17.62	0.05	17.46	0.10	17.65	0.04
<b>Hardship</b>						
Housing ***	27.25		35.96		25.65	
Utility ***	26.60		35.94		24.89	
Medical **	15.97		12.28		16.67	
Food ***	31.69		41.61		29.96	
Total number of hardship ***	1.56	0.04	2.02	0.08	1.51	0.03
Any hardship ***	60.83		70.09		59.20	
Total types of hardship ***	1.03	0.02	1.28	0.04	0.98	0.02
<b>Psychological distress</b>						
Depressive symptoms ***	17.19	0.16	18.50	0.29	16.95	0.12
Perceived economic stress ***	11.33	0.05	11.76	0.10	11.25	0.04

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

children, were less educated, and were less likely to be married compared with respondents without investigated reports. With regard to economic conditions, respondents with an investigated CPS report were less employed, had higher rates of TANF receipt, and had lower income-to-needs ratio (indicating they are poorer) compared with respondents without an investigated maltreatment report. The investigated respondents received lower social support, had a lower level of mastery skills, were more likely to have experienced domestic violence, were more likely to have a substance abuse problem, and were more likely to have higher parenting stress. In addition, CPS-investigated respondents were more likely to be depressed and to have higher economic stress.

CPS-investigated respondents were more likely to experience housing hardship, utility shut off, food insecurity, and a higher number of hardships than non-CPS involved families. For example, 36% of CPS-investigated respondents experienced housing hardship, while 26% of non-investigated respondents experienced it. One noteworthy exception of the association is medical hardship: CPS-investigated respondents were less likely to experience medical hardship than non-investigated respondents.

### *Correlations*

Table 6 shows the results of the correlations between CPS outcomes and material hardship measures, income-to-need ratio, and psychological distress indicators. All material hardship measures except medical hardship were positively associated with all three CPS outcomes. Additionally, psychological distress, such as depressive symptoms and perceived economic stress, were positively associated with all CPS outcomes. All material hardship measures were associated with psychological distress. Income-to-needs ratio was negatively

associated with all CPS outcomes. The correlations of income-to-needs ratio and material hardships were generally low and positive except medical hardship.<sup>17</sup>

To examine the association between material hardship and CPS involvement, a series of logistic regression models were run by each type of CPS outcome and by measures of material hardship. Pooled logit models were run first and the results were compared to the results of caregiver-specific fixed effect logit models. To test the mediation effect of psychological distress variables, three stepwise regression methods were used. To enable comparison of results across CPS outcomes and analysis methods, several logistic regression results were combined into one table and only the estimations of material hardship measures and psychological distress measures were reported. At the end of this section, the odds ratios and standard errors of all covariates in the final model of each logistic regression model are given (Table 14 ~ Table 23).

The results of the associations between summary measures of hardship and CPS outcomes follow. As summary measures of hardship, any material hardship, total number of hardships, and categorized number of hardships were used. The results of the associations between types of hardship and CPS outcomes are then presented. Housing hardship, utility hardship, medical hardship, and food hardship were considered as representative types of hardship and included in a model. In addition, the effects of experiencing multiple types of hardship on CPS investigation were estimated, and are presented at the end.

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<sup>17</sup> In addition to income-to-needs ratio, the correlation between material hardships and poverty were checked (<1 income- to- needs ratio), and the magnitude of correlation were still found to be low. For example, the correlation between any material hardship and poverty was 0.12.

Table 6: Correlations Between CPS Outcomes and Material Hardship and Poverty and Psychological distress

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Any CPS	1												
(2) Neglect	0.816*	1											
(3) Abuse	0.705*	0.430*	1										
(4) Any hardship	0.091*	0.078*	0.080*	1									
(5) Housing	0.108*	0.084*	0.065*	0.507*	1								
(6) Utility	0.048*	0.046*	0.035*	0.482*	0.198*	1							
(7) Medical	0.001	-0.011	0.007	0.350*	0.164*	0.095*	1						
(8) Food	0.058*	0.060*	0.058*	0.547*	0.202*	0.148*	0.248*	1					
(9) Total number of hardship	0.066*	0.058*	0.054*	0.634*	0.559*	0.488*	0.524*	0.671*	1				
(10) Total types of hardship	0.091*	0.077*	0.070*	0.770*	0.648*	0.594*	0.559*	0.666*	0.909*	1			
(11) Income-to-needs ratio	-0.071*	-0.058*	-0.072*	-0.182*	-0.130*	-0.128*	-0.020	-0.128*	-0.146*	-0.170*	1		
(12) Depressive symptoms	0.089*	0.091*	0.080*	0.249*	0.193*	0.168*	0.173*	0.263*	0.343*	0.324*	-0.059*	1	
(13) Economic stress	0.056*	0.060*	0.022	0.276*	0.205*	0.265*	0.107*	0.203*	0.317*	0.321*	-0.173*	0.202*	1

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05



## **Multivariate Analysis**

### *Composite Measures of Hardship*

#### Results for Any Material Hardship

Table 7 shows the results from the pooled logit models and fixed effect models, predicting three CPS outcomes as a function of any material hardship. Each column of each panel of Table 7 shows the odds ratio and standard error from a single model. The pooled logit model results are presented in the first three columns in Table 7. Column (1) shows the results predicting any CPS report, column (2) shows the results predicting neglect, and column (3) shows the results for predicting physical abuse. Panel A shows the results from models that control only for wave dummies. Any hardship was positively and strongly associated with any investigated maltreatment report, investigated neglect report, and investigated physical abuse report. For example, caregivers who experienced at least one hardship were 2.38 times more likely to be investigated than caregivers who did not experience any hardship. Panel B adds all covariates except psychological distress. After controlling for confounding variables, the magnitude of the association between any material hardship and three CPS outcomes decreased, and the effect of any hardship on neglect became insignificant.

Panel C adds psychological distress variables to examine if those variables mediate the association between any material hardship and CPS outcomes. After controlling for psychological distress variables, the effect of any hardship on investigated maltreatment reports became insignificant. In this model, depressive symptoms was significantly associated with any maltreatment investigation, while economic stress showed no association. In order to check which psychological distress variable leads to the insignificance of any hardship, separate

regression models for each psychological distress variable were re-run. When only depressive symptoms were added in panel C, the magnitude of any hardship decreased but remained significant. Depressive symptoms were also significantly associated with CPS investigation. In contrast, when only the economic stress variable was added in panel C, the association between any hardship and maltreatment investigation became insignificant, showing that economic stress was also not significant.<sup>18</sup> These findings suggest that the relationship between any CPS investigation and any material hardship is partially mediated by depression. The association between any hardship and physical abuse investigation is significant; its magnitude was not decreased even after controlling psychological distress variables.

Although a rich set of controls was included in the pooled logit models, the possibility still exists that unmeasured heterogeneity may have biased the relationship between any material hardship experience and CPS outcomes. To address this concern, caregiver-specific fixed effects models were used, which control for unobserved time invariant caregiver characteristics that may be associated with material hardship as well as with CPS involvement. Columns (4), (5), and (6) in Table 7 show the estimated odds ratio from fixed effects logistic regression predicting three CPS outcomes.

In the fixed effect logit models, the effects of any hardship on CPS involvement are positive and statistically significant regardless of the types of CPS reports, even after controlling for other covariates and psychological distress variables. For example, when a caregiver has experienced change from no hardship to at least one hardship, the caregiver's odds of being

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<sup>18</sup> According to Baron and Kenny (1986), if a full or partial mediation effect exists, the following four steps need to be met: 1) X (i.e., any hardship) predicts Y (i.e., any CPS investigation); 2) X predicts M (i.e., depression); 3) M predicts Y; 4) M remains significant after controlling for X in the model predicting Y. Any hardship, depression, and any CPS investigation met all four steps: Depression mediates the association between any hardship and investigated maltreatment reports. However, economic stress does not mediate the link between any hardship and investigated maltreatment reports. In other words, significant relationships were found for step (1) and step (2), but step (3) was not met: economic stress did not predict any CPS involvement.

investigated are multiplied by 3.27. Once caregiver-specific fixed effects are included, none of the psychological distress variables were significant. This finding suggests that the effect of changes in material hardships on CPS investigation was not mediated by the changes in depressive symptoms.

Table 7: Any Material Hardship on CPS Involvement

	Pooled Logit			Fixed Effect (Logit)		
	Any CPS (1) OR(S.E)	Neglect (2) OR(S.E)	Abuse (3) OR(S.E)	Any CPS (4) OR(S.E)	Neglect (5) OR(S.E)	Abuse (6) OR(S.E)
Panel A: Control only for wave						
Any hardship	2.38*** (0.59)	2.53*** (0.68)	3.05*** (0.99)	3.04*** (0.79)	2.50** (0.70)	3.58** (1.42)
Panel B: Add socio-demographic, well-being, and parenting variables						
Any hardship	1.81* (0.52)	1.68 (0.50)	2.34* (0.88)	3.50*** (0.97)	2.91*** (0.88)	4.26** (1.97)
Panel C: Add psychological distress variables						
Any hardship	1.74 (0.51)	1.59 (0.47)	2.41* (0.95)	3.27*** (0.93)	2.80*** (0.86)	4.76** (2.31)
Depressive symptoms	1.22* (0.11)	1.25* (0.11)	1.37* (0.18)	1.20 (0.16)	1.30 (0.22)	1.33 (0.27)
Economic stress	1.05 (0.11)	1.11 (0.13)	0.91 (0.14)	1.11 (0.16)	1.00 (0.18)	0.82 (0.17)
Observations	4,237	4,237	4,237	674	484	378
Number of Ids	1,135	1,135	1,135	177	127	101

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

### Results for Total Number of Material Hardships

Previous analysis suggests that if caregivers experience at least one hardship, the risk of being involved in CPS investigation increases. This leads to the question of whether, as the number of material hardships families experience increases, the risk of being involved in CPS

increases. Table 8 presents the results of predicting CPS involvement as a function of a summed numbers of hardships.

Table 8: Total Number of Hardship on CPS Involvement

	Pooled Logit			Fixed Effect (Logit)		
	Any CPS	Neglect	Abuse	Any CPS	Neglect	Abuse
	(1)	(2)	(3)	(4)	(5)	(6)
	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)
Panel A: Control only for wave						
Total hardships	1.12*** (0.04)	1.14*** (0.04)	1.12** (0.04)	1.06 (0.06)	1.05 (0.06)	1.07 (0.08)
Panel B: Add socio-demographic, well-being, and parenting variables						
Total hardships	1.06 (0.05)	1.05 (0.05)	1.07 (0.06)	1.09 (0.05)	1.07 (0.05)	1.10 (0.06)
Panel C: Add psychological distress variables						
Total hardships	1.04 (0.05)	1.03 (0.05)	1.06 (0.07)	1.05 (0.07)	1.05 (0.07)	1.09 (0.11)
Depressive symptoms	1.22* (0.11)	1.25* (0.11)	1.37* (0.18)	1.25 (0.17)	1.35 (0.23)	1.32 (0.26)
Economic stress	1.08 (0.12)	1.14 (0.14)	0.96 (0.15)	1.21 (0.17)	1.08 (0.20)	0.96 (0.20)
Observations	4,237	4,237	4,237	674	484	378
Number of Ids	1,135	1,135	1,135	177	127	101

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

As seen in panel A of the pooled logit models, total number of hardships was positively associated with all three CPS outcomes when only waves were controlled. However, after adding socio-demographic and other covariates, the associations disappeared. In the fixed effect model, the total number of hardships was not significant, even in models controlling only waves. This suggests that the number of hardship may not be linearly associated with CPS investigation.

### Results for Categorized Number of Material Hardships

Since a linear measure may not capture the threshold effect between number of hardships and CPS investigation, the summed total number of hardship variables was categorized in 4 groups (0, 1, 2, and 3+). As seen in Table 9, categories with more than 4 hardships have small cell sizes, therefore in order to decrease standard errors, three or more hardships were merged as one category of 3 or more.

Table 9: Number of Material Hardship (weighted)

Number of hardship	%	cum %
0 experience of hardship	39.15	39.15
1 hardship	24.75	63.89
2 hardships	12.69	76.58
3 hardships	7.99	84.57
4 hardships	4.63	89.20
5 hardships	4.58	93.78
6 hardships	2.94	96.72
7 hardships	1.30	98.02
8 hardships	1.06	99.07
9 hardships	0.69	99.76
10 ~11 hardships <sup>19</sup>	0.24	100.00

Table 10 shows the relative effects of the accumulation of hardship on CPS involvement. In the pooled logistic regression model, experiencing one hardship is not statistically distinguishable from experiencing no hardship on any CPS outcome. This finding was the only consistent pattern between the number of hardships and CPS outcomes. For example, as seen

<sup>19</sup> Only 1 caregiver experienced 11 hardships, so 10 and 11 hardships categories were merged.

Panel C of Table 10, only two material hardships are significantly associated with investigated maltreatment reports, while none of the categorical number of hardships was not associated with neglect investigation, and both "two hardships" and "three or more hardships" were associated with physical abuse investigation.

In the fixed effect models, significant associations were found between each category of numbers of hardship and any maltreatment investigation. However, experiencing three or more hardships (OR: 3.52) is not worse on the risk of maltreatment investigation than having two hardships (OR: 4.52). In regard to neglect investigation, one hardship was not significantly associated with neglect investigation. Like maltreatment investigation, however, experiencing three or more hardships was not worse than experiencing two hardships on neglect investigation. On the other hand, as the number of hardship categories increased, the odds of being involved in physical abuse increased: one hardship (OR: 3.31), two hardships (OR: 6.5), and three or more hardships (OR: 7.9).

Table 10: Categorized Number of Material Hardships\_on CPS Involvement

	Pooled Logit			Fixed Effect (Logit)		
	Any CPS	Neglect	Abuse	Any CPS	Neglect	Abuse
	(1)	(2)	(3)	(4)	(5)	(6)
	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)
<b>Panel A: Control only for wave</b>						
1	1.69 (0.50)	1.74 (0.58)	2.08 (0.87)	2.36** (0.70)	1.80 (0.59)	2.62* (1.16)
2	3.04*** (0.93)	3.15** (1.11)	3.99*** (1.65)	4.13*** (1.31)	4.34*** (1.60)	4.76*** (2.16)
3 or more	2.77*** (0.76)	3.06*** (0.93)	3.55*** (1.21)	3.07*** (0.97)	2.41* (0.85)	3.98** (1.84)
<b>Panel B: Add socio-demographic, well-being, and parenting variables</b>						
1	1.42 (0.45)	1.32 (0.46)	1.75 (0.74)	2.71** (0.85)	1.95 (0.67)	3.07* (1.60)
2	2.24* (0.77)	2.14* (0.80)	2.88* (1.30)	4.77*** (1.65)	6.05*** (2.48)	5.06** (2.68)
3 or more	2.12* (0.72)	1.89 (0.70)	2.84* (1.27)	3.89*** (1.37)	3.27** (1.30)	6.38** (3.67)
<b>Panel C: Add psychological distress variables</b>						
1	1.39 (0.44)	1.27 (0.44)	1.81 (0.78)	2.58** (0.82)	1.83 (0.64)	3.30* (1.76)
2	2.20* (0.77)	2.06 (0.76)	3.04* (1.41)	4.52*** (1.59)	6.32*** (2.66)	6.55*** (3.72)
3 or more	2.00 (0.71)	1.73 (0.63)	2.95* (1.38)	3.52*** (1.27)	3.03** (1.24)	7.90*** (4.85)
Depressive symptoms	1.22* (0.11)	1.24* (0.11)	1.38* (0.18)	1.21 (0.16)	1.40 (0.25)	1.36 (0.28)
Economic stress	1.04 (0.11)	1.10 (0.14)	0.89 (0.14)	1.08 (0.16)	0.95 (0.18)	0.75 (0.17)
Observations	4,237	4,237	4,237	674	484	378
Number of Ids	1,135	1,135	1,135	177	127	101

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

## *Types of Material Hardship*

### Results for Four Types of Material Hardship

Table 11 shows the associations of four types of material hardship with three different types of CPS involvement. When controlling for only waves, as in the pooled logit models, housing hardship was significantly associated with any CPS investigation and neglect investigation, and food insufficiency was significantly associated with neglect and abuse investigation. After inclusion of socio-demographics and other variables in panel B, only the association between housing hardship and any CPS involvement was still significant. Inclusion of psychological distress variables in panel C did not affect the magnitude of the housing hardship effect.

Unlike the results of the pooled logistic regression models, in the fixed effect logistic regression models, the inclusion of other confounding variables and psychological distress variables did not affect the significant influence on the effect of types of hardship on CPS outcomes.

Among the four types of material hardship, only two are predictive of an increased risk of CPS involvement. In particular, experiencing housing hardship increases the odds of being investigated by 2.2 times, and the odds of being investigated due to neglect by 1.84 times. If a caregiver experienced food hardship, the caregiver's odds of being investigated for neglect are multiplied by 2.03. Additionally, joint significance tests were conducted in each CPS outcome model, and it was found that the differences in types of material hardship were statistically significant.



Table 11: Types of Hardship on CPS Involvement

	Pooled Logit			Fixed Effect (Logit)		
	Any CPS (1)	Neglect (2)	Abuse (3)	Any CPS (4)	Neglect (5)	Abuse (6)
	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)
Panel A: Control only for wave						
Housing	2.13*** (0.49)	2.09** (0.59)	1.59 (0.47)	2.23*** (0.52)	1.93* (0.53)	1.53 (0.47)
Utility	1.22 (0.26)	1.30 (0.35)	1.27 (0.36)	0.87 (0.20)	0.84 (0.22)	0.85 (0.29)
Medical	0.69 (0.21)	0.57 (0.22)	0.74 (0.26)	0.95 (0.32)	0.53 (0.21)	1.32 (0.56)
Food	1.44 (0.29)	1.66* (0.41)	1.77* (0.47)	1.18 (0.27)	1.72* (0.45)	1.04 (0.32)
Panel B: Add socio-demographic, well-being, and parenting variables						
Housing	1.83* (0.44)	1.68 (0.49)	1.36 (0.44)	2.31*** (0.57)	1.96* (0.59)	1.49 (0.55)
Utility	1.08 (0.23)	1.14 (0.30)	1.16 (0.33)	0.87 (0.21)	0.88 (0.24)	0.88 (0.34)
Medical	0.91 (0.29)	0.70 (0.28)	1.01 (0.37)	1.02 (0.35)	0.58 (0.23)	1.85 (0.88)
Food	1.17 (0.26)	1.23 (0.32)	1.42 (0.40)	1.23 (0.30)	1.98* (0.57)	0.98 (0.37)
Panel C: Add psychological distress variables						
Housing	1.83* (0.44)	1.69 (0.48)	1.39 (0.45)	2.22** (0.55)	1.84* (0.57)	1.48 (0.55)
Utility	1.01 (0.23)	1.04 (0.29)	1.13 (0.34)	0.74 (0.19)	0.79 (0.23)	0.81 (0.34)
Medical	0.86 (0.27)	0.65 (0.26)	0.96 (0.35)	0.90 (0.32)	0.51 (0.21)	1.94 (0.97)
Food	1.15 (0.26)	1.20 (0.31)	1.41 (0.40)	1.21 (0.30)	2.03* (0.59)	0.97 (0.37)
Depressive symptoms	1.23* (0.11)	1.26* (0.11)	1.38* (0.18)	1.25 (0.17)	1.40 (0.25)	1.38 (0.29)
Economic stress	1.06 (0.12)	1.12 (0.15)	0.94 (0.15)	1.25 (0.19)	1.07 (0.21)	0.96 (0.21)
Observations	4,237	4,237	4,237	674	484	378
Number of Ids	1,135	1,135	1,135	177	127	101

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Physical abuse was not associated with any specific type of material hardship. In addition, neither change in utility shutoff nor unmet medical needs were associated with any CPS outcomes. In order to check whether the insignificance for utility hardship and medical hardship was due to housing and food hardship, separate regression models with only one type of hardship were rerun. Even in the separate model, utility hardship and medical hardship were not associated with any CPS outcome.

### Results of Multiple Types of Hardships

As shown in Table 12, 32% of respondents experienced only one type of hardship, while 29% experienced two or more hardships. To test whether the co-occurrence of different types of material hardship increased the risk of CPS involvement compared with no material hardship or only one type of hardship, five categories of hardship measure were subsumed into three categories: none, 1 type of hardship, and 2 or more types of hardship.<sup>20</sup>

Table 12: Number of Types of Hardship (weighted)

Number of Types	%	cum %
0 experience of hardship	39.15	39.15
1 type of hardship	32.37	71.52
2 types of hardship	18.08	89.60
3 types of hardship	7.28	96.88
4 types of hardship	3.12	100.00

The pooled logit models in Table 13 show that caregivers who experienced one type of material hardship were not statistically different from caregivers who experienced no material

<sup>20</sup> Previously, the threshold effect of multiple numbers of material hardship were estimated. However, multiple types of hardship differ from multiple numbers of hardship. For example, a caregiver can experience three hardships, such as difficulty to pay rent, doubling up, and eviction, within a single type of hardship (in this case, housing hardship).

Table 13: Multiple Types of Hardship on CPS Involvement

	Pooled Logit			Fixed Effect (Logit)		
	Any CPS	Neglect	Abuse	Any CPS	Neglect	Abuse
	(1)	(2)	(3)	(4)	(5)	(6)
	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)	OR(S.E)
<b>Panel A: Control only for wave</b>						
1	1.85*	2.04*	2.43*	2.75***	2.29**	2.99**
	(0.51)	(0.61)	(0.88)	(0.77)	(0.69)	(1.25)
2 or more	2.99***	3.11***	3.74***	3.46***	2.88**	4.52***
	(0.81)	(0.94)	(1.34)	(1.01)	(0.95)	(1.96)
<b>Panel B: Add sociodemographic, well-being, and parenting variables</b>						
1	1.51	1.49	1.96	3.04***	2.45**	3.32*
	(0.46)	(0.49)	(0.78)	(0.90)	(0.79)	(1.61)
2 or more	2.30*	1.97*	2.94*	4.41***	4.06***	6.49***
	(0.75)	(0.65)	(1.28)	(1.44)	(1.52)	(3.47)
<b>Panel C: Add psychological distress variables</b>						
1	1.48	1.43	2.03	2.93***	2.42**	3.82**
	(0.46)	(0.46)	(0.83)	(0.88)	(0.79)	(1.91)
2 or more	2.21*	1.84	3.07*	4.02***	3.85***	7.68***
	(0.74)	(0.61)	(1.39)	(1.35)	(1.49)	(4.39)
Depressive symptoms	1.22*	1.24*	1.38*	1.18	1.27	1.31
	(0.11)	(0.11)	(0.18)	(0.16)	(0.22)	(0.27)
Economic stress	1.04	1.10	0.90	1.09	0.96	0.78
	(0.11)	(0.13)	(0.14)	(0.16)	(0.18)	(0.17)
Observations	4,237	4,237	4,237	674	484	378
Number of Ids	1,135	1,135	1,135	177	127	101

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

hardship. Caregivers who experienced more than 2 types of hardship were at a higher risk of being reported for maltreatment or for physical abuse compared with caregivers who did not experience any type of hardship. With the addition of psychological distress, the effect of multiple types of hardship disappeared. This suggests that the effect of multiple types of hardship

on neglect was mediated by caregiver depressive symptoms. Caregivers whose families were exposed to multiple types of hardship may have experienced greater depressive symptoms, and this heightened depressive symptoms may have led to the investigation of neglect.

By comparison, the fixed effects models suggest that if a caregiver experiences one type of hardship, the risk of being involved in CPS significantly increases from when the caregiver doesn't have any hardship. In addition, caregivers reporting two or more types of material hardship had greater risk for CPS involvement. In particular, the odds of being involved in physical abuse when a family experienced changes from zero hardships to multiple types of hardship is much larger than the odds of being involved in physical abuse when a family experienced change from zero hardships to a single type of hardship. Unlike the results of the pooled logit model, depressive symptoms was not associated with CPS outcomes.

### **Sensitivity Tests**

To test the sensitivity of the findings, the effect of any material hardship and types of hardship on CPS outcomes were re-run. The Poisson models were first used to measure CPS involvement as a count variable (i.e., the total number of CPS investigations between waves) rather than as a dichotomous variable (i.e., whether any CPS investigation occurred between waves). The findings of using Poisson models are generally consistent with findings of fixed effects logit models, although the magnitudes of the estimates are smaller than those of the fixed effect logit models. Additionally, food hardship was not significantly associated with neglect in the Poisson models.

Next, the full model of any hardship and types of hardship on CPS outcomes were re-run using random effects models. The direction and statistical significance of estimators of material

hardship were similar to the results of the fixed effect model. Any hardship is significantly associated with all CPS outcomes. Like the findings of Poisson models, neglect investigation is associated with housing hardship but not food hardship.

Table 14: Pooled Logit: Any Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Any hardship	1.74	0.51	1.59	0.47	2.41*	0.95
Non-Hispanic White	1.56	0.48	2.05*	0.71	1.78	0.69
Hispanic	0.97	0.45	0.75	0.44	1.68	0.82
Female	0.21***	0.10	0.17**	0.11	0.06***	0.04
Age at initial interview	0.97	0.02	0.96	0.02	0.94	0.03
Age at first birth	1.10**	0.04	1.10*	0.04	1.07	0.05
Married	0.41*	0.17	0.42	0.21	0.47	0.20
Cohabiting	1.36	0.45	1.34	0.50	2.01	0.76
Number of kids	1.43***	0.11	1.58***	0.13	1.46***	0.15
Kids under age 5	1.02	0.26	1.16	0.34	0.93	0.31
HS or GED	0.67	0.16	0.65	0.18	0.63	0.18
Work	0.57**	0.12	0.59*	0.15	0.64	0.19
TANF receipt	1.19	0.29	0.94	0.27	1.32	0.45
Income-to-needs ratio	0.77	0.18	0.79	0.23	0.44**	0.14
Social support	0.99	0.12	1.04	0.14	0.87	0.12
Mastery	1.13	0.13	1.03	0.14	1.36*	0.19
Poor health	0.64	0.20	0.71	0.26	0.44	0.20
Domestic violence	1.91*	0.59	1.97	0.73	2.13	0.90
Substance abuse	2.25*	0.87	3.04**	1.21	2.91*	1.37
Parenting stress	1.18	0.20	1.24	0.25	1.22	0.21
Parental warmth	0.99	0.12	1.00	0.14	1.15	0.17
Depressive symptoms	1.22*	0.11	1.25*	0.11	1.37*	0.18
Economic stress	1.05	0.11	1.11	0.13	0.91	0.14
N	4,237		4,237		4,237	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 15: Fixed Effects Model: Any Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Any hardship	3.27***	0.93	2.80***	0.86	4.76**	2.31
Married	0.26*	0.14	0.29	0.21	0.08*	0.08
Cohabiting	2.07	0.86	1.60	0.70	3.31	2.08
Number of kids	0.89	0.12	0.98	0.17	1.37	0.33
Kids under age 5	1.57	0.58	1.86	0.90	3.51*	2.08
HS or GED	3.64	2.49	6.02	5.67	0.23	0.26
Work	0.85	0.24	1.03	0.36	0.82	0.32
TANF receipt	0.92	0.24	0.96	0.31	0.43*	0.17
Income-to-needs ratio	0.98	0.30	1.07	0.38	0.47	0.24
Social support	1.05	0.14	1.06	0.17	1.11	0.26
Mastery	1.06	0.15	1.10	0.19	0.92	0.22
Poor health	1.08	0.39	1.17	0.52	0.70	0.36
Domestic violence	1.46	0.52	1.50	0.61	0.69	0.31
Substance abuse	0.66	0.30	1.20	0.69	0.19*	0.16
Parenting stress	0.95	0.14	0.95	0.17	0.78	0.17
Parental warmth	1.14	0.14	1.21	0.19	1.29	0.25
Depressive symptoms	1.20	0.16	1.30	0.22	1.33	0.27
Economic stress	1.11	0.16	1.00	0.18	0.82	0.17
N	674		484		378	
Number of id	177		127		101	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 16: Pooled Logit: Total Numbers of Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Total N of hardship	1.04	0.05	1.03	0.05	1.06	0.07
Non-Hispanic White	1.59	0.50	2.09*	0.73	1.85	0.69
Hispanic	0.96	0.45	0.74	0.43	1.65	0.79
Female	0.20***	0.09	0.17**	0.10	0.06***	0.04
Age at initial interview	0.97	0.02	0.96	0.02	0.94*	0.03
Age at first birth	1.10**	0.04	1.09*	0.04	1.07	0.05
Married	0.40*	0.17	0.41	0.20	0.45	0.19
Cohabiting	1.28	0.41	1.26	0.47	1.82	0.67
Number of kids	1.44***	0.11	1.59***	0.13	1.46***	0.15
Kids under age 5	1.02	0.26	1.16	0.34	0.95	0.31
HS or GED	0.67	0.16	0.65	0.18	0.63	0.18
Work	0.57**	0.12	0.59*	0.15	0.64	0.19
TANF receipt	1.18	0.30	0.93	0.27	1.31	0.45
Income-to-needs ratio	0.74	0.17	0.77	0.22	0.41**	0.13
Social support	0.98	0.12	1.03	0.14	0.86	0.12
Mastery	1.12	0.13	1.02	0.14	1.35*	0.19
Poor health	0.65	0.21	0.72	0.26	0.45	0.21
Domestic violence	1.93*	0.60	1.98	0.74	2.16	0.92
Substance abuse	2.21*	0.85	3.01**	1.19	2.81*	1.31
Parenting stress	1.20	0.19	1.26	0.25	1.26	0.21
Parental warmth	0.99	0.12	1.00	0.14	1.15	0.17
Depressive symptoms	1.22*	0.11	1.25*	0.11	1.37*	0.18
Economic stress	1.08	0.12	1.14	0.14	0.96	0.15
Constant	0.06**	0.06	0.03**	0.04	0.28	0.33
N	4,237		4,237		4,237	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 17: Fixed Effects Model: Total Numbers of Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Total N of hardship	1.05	0.066	1.05	0.074	1.09	0.11
Married	0.28*	0.147	0.38	0.251	0.08*	0.083
Cohabiting	1.61	0.623	1.28	0.539	3.48*	2.132
Number of kids	0.88	0.117	0.97	0.165	1.32	0.289
Kids under age 5	1.53	0.568	1.79	0.849	3.57*	2.139
HS or GED	3.93*	2.592	5.2	4.419	0.27	0.285
Work	0.88	0.244	1.02	0.349	0.86	0.331
TANF receipt	0.98	0.247	0.99	0.31	0.5	0.184
Income-to-needs ratio	1.01	0.303	1.04	0.36	0.36*	0.179
Social support	1.03	0.134	1.05	0.159	0.99	0.221
Mastery	1.07	0.151	1.10	0.188	0.92	0.214
Poor health	0.95	0.337	1.02	0.443	0.56	0.277
Domestic violence	1.55	0.535	1.57	0.632	0.84	0.372
Substance abuse	0.70	0.313	1.33	0.757	0.23	0.179
Parenting stress	1.01	0.142	1.02	0.177	0.81	0.176
Parental warmth	1.15	0.138	1.22	0.191	1.38	0.252
Depressive symptoms	1.25	0.167	1.35	0.23	1.32	0.262
Economic stress	1.21	0.173	1.08	0.196	0.96	0.201
N	674		484		378	
Number of id	177		127		101	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05



Table 18: Pooled Logit: Categorized Numbers of Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
1 hardship	1.27	0.44	1.81	0.78	1.39	0.44
2 hardships	2.06	0.76	3.04*	1.41	2.20*	0.77
3 or more hardships	1.73	0.63	2.95*	1.38	2.00	0.71
Non-Hispanic White	2.09*	0.75	1.82	0.71	1.57	0.51
Hispanic	0.74	0.43	1.66	0.81	0.96	0.45
Female	0.18**	0.11	0.07***	0.04	0.21**	0.10
Age at initial interview	0.96	0.02	0.94	0.03	0.97	0.02
Age at first birth	1.10*	0.04	1.07	0.05	1.10**	0.04
Married	0.42	0.21	0.48	0.21	0.41*	0.17
Cohabiting	1.31	0.49	1.95	0.73	1.34	0.44
Number of kids	1.58***	0.13	1.46***	0.16	1.43***	0.11
Kids under age 5	1.17	0.34	0.94	0.32	1.03	0.26
HS or GED	0.64	0.18	0.62	0.17	0.66	0.16
Work	0.59*	0.15	0.64	0.19	0.57**	0.12
TANF receipt	0.93	0.27	1.33	0.45	1.19	0.29
Income-to-needs ratio	0.78	0.22	0.43**	0.14	0.76	0.18
Social support	1.05	0.15	0.89	0.12	1.01	0.12
Mastery	1.04	0.14	1.38*	0.20	1.14	0.13
Poor health	0.69	0.25	0.43	0.20	0.63	0.19
Domestic violence	1.93	0.70	2.10	0.88	1.88*	0.58
Substance abuse	3.04**	1.23	2.87*	1.39	2.24*	0.88
Parenting stress	1.22	0.24	1.19	0.20	1.16	0.19
Parental warmth	0.99	0.14	1.15	0.16	0.99	0.12
Depressive symptoms	1.24*	0.11	1.38*	0.18	1.22*	0.11
Economic stress	1.10	0.14	0.89	0.14	1.04	0.11
Constant	0.02**	0.02	0.13	0.16	0.04***	0.04
N	4,237		4,237		4,237	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 19: Fixed Effects Model: Categorized Numbers of Material Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
1 hardship	2.58**	0.82	1.83	0.64	3.30*	1.76
2 hardships	4.52***	1.59	6.32***	2.66	6.55***	3.72
3 or more hardships	3.52***	1.27	3.03**	1.24	7.90***	4.85
Married	0.30*	0.16	0.33	0.23	0.09*	0.09
Cohabiting	2.15	0.89	1.73	0.77	3.69*	2.35
Number of kids	0.87	0.12	0.97	0.18	1.25	0.31
Kids under age 5	1.68	0.64	2.23	1.13	3.86*	2.35
HS or GED	3.57	2.45	6.91	7.12	0.18	0.21
Work	0.85	0.25	1.08	0.39	0.81	0.33
TANF receipt	0.90	0.24	1.00	0.33	0.43*	0.17
Income-to-needs ratio	0.98	0.30	0.98	0.36	0.45	0.23
Social support	1.08	0.15	1.15	0.19	1.21	0.29
Mastery	1.06	0.15	1.13	0.21	0.96	0.23
Poor health	1.01	0.37	1.17	0.54	0.65	0.34
Domestic violence	1.50	0.54	1.48	0.63	0.68	0.31
Substance abuse	0.68	0.31	1.22	0.69	0.20	0.17
Parenting stress	0.92	0.13	0.92	0.17	0.72	0.17
Parental warmth	1.14	0.14	1.27	0.20	1.28	0.25
Depressive symptoms	1.21	0.16	1.40	0.25	1.36	0.28
Economic stress	1.08	0.16	0.95	0.18	0.75	0.17
N	674		484		378	
Number of id	177		127		101	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 20: Pooled Logit: Types of Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Housing	1.83*	0.44	1.69	0.48	1.39	0.45
Utility	1.01	0.23	1.04	0.29	1.13	0.34
Medical	0.86	0.27	0.65	0.26	0.96	0.35
Food	1.15	0.26	1.20	0.31	1.41	0.40
Non-Hispanic White	1.57	0.51	2.11*	0.75	1.80	0.69
Hispanic	1.00	0.46	0.79	0.45	1.67	0.80
Female	0.19***	0.09	0.16**	0.09	0.06***	0.04
Age at initial interview	0.97	0.02	0.96	0.02	0.94*	0.03
Age at first birth	1.10**	0.04	1.09*	0.04	1.07	0.06
Married	0.41*	0.17	0.42	0.21	0.46	0.20
Cohabiting	1.33	0.43	1.31	0.48	1.91	0.70
Number of kids	1.44***	0.11	1.58***	0.13	1.46***	0.15
Kids under age 5	1.03	0.27	1.18	0.35	0.94	0.31
HS or GED	0.65	0.15	0.64	0.18	0.63	0.17
Work	0.60*	0.12	0.62*	0.15	0.65	0.20
TANF receipt	1.16	0.29	0.89	0.26	1.30	0.45
Income-to-needs ratio	0.77	0.18	0.79	0.23	0.42**	0.14
Social support	0.99	0.12	1.04	0.14	0.87	0.12
Mastery	1.14	0.14	1.04	0.15	1.37*	0.19
Poor health	0.64	0.20	0.73	0.27	0.44	0.21
Domestic violence	1.80	0.58	1.88	0.75	2.09	0.91
Substance abuse	2.10	0.80	2.79*	1.12	2.72*	1.29
Parenting stress	1.18	0.20	1.23	0.25	1.22	0.21
Parental warmth	0.99	0.12	0.99	0.14	1.15	0.17
Depressive symptoms	1.23*	0.11	1.26*	0.11	1.38*	0.18
Economic stress	1.06	0.12	1.12	0.15	0.94	0.15
Constant	0.05**	0.05	0.03**	0.03	0.24	0.29
N	4,237		4,237		4,237	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 21: Fixed Effects Models: Types of Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
Housing	2.22**	0.55	1.84*	0.57	1.48	0.55
Utility	0.74	0.19	0.79	0.23	0.81	0.34
Medical	0.90	0.32	0.51	0.21	1.94	0.97
Food	1.21	0.30	2.03*	0.59	0.97	0.37
Married	0.24**	0.13	0.29	0.21	0.09*	0.09
Cohabiting	1.73	0.69	1.52	0.68	3.81*	2.40
Number of kids	0.87	0.12	0.98	0.17	1.36	0.30
Kids under age 5	1.69	0.65	1.77	0.87	4.06*	2.49
HS or GED	3.29	2.18	4.38	3.85	0.30	0.34
Work	1.01	0.29	1.12	0.39	0.89	0.36
TANF receipt	0.93	0.24	0.93	0.30	0.48	0.18
Income-to-needs ratio	1.00	0.30	1.03	0.37	0.40	0.20
Social support	1.02	0.14	1.11	0.18	0.99	0.23
Mastery	1.10	0.16	1.17	0.21	0.89	0.22
Poor health	0.79	0.29	0.93	0.42	0.48	0.25
Domestic violence	1.44	0.51	1.41	0.59	0.79	0.36
Substance abuse	0.71	0.32	1.29	0.74	0.22	0.18
Parenting stress	1.01	0.15	1.01	0.18	0.78	0.18
Parental warmth	1.15	0.14	1.22	0.20	1.39	0.26
Depressive symptoms	1.25	0.17	1.4	0.25	1.38	0.29
Economic stress	1.25	0.19	1.07	0.21	0.96	0.21
N	674		484		378	
Number of id	177		127		101	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

Table 22: Pooled Logit: Multiple Types of Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
1 type	1.48	0.46	1.43	0.46	2.03	0.83
2 or more types	2.21*	0.74	1.84	0.61	3.07*	1.39
Non-Hispanic White	1.54	0.50	2.04*	0.73	1.77	0.70
Hispanic	0.96	0.45	0.74	0.43	1.64	0.81
Female	0.21***	0.10	0.17**	0.11	0.07***	0.04
Age at initial interview	0.97	0.02	0.96	0.02	0.94	0.03
Age at first birth	1.10**	0.04	1.10*	0.04	1.07	0.05
Married	0.40*	0.17	0.42	0.21	0.48	0.21
Cohabiting	1.38	0.46	1.35	0.51	2.04	0.77
Number of kids	1.44***	0.11	1.58***	0.13	1.47***	0.15
Kids under age 5	1.02	0.26	1.16	0.34	0.92	0.31
HS or GED	0.66	0.16	0.64	0.18	0.62	0.17
Work	0.58**	0.12	0.60*	0.15	0.65	0.19
TANF receipt	1.20	0.30	0.94	0.27	1.33	0.45
Income-to-needs ratio	0.77	0.18	0.79	0.23	0.43**	0.14
Social support	1.01	0.12	1.05	0.15	0.89	0.12
Mastery	1.14	0.13	1.04	0.14	1.38*	0.20
Poor health	0.62	0.19	0.69	0.25	0.42	0.19
Domestic violence	1.88*	0.58	1.95	0.72	2.08	0.87
Substance abuse	2.19*	0.86	2.99**	1.20	2.81*	1.35
Parenting stress	1.16	0.19	1.23	0.24	1.20	0.21
Parental warmth	0.99	0.12	1.00	0.14	1.14	0.16
Depressive symptoms	1.22*	0.11	1.24*	0.11	1.38*	0.18
Economic stress	1.04	0.11	1.10	0.13	0.90	0.14
Constant	0.04***	0.04	0.02**	0.03	0.14	0.17
N	4,237		4,237		4,237	

\*\*\* p&lt;0.001, \*\* p&lt;0.01, \* p&lt;0.05

Table 23: Fixed Effects Models: Multiple Types of Hardship on CPS Involvement

VARIABLES	Any CPS		Neglect		Abuse	
	OR	SE	OR	SE	OR	SE
1 type	2.93***	0.88	2.42**	0.79	3.82**	1.91
2 or more types	4.02***	1.35	3.85***	1.49	7.68***	4.39
Married	0.27*	0.14	0.29	0.20	0.09*	0.09
Cohabiting	2.18	0.91	1.71	0.75	4.29*	2.83
Number of kids	0.88	0.12	0.99	0.18	1.31	0.32
Kids under age 5	1.60	0.60	1.88	0.93	3.34*	2.01
HS or GED	3.46	2.35	6.48	6.30	0.17	0.20
Work	0.84	0.24	0.98	0.34	0.78	0.31
TANF receipt	0.92	0.24	0.97	0.31	0.41*	0.16
Income-to-needs ratio	1.01	0.31	1.10	0.40	0.47	0.24
Social support	1.08	0.15	1.12	0.18	1.17	0.28
Mastery	1.07	0.15	1.12	0.20	0.97	0.24
Poor health	1.03	0.38	1.07	0.48	0.66	0.35
Domestic violence	1.48	0.53	1.49	0.61	0.66	0.30
Substance abuse	0.68	0.31	1.26	0.74	0.20	0.17
Parenting stress	0.94	0.14	0.95	0.17	0.73	0.17
Parental warmth	1.15	0.14	1.25	0.20	1.27	0.25
Depressive symptoms	1.18	0.16	1.27	0.22	1.31	0.27
Economic stress	1.09	0.16	0.96	0.18	0.78	0.17
N	674		484		378	
Number of id	177		127		101	

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05

## CHAPTER 6

### DISCUSSION AND CONCLUSION

#### **Primary Findings**

Although a substantial number of studies have explored the association between income poverty and CPS involvement, only a handful of studies have investigated the role of material hardship in CPS involvement. To my knowledge, this is the first analysis to have focused on the relationship between changes in material hardship and changes in CPS involvement using a multiple wave study design, which enables unobservable characteristics to be controlled. Another contribution is exploring multiple measures of material hardship and different types of CPS outcomes. This study helps further our understanding of how poverty experiences measured by material hardship within low-income populations affect the risk of CPS involvement. Using longitudinal data from the Illinois Families Study, the current study finds that a strong relationship exists between material hardship and investigated CPS reports.

#### *Diverse Measures of Material Hardship and CPS Involvement*

Given the lack of consensus on how to measure material hardship, previous studies have used a variety of measures. This study utilized both summary measures and types of hardship measures since different measures of hardship have different advantages. For example, constructing an index by summing the total number of material hardships can give information on the overall level of hardship a family experienced (Beverly, 2000). However, an index measure does not give information on whether particular types of hardship have more of an impact than others.

First, changes in material hardship experiences are strongly associated with an elevated risk for CPS investigation, regardless of type of CPS outcome. For example, when caregivers experience at least one hardship, the odds of being investigated for neglect increase by 2.8 times and the odds of being investigated for physical abuse increase by 4.76 times. While this dichotomous measure of hardship shows the positive association between material hardship and CPS involvement, it does not tell us much about the association between severity of material hardship and CPS involvement. The results on the cumulative effect of hardships suggest that no linear association exists between the total number of hardships and CPS involvement. To check for a threshold effect of cumulative risk, the continuous cumulative risk score was recorded into four different levels (i.e., 0, 1, 2, and 3 or more), and greater differences of odds ratio were found in the first few hardships. In general, having three or more hardships did not lead to a greater change of CPS involvement than having two hardships.

Second, some types of hardship were more strongly associated with CPS outcomes than others. Caregivers who experience difficulty paying the rent or mortgage, experience doubling up, are evicted, or are homeless are more likely to be investigated than caregivers who do not experience these hardships. The results from fixed effects models also support the predictive effect of housing hardship on any maltreatment investigation. In addition, if caregivers began to skip either their meals or their children's meals, began to rely on a few low-cost foods, or were unable to feed their children a balanced meal, the odds of being investigated for neglect increased by 1.98 times. However, the sensitivity test results show that food hardship is not associated with neglect investigation. Thus, caution is needed when making a conclusive suggestion on the effect of food hardship on neglect.



The possible explanation of why housing hardship is associated with CPS outcome is that housing hardship might be a more severe hardship compared to the others. For example, the economic condition of a family who experienced housing hardship such as homelessness or eviction may be in a more difficult situation than a family who experienced termination of phone service. An alternative explanation is that compared to the other hardships, families experiencing housing hardship are more visible to possible maltreatment reporters than families experiencing food difficulty or utility shut off. This heightened visibility may increase the possibility of being reported.

This study also found that caregivers experiencing multiple types of hardship are at greater risk of being investigated than caregivers who experience no hardship or a single type of hardship. If caregivers experienced multiple types of hardship after experiencing no hardships, the odds of being involved in CPS investigation increased by 4 times. Examining only one type of material hardship at a time may underestimate the extent of families' economic constraints since poor families tend to make trade-offs among basic needs and tend to experience multiple types of hardship (Federman et al., 1996). For example, families may choose to pay the utility bill one month and not pay the rent, but the following month, if there is a threat of eviction, the family may pay the rent but not the utilities.

In sum, experiencing any hardship is strongly associated with CPS involvement. Among types of hardship, housing hardship is strongly associated with CPS involvement. Although the number of hardships is not linearly associated with CPS investigation, families who experience multiple material hardships (whether it is measured by individual hardship or types of hardship) are at higher risk of being involved with CPS.

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*Material Hardship and Types of CPS Involvement*

Few studies have explored the association between material hardship and types of child maltreatment. This study found that different indicators of material hardship were associated with different types of child maltreatment. In general, neglect investigations are responsive to types of hardship, while physical abuse investigations are responsive to levels of hardship regardless of the types of hardship. Housing hardship and food hardship were associated with being investigated for neglect, but not physical abuse. The level of material hardship has different degrees of magnitude by types of CPS involvement. The odds of any hardship on physical abuse (OR: 4.76) is much larger than on neglect (OR: 2.8). Physical abuse investigations seem more responsive to number of hardships than neglect investigations. For example, compared to no hardship, the effect of one hardship on neglect is not statistically different, but experiencing one hardship is significantly associated with physical abuse. Also, while experiencing three or more hardships is not more detrimental than experiencing two hardships for neglect, having three or more hardships is more detrimental than having 2 hardships for physical abuse. In addition, the effect of multiple types of hardship is stronger for physical abuse than for neglect. For example, if caregivers experience multiple types of hardship, the risk of being investigated for physical abuse is substantially higher (OR: 7.68) compared to the odds of being investigated for neglect (OR: 4.35).

Interestingly, the comparison of the pooled logit model and the fixed effects models show that endogeneity from time invariant unmeasured caregiver heterogeneity biased the estimates in the pooled logit model, particularly regarding the association between neglect and material hardship. In general, compared to the magnitude of estimates of material hardship in the pooled logit models, the odds ratio of material hardship are much larger in the fixed effects models. In

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addition, none of hardship measures is significantly associated with neglect in the pooled logit models. However, after controlling for mothers' fixed characteristics, material hardship became a significant predictor of neglect. These findings suggest that the effect of material hardship on CPS involvement was underestimated in the pooled logit model.

#### *Pathway between Material Hardship and CPS involvement*

Even though previous studies suggest an association between material hardships and CPS involvement, the potential pathways by which material hardships affect CPS involvement were unclear. Material hardship can be linked directly to CPS involvement due to a lack of financial resources to meet basic needs, or indirectly through psychological distress or other mechanisms. The results of the pooled logit models seemed to support the mediation mechanism: material hardship is indirectly associated with CPS investigation through depressive symptoms. However, the results of the fixed effects models suggest that changes in depressive symptoms do not mediate the association between the changes in material hardship and CPS involvement status change.

As another possible mechanism, the role of parenting stress on CPS outcomes was examined. In other words, whether material hardship may indirectly cause CPS involvement through heightened parenting stress was considered. However, the findings suggest that the association between material hardship and CPS investigation were not fully explained by parenting stress (results are not shown).

In sum, baseline depressive symptoms partially mediate the association between material hardship and CPS investigation. However, neither depressive symptoms nor parenting stress fully mediate the association between material hardship and CPS involvement. These findings

support the modified FEST theory I suggested: Material hardship may directly affect CPS involvement. Also material hardship may indirectly affect CPS involvement through some other unmeasured factors.

### *Income Poverty and Material Hardship*

Given that families who are considered poor by income measure differ from families who experience material hardship (although there is some overlap), assessing the role of both income poverty and material hardship in child maltreatment can provide further understanding about the extent to which varying degrees or types of economic constraint affect child maltreatment. In the full models, which control all covariates, income-to-needs ratio was negatively associated with physical abuse in the pooled logit model, but it was not associated with any other CPS outcomes.

To assess whether material hardship mediates the association between income-to-needs ratio and CPS outcomes, the pooled logit models and the fixed effects models were rerun. These models predict CPS involvement as a function of income-to-needs ratio by controlling for other covariates, but not controlling material hardship (data not shown). In the models without material hardship, income-to-needs ratio was associated with physical abuse in both the pooled logit model and the fixed effect model. Once material hardship was added to the models, the magnitude of income-to-needs ratio was reduced in the pooled logit model and became statistically insignificant in the fixed effects model, while material hardship was strongly associated with physical abuse. This finding suggests that the association between income-to-needs ratio and physical abuse is mediated by material hardship. However, except for physical abuse, income-to-needs ratio was not significantly associated with other CPS outcomes, even when hardship measures were not added. This analysis was re-run by operationalizing income-

to-needs ratio into poverty (<1 income-to-needs ratio) or deep poverty (<0.5 income-to-needs ratio); however, none of the measures is significantly associated with any CPS outcome.<sup>21</sup>

These findings suggest that among an economically disadvantaged sample, the income poverty measure has limitations in its ability to indicate family economic wellbeing or availability or living conditions, and hardship measures might better reflect more inadequate resources than the conventional income poverty measure.

Alternatively, experiencing material hardship could reflect not only a lack of resources but also other personal characteristics, such as lack of ability to manage resources, high level of disorganization, or high impulsivity. However, if we assume these personal characteristics do not change over time, the results of the fixed effects model, which controls for unobserved constant caregiver characteristics, suggests that material hardship may not be a proxy of personal disorganization but a reflection of unmet basic needs.

### **Limitations and Future Research**

There are several important limitations to the current study. First, the findings of this study may not be generalized to all low income families. Since the sample used in this study was recruited from welfare recipients of a single state (i.e., Illinois), the welfare population may not be representative of the entire low income population. One element to consider is that individuals who do not apply for cash welfare, regardless of eligibility, might differ from those who do apply. For future research, the effect of material hardship on CPS outcome should be studied using nationally representative data.

Second, the outcome measure of this study is based on CPS reports rather than on actual events of maltreatment. It is important to note that the risk of being involved with CPS may

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<sup>21</sup> Given this is low income sample, there is small variation in incomes which might result in no significance.

differ from the risk of maltreatment. Also, given the fact that child welfare policy and practice vary by state due to each state's own decision thresholds regarding alleged incidents of child maltreatment, the effect of material hardship on CPS investigation might differ by state. Future research using both self-reported abuse and neglectful behavior as well as administrative CPS records can provide more information on the association between material hardship and child maltreatment.

Third, measurement error of material hardship may bias the estimation of the association between types of hardship and CPS involvement. The food hardship measure used in this study comes from the USDA food insecurity questions, but the operationalization of this variable as dichotomous in this study is artificial. Also, indicators of housing hardship in this study are more likely to represent housing stability. Other aspects of housing hardship, such as crowding or housing quality should also be assessed.

Fourth, it is possible that omitted variables biased the estimated association between material hardship and CPS involvement. Although this study tried to address this issue by controlling for a rich set of sociodemographic, parenting, psychological wellbeing, and distress factors, and by controlling for unobserved constant caregiver characteristics, the estimations are not free from the endogeneity problem caused by time varying unobserved characteristics (Agresti, 2002). Finally, although this study attempted to estimate the effect of material hardship on CPS involvement utilizing several measures, there is need for further research on the role of duration of hardship on CPS involvement. In other words, we need to investigate whether persistent hardship has a stronger negative association with child maltreatment than transitory hardship, and whether the effects of material hardships occur immediately or increase over time and how long the effects last. It is also unclear whether the timing of hardship affects child

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maltreatment, i.e., whether the effect of hardship on families when children are young differs from when children are older.

## **Conclusion**

The most commonly used measure of material deprivation is income poverty, however, given the critique of using the income poverty measure and the weak association between income and material hardship, this study explored the association between material hardship and CPS outcomes.

Within a low-income sample, experiencing material hardship increased the risk of being involved in a CPS investigation regardless of the type of CPS outcome. When a caregiver experiences multiple hardships, the odds of being investigated are increased 4 times. Specific forms of material hardship were found to be more salient for CPS involvement than others, at least among a low-income population. Housing hardship is consistently strongly associated with CPS involvement regardless of the analytical method.

The findings of this study suggest that to reduce child maltreatment, it might be more effective to offer an economic support package, such as providing emergency assistance for food or housing, affordable housing, and helping families to apply for public benefits (i.e. housing subsidy and food stamps).

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