Associations Between Child Care Subsidies and Family Well-Being

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Abstract:

Child care subsidies affect a vast majority of low-income families, and a small but growing body of literature examines the influence of subsidies on measures of family well-being. This study aims to investigate the relationship between child care subsidies and maternal and child well-being, holding constant employment and, thereby, isolating the influence of subsidies on family well-being. Data are drawn from the Fragile Families and Child Wellbeing Study, a national longitudinal study of primarily unwed mothers, focusing on a sample of 1,193 mothers who are either receiving subsidies or eligible for, but not receiving, subsidies. Results show that child care subsidy receipt predicts higher levels of parenting stress, increased likelihood of maternal depression, and increased externalizing child behavior. Further, maternal mental health does not mediate the relationship between subsidy receipt and child behavior. Finally, suggestive evidence indicates that the relationship between subsidy receipt and well-being is less negative for Hispanic families. Overall, the findings emphasize the need for future research to explore mechanisms to explain the observed relationship between subsides and decreased family well-being.

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INTRODUCTION

The passage of the Personal Responsibility and Work Opportunity Recovery Act (PRWORA) in 1996 brought a marked shift in the policy strategies used to combat poverty in the United States. The new legislation emphasized individual responsibility and created employment requirements and time limits for those receiving welfare benefits. To support the new goal of employment for welfare recipients, the federal government created the Child Care and Development Fund (CCDF) as part of PRWORA to provide subsidized child care to low-income families. Child care subsidies have become a key work support in the post-PRWORA era, as they alleviate high child care costs for low-income families and facilitate the transition from welfare to work.

Funding for child care subsidies grew rapidly after the passage of PRWORA and only recently has begun to plateau. In fiscal year 2009, a total of $9.1 billion combined federal and state funds were spent on child care subsidies (Office of Child Care, 2009). The most recent figures available show that during an average month in 2008, the CCDF served over 1.6 million children and over 900,000 families (Office of Child Care, 2011). Herbst & Tekin (2010) highlight the policy relevance of child care subsidies by noting that, in 2005, child care subsidies served more children than Head Start and state pre-kindergarten programs combined and constituted a larger share of expenditures than both programs. With child care subsidies reaching so many families and children, it is important to understand the role that child care subsidies play in various aspects of family life.

A large body of empirical research focuses on the influence of subsidy receipt on economic outcomes for mothers. Previous literature finds that child care subsidies reduce barriers to work and improve the likelihood of employment for low-income mothers (Blau & Tekin, 2007; Crawford, 2006; Meyers, Heintze, & Wolf, 2002; Tekin, 2005). Yet, only a small body of literature examines the influence of subsidy receipt on measures of family well-being. Furthermore, the majority of these studies fail to disentangle the influence of child care subsidies on family well-being above and beyond their impact on maternal employment. In order to better understand the outcomes associated with child care subsidies and, in turn, inform the development of effective public policy, it is important to determine whether subsidies influence mothers and children in ways other than facilitating mothers to enter the workforce. For example, if subsidy recipients and non-recipients experience different outcomes solely due to differences in maternal employment, then this suggests that it is not child care subsidies per se, but rather work-promoting programs in general, that impact family well-being. However, if child care subsidies in isolation have an impact on family well-being, then this suggests that there is something about the process of applying for and receiving subsidies that influences family outcomes. By holding employment constant in the current study, I aim to isolate the association between child care subsidies and maternal and child well-being.

REVIEW OF THE LITERATURE

Maternal Employment and Family Well-Being

Previous studies that examine subsidy receipt and fail to hold maternal employment constant capture the bundled effect of both child care subsidies and maternal employment on family well-being. Therefore, when attempting to isolate the effect of subsidy receipt, it is important to also understand the role that maternal employment might play in influencing family and child outcomes.

The literature on maternal employment and family well-being varies widely based on social and contextual factors. A meta-analysis of 69 studies found that overall early maternal employment was not significantly associated with child achievement or behavioral problems (Thompson, Goldberg, & Prause, 2010). Yet, exceptions existed for certain subgroups. For example, early maternal employment had a positive effect on achievement for children in single parent families and families receiving welfare. Similarly, in a heterogeneous sample of families, maternal employment in the first year of a child's life was associated with decreased cognitive outcomes at age three (Brooks-Gunn, Han, & Waldfogel, 2010). However, subgroup analyses revealed that full-time maternal employment was only associated with lower achievement scores for a sample of while first-graders, but had no significant impact on a small sample of African-American children.

A line of literature that addresses the impact of maternal employment on low-income families specifically yields more consistent results. Maternal employment among low-income families generally has positive or neutral implications for family well-being outcomes. For example, Kyunghee (2010) finds that maternal employment among a

sample of low-income welfare recipients had positive effects on maternal outcomes and no effect on children's cognitive development. Experimental studies on maternal employment among low-income families also find improved behavioral and cognitive outcomes for children but highlight that the positive gains are usually associated with increases in income due to maternal employment (Gennetian & Miller, 2002; Zaslow, Moore, Brooks, Morris, Tout, Redd, & Emig, 2002).

Child Care Subsidies and Maternal Economic Outcomes

As noted previously, a large body of work examines how child care subsidies influence mothers' employment. A majority of studies demonstrate a positive connection between subsidy receipt and employment outcomes among low-income mothers (Crawford, 2006; Danziger, Ananat, & Browning, 2004; Press, Fagan, & Laughlin, 2006). In particular, subsidy receipt has been estimated to increase the probability of single mothers' employment by 15.3% (Tekin, 2005), indicating that the impact of subsidy receipt on employment is sizeable. Evidence also suggests that child care subsidies lead to improved economic outcomes and economic self-sufficiency for those leaving welfare (Danziger et al., 2004; Forry, 2009; Ha, 2009; Meyers, Han, Wainldfogel, Garfinkel, 2001). The influence of subsidy receipt on economic well-being is particularly large for mothers who maintain subsidies for longer periods of time. For example, Ha (2009) finds that mothers who received subsidies for 4-6 months saw an 8% increase in earnings, while mothers who received subsidies for 25 months or more saw their earnings rise by 320% compared to mothers who were potentially eligible for subsidies but not receiving them.

Child Care Subsidies and Family Well-Being

Besides influencing maternal employment, child care subsidies could influence other aspects of family life and well-being. A variety of studies provide an empirical foundation for understanding the relationship between child care subsidies and the family. Danziger, Ananat, and Browning (2004) examine how child care subsidies facilitate the transition from welfare to work and, in doing so, evaluate the impact of subsidy receipt on problems with child care, and maternal parenting stress. Using a sample of welfare recipients in an urban Michigan county, Danziger et al. (2004) compare mothers receiving child care subsidies with mothers who meet the income eligibility limit for subsidies and have an age-eligible child but don't receive subsidies. In the study, the effects of maternal employment and subsidy receipt were intermingled, as levels of maternal employment varied between subsidy recipients and eligible, non-recipients. Results showed no significant difference in child care-related problems or parenting stress scores between the two groups. The authors highlight parenting stress as a potential function of child care difficulties and suggest that parenting stress was not affected by subsidy receipt because child care-related problems persisted for both subsidy recipients and non-recipients in their sample. One reason this might be the case is that in Michigan the majority of child care subsidies are used for in-home care (Danziger et al., 2004), which tends to be less stable and more prone to child care-related problems.

In fact, the larger body of research on child care subsidies and stability of care suggests that Danizger et al.'s (2004) results are unique to the Michigan policy context and do not speak to the overall influence of subsidies on child care-related problems. Instead, the empirical evidence indicates that child care subsidies do reduce the number

of problems mothers experience at work due to failed child care. For example, Press, Fagan and Laughlin (2006) compare mothers who applied for, but were not receiving, subsidies with those who were currently receiving subsidies to determine the influence of subsidy receipt on scheduling problems, such as an inability to choose ideal work-hours, shifts and over time. They find that mothers receiving child care subsidies were 21% less likely to experience scheduling problems at work due to child care. Weinraub, Shlay, Harmon and Tran (2005) also find that among African-American parents in Philadelphia subsidy recipients had fewer absences from work due to child care problems than non-subsidy recipients. Finally, a recent study finds that subsidy recipients are considerably less likely to experience child care-related work disruptions compared two comparison groups, mothers who did not report receiving subsidies and mothers on the waiting list for subsidies (Forry & Hofferth, 2010). Overall, these studies demonstrate that child care subsidies play a substantial role in reducing child care problems, which suggests that the use of child care subsidies may reduce overall stress and, specifically, may reduce maternal parenting stress through the reduction of child care problems.

Furthermore, a body of literature that examines the impact of subsidy receipt on the quality and stability of child care has implications for the relationship between subsidy receipt and maternal parenting outcomes. Teitler, Reichman and Nepomnyaschy (2004) explain that child care arrangements play an important role in maternal parenting stress. While convenient and high quality child care has the potential to lower parenting stress, unreliable and poor quality care can do the opposite. Therefore, subsidy receipt may impact parenting stress to the extent that subsidies play a role in child care quality and stability. Evidence suggests that child care subsidies increase the use of state-licensed

center-based child care, which is considered to be of higher quality (Ryan, Johnson, Rigby, & Brooks-Gunn, 2011). Subsidies have also been shown to improve the stability of care (Brooks, 2002; Crosby, Gennetian, & Huston, 2005; Rigby, Ryan, & Brooks-Gunn, 2007). The associations between subsidy receipt and the use of center-based care and improved stability of care are sizeable. For example, Brooks (2002) finds that subsidy recipients' child care arrangements lasted twice as long as those for non-recipients. In addition, 92% of subsidy recipients used licensed center-based care compared with 28% of non-subsidy recipients. These large improvements in child care characteristics associated with subsidy receipt may serve to reduce parenting stress.

More direct evidence on the relationship between subsidized child care and family well-being is provided by Baker, Gruber and Milligan (2008). The authors analyze the impact of a highly subsidized, universally accessible child care system in Quebec, Canada. This program, known as the "$5 per day child care program," provides child care to all children at the cost of $5 per day. The policy, implemented between 1997 and 2000 in Quebec, serves as a natural experiment when compared with the rest of Canada. Baker et al. (2008) examine the impact of Quebec's subsidized child care program on child care utilization, labor supply, and child and parent outcomes using a difference in differences model that compares changes over time in outcomes in Quebec with changes in outcomes in the rest of Canada. In their study, they focus on a sample of two-parent families with children ages zero to four. The results show that while the subsidized child care program increased formal child care arrangements and labor force participation, it had negative effects on mothers and children. Participation in the subsidized child care program was associated with more hostile and ineffective parenting, less consistent parenting, and

worse parental health. In addition, children participating in the subsidized child care program were worse off in terms of anxiety, aggression, motor skills, social skills, and illness.

The authors suggest that the negative behavioral effects documented for children may be the result of difficulties children may have experienced when they were moved into child care centers, a more social environment where they needed to interact with more children. Secondly, they hypothesize parents' stress may have increased due to their entrance into the labor market. This, in turn, might have resulted in more negative child behavior or caused parents to report more negative child behavior. Lastly, it may be that the negative child outcomes documented in the study are short-run problems that will dissipate over time.

The results of the Baker et al. (2008) study are not easily generalizable to the U.S. child care subsidy system because, unlike the U.S. system which targets low-income populations, the Quebec child care program was universal and available to working parents of all income levels. Furthermore, because the sample was restricted to two-parent families, is it difficult to generalize the results to U.S. where the majority of child care subsidy recipients are single parents. Finally, because the policy change that provided subsidized child care encouraged many mothers to enter the workforce at the same time, the study fails to disentangle the effects of the subsidized child care program from the effects of maternal employment on family well-being.

Similar results are uncovered in a recent analysis of the impact of child care subsidies on child development in the U.S. Herbst and Tekin (2010) use a sample of

single mothers and children from the nationally representative Early Childhood Longitudinal Study, Kindergarten cohort (ECLS-K) to evaluate the impact of subsidy receipt on children's test scores and behavioral problems. They use a Two-Stage Least Squares Regression model to instrument for subsidy receipt using county-specific variation in eligibility. In the analysis, they compare subsidy recipients to all other single mothers included in the ECLS-K, regardless of whether these mothers are eligible to receive subsidies. Herbst and Tekin (2010) find subsidy receipt in the year before kindergarten is associated with lower reading and math test scores and greater behavioral problems for children upon entering kindergarten. However, the study does not attempt to unbundle the effects of maternal employment and subsidy receipt.

Another study addresses the relationship between child care subsidies and family well-being using a sample of families in the state of Georgia. Brooks (2002) compares mothers receiving subsidies with demographically similar mothers on the waiting list for subsidies. He finds that mothers receiving subsidies were more likely to be employed, spent half as much of their income on child care, were less likely to be very poor, and were more satisfied with their child care than waitlist mothers. Children of mothers receiving subsidies were more likely to be in center-based care and have more stable child care arrangements. No statistically significant differences were observed for child health, cognitive development, and socioemotional maturity. Brooks (2002) explains these null findings by citing the lack of available quality child care for low-income families in Georgia due to minimal child care regulations in the state.

While Brooks' (2002) analytic sample includes only employed mothers and thereby holds maternal employment constant at the time the study participants were

chosen, by the time interviews were conducted with the participants, one in five mothers on the waiting list had lost her job. The subsidy group on the other hand maintained employment, as this was a requirement of subsidy receipt. Therefore, Brooks' (2002) analysis does not truly hold employment constant between the subsidy and comparison group, which indicates that the results may be affected by differences in employment rather than by subsidy receipt itself. The results, which show no significant influence on child well-being, contrast with the results documented by Baker, Gruber, & Milligan (2008) and Herbst & Tekin (2010), which demonstrate a negative relationship between subsidies and child well-being.

Finally, the most relevant paper to the current study is Herbst & Tekin's (2012) working paper which uses three nationally representative datasets to explore the implications of subsidy receipt for both parental and child well-being. The authors utilize various outcomes from the Fragile Families and Child Well-Being Study, the ECLS-K, and the DDB Needham Life Style Survey (a cross sectional, nationally representative study that contains data on social, economic, political, and personal themes) to measure maternal health, maternal mental health, and the quality of child-parent interactions. Results based on various empirical strategies both within and across the different surveys show that mothers receiving child care subsidies have lower levels of overall health, increased symptoms consistent with anxiety, depression and parenting stress, and increased physical and psychological aggression toward their children.

In their analysis, Herbst & Tekin (2012) hypothesize three main causal pathways through which child care subsidies could affect family well-being. They posit that mothers' transitions from leisure to labor (through entering the labor market), families'

changes in income and consumption, and changes in the nature and quantity of time mothers spend with children due to subsidy receipt could all cause changes in maternal and child well-being. Like in previous studies, Herbst & Tekin (2012) do not attempt to isolate the influence of subsidy receipt from the influence of maternal employment and instead consider maternal employment a mechanism linking subsidy receipt to family outcomes. In the analysis of the Fragile Families data and the ECLS-K child care subsidy recipients are compared to all other respondents in the overall sample, regardless of child care subsidy eligibility. In the analysis of the DDB Needham Life Style Survey, the authors estimate the effects of varying levels of state child care subsidy spending on parental and child outcomes, again looking at an overall nationally representative sample. The negative relationship Herbst & Tekin (2012) uncover between subsidy receipt and family well-being is largely consistent with previous studies on similar domains of family well-being. The authors conclude that future research should examine whether changes in maternal well-being due to subsidy receipt serve as a mechanism through which subsidies influence children.

The present study builds specifically on the findings of Herbst & Tekin (2012) and on previous studies related to child care subsidy use and maternal and child well-being. First, by utilizing data on state child care subsidy eligibility guidelines, I am able to construct a comparison group of families who would be eligible for, but are not receiving, subsidies in the Fragile Families sample. Whereas Herbst & Tekin (2012) compare family well-being outcomes between subsidy recipients and the general Fragile Families sample, the present study uses a more nuanced counterfactual. Second, I am able to extend the literature on potential mechanisms through which subsidies may affect child

well-being by explicitly testing whether changes in maternal well-being explain changes in child outcomes due to subsidy receipt. Although previous studies have investigated the relationship between subsidy receipt and child outcomes, the current study is the first to examine maternal well-being as a mechanism. Finally, while previous studies have failed to distinguish the influence of subsidy receipt from the influence of maternal employment, I compare subsidy recipients to only employed families eligible for, but not receiving, subsidies. As such, the current analysis extends Herbst & Tekin's (2012) study of the relationship between child care subsidies and family well-being and fills a gap in the literature by isolating the relationship between subsidy receipt and family well-being from the relationship between subsidies and maternal employment.

CONCEPTUAL MODEL

There are a variety of ways in which child care subsidies could influence family well-being, holding employment constant. Figure 1 provides the conceptual framework that guides this analysis. The figure shows that three mechanisms, child care characteristics, burden of maintaining a subsidy, and economic resources, may influence the relationship between child care subsidies and maternal well-being, defined as parenting stress and maternal depression. The figure also shows that child care subsidy receipt may influence child well-being through its effects on maternal parenting stress and mental health, or through child care characteristics and/or economic resources.

Figure 1. Conceptual Framework

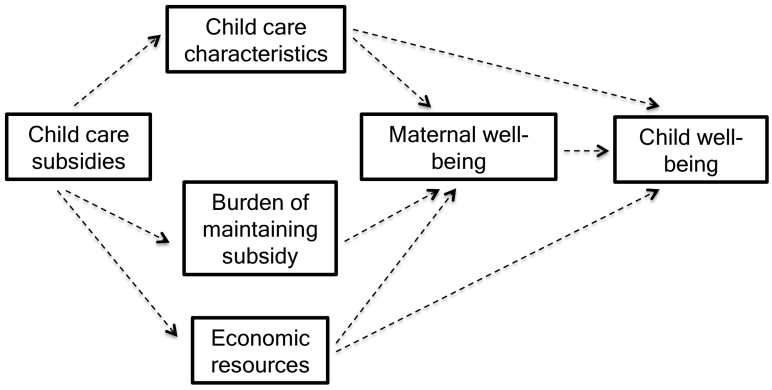
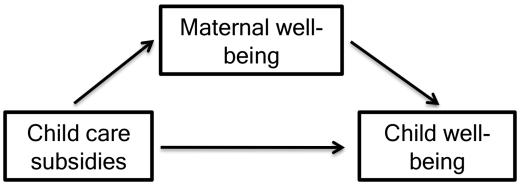


Figure 2 shows the relationships that will be estimated in the analysis. The current study aims to identify whether child care subsidies influence maternal well-being and child well-being and whether maternal well-being mediates the relationship between subsidy receipt and child well-being. While I do not test every potential mechanism in this analysis, it is important to consider all of the conceptual pathways through which the analytical relationship I will estimated might operate.

Figure 2. Analytical Framework



Child Care Characteristics as a Mediator

Child care subsidies have been shown to increase child care quality and stability and reduce child care-related work disruptions (Brooks, 2002; Forry & Hofferth, 2010; Ryan, Johnson, Rigby, & Brooks-Gunn, 2011). Improvements in child care associated with subsidy receipt may allow parents to better balance child rearing responsibilities and

work, thus alleviating parenting stress. Also, improved quality, stability, and reliability of child care arrangements may increase satisfaction with care and improve maternal mental health and overall well-being. For example, Chatterji, Markowitz, & Brooks-Gunn (2011) find suggestive evidence that certain forms of child care, such as center based care, are associated with reductions in maternal depression among employed mothers. In addition, strain associated with child care arrangements is associated with higher rates of maternal depression (Gordon & Gluzman, 2007). As such, if subsidy receipt improves stability and reduces strain associated with child care, maternal mental health may improve.

Improved child care quality for subsidy recipients may also influence child development. A large body of research demonstrates that child care quality is associated with improved child developmental outcomes, particularly cognitive outcomes. In a review of the literature on early childhood intervention programs, Currie (2001) finds that children in high quality center care tend to have fewer behavioral problems and better cognitive and language development than those in poorer quality centers. Evidence also shows that children in center care have improved school readiness (Magnuson & Waldfogel, 2005). These findings suggest that child care subsidies may improve children's behavioral and cognitive functioning by providing access to high quality center-based care.

Burden of Maintaining Subsidy as a Mediator

The act of acquiring and maintaining a child care subsidy may also put a burden on mothers and increase both overall stress and parenting stress. In order to be eligible for child care subsidies, mothers must be employed and earn below a certain income

eligibility threshold. Furthermore, mothers who have obtained subsidies are usually required to recertify for subsidies every 6 or 12 months and must present pay stubs to demonstrate their employment. Therefore, mothers relying on subsidies may feel more pressure to maintain employment, as the loss of a job for a subsidy recipient also means the loss of her child care subsidy. Fluctuations in earnings may also create added stress for subsidy recipients because an increase in earnings can result in the loss of a child care subsidy or a reduction in its value. Indeed, a small body of research documents the substantial difficulties mothers have applying for and maintaining their subsidies (Basta, 2007; Washington, Marshall, Robinson, Modigliani, & Rosa, 2006). In one study, 37% of subsidy eligible mothers reported that the main reason they did not use subsidies was due to the hassle associated with applying (Shlay, Weinraub, Harmon, & Tran, 2004). Therefore, to the extent that acquiring and maintaining child care subsidies proves difficult and burdensome, mothers may feel less able to balance their responsibilities as a parent and face increased levels of parenting stress.

Economic Resources as a Mediator

Holding employment constant, child care subsidies lead to increased household income, given that they alleviate families of the need to pay for at least some or all of their childcare expenditures (Ha, 2009). A large body of research highlights the ways in which increased income can benefit both mothers and children. For mothers, greater family resources reduce depression and parental stress (Rafferty, Grifin, & Robokos, 2010). For children, income is a strong predictor of cognitive functioning (Duncan & Brooks-Gunn, 1997).

Maternal Parenting Stress and Mental Health as Mediators

If a relationship exists between child care subsidies and maternal parenting stress and mental health, then it follows that child well-being, specifically behavior and cognitive functioning, may be influenced. Previous research highlights the ways in which parental stress and maternal mental health can influence child well-being (Shonkoff & Phillips, 2000). High levels of maternal parenting stress are associated with decreased developmental competence in children (Anthony, Anthony, Glanville, Naiman, Waanders, & Shaffer, 2005; Crnic, Gaze, & Hoffman, 2005), insecure parent-child attachment (Jarvis & Creasey, 1991), behavioral problems in children (Barry, Dunlap, Cotton, Lochman, & Wells, 2005; Creasey & Jarvis, 1994), and lower social competence in children (Anthony et al., 2005). Therefore, it is possible that parenting stress and maternal depression may serve as mechanisms through which child care subsidies affect child outcomes.

Subgroup Variation

Additionally, there may be subgroup variation in the impact of child care subsidies on maternal mental health, child behavior and child cognition. First, child gender has been associated with differences in behavioral and achievement outcomes for children, with boys exhibiting increased externalizing behavior, decreased internalizing behavior, and poorer achievement scores than girls (Andersson, 2002; Caspi, Henry, McGee, Moffitt, Silva, 1995; Matthews, Ponitz, & Morrison, 2009). Therefore, to the extent that child care subsidies improve child care quality and increase income, boys have

the most to gain in terms of improvements in externalizing behavior and cognitive development.

Second, there may be subgroup differences by race/ethnicity. The racial achievement gap is well established, with black children tending to score lower than white children on achievement tests (Chapin, 2006; Yeung, & Conley, 2008). Further, mothers of different racial and ethnic backgrounds tend to prefer different types of child care arrangements which may lead to differential child behavioral and cognitive outcomes. For example, Hispanic families are much more likely to use informal, kin-based child care while black families are more likely to use center-based child care (Capizzano, Adams, & Ost, 2006). As such, families of different racial backgrounds may use subsidies differently, and this may lead to different family well-being outcomes by race/ethnicity.

Third, because children in single-parent families tend to experience greater cognitive gains with increases in income than children in two-parent families (Duncan & Brooks-Gunn, 1997), it is likely that subsidy receipt will influence family well-being differently for single- and two-parent households if indeed income is a mechanism. Lastly, research shows that the effects of child care quality on child outcomes varies by level of disadvantage (Currie, 2001). In her review of the literature, Currie (2001) finds that early childhood educational programs often produce greater effects for more disadvantaged children. Therefore, to the extent that subsidies improve child care quality, children of the most disadvantaged families may have the most to gain.

Research Questions and Hypotheses

The family well-being outcomes that might be influenced by subsidy receipt differ depending on which mechanisms are operating: child care characteristics, the burden of maintaining a subsidy, economic resources, or maternal well-being. Therefore, it is necessary to examine a range of child and maternal well-being outcomes. In the current study, I focus my analysis on maternal parenting stress, maternal depression, child behavioral problems, and child test scores as measures of family well-being. I aim to answer the following research questions:

1. Do child care subsidies affect maternal and child well-being holding maternal employment constant?

I hypothesize that child care subsidies will have a significant impact on all measures of family well-being, however, as noted below, the direction of the relationship will depend on which specific mechanisms are at work.

2. Do parenting stress and maternal depression serve as mechanisms through which child care subsidies affect child well-being?

I hypothesize that both parenting stress and maternal depression will function as mechanisms for the relationship between child care subsidies and child outcomes. It is unclear which of the potential mechanisms that influence maternal mental health will have the strongest effect. Therefore, it is unclear whether parenting stress and maternal depression will increase or decrease. For example, if maintaining eligibility for child care subsidies is burdensome, then subsidies will be associated with increased parenting stress. If subsidy receipt leads to improved stability in child care, parenting stress would

be reduced. Changes in parenting stress and depression are likely to be associated with children's socio-emotional functioning. If stress and depression increase, children's behavior problems are likely to increase as well; the opposite would be the case if maternal stress and depression decrease.

3. Are there certain subgroups for whom the influence of child care subsidies on family well-being is the strongest?

Based on the literature, I hypothesize that the influence of child care subsidies will be strongest for mothers with male children, minorities, single-parent households, and families with the highest levels of disadvantage.

Additional Factors Associated with Subsidy Receipt and Family Well-Being

It is important to note that subsidy recipients may differ from eligible non-recipients in a variety of ways. To better isolate the relationship between subsidy receipt and family well-being, I attempt to account for a wide range of factors that may influence both subsidy receipt and family well-being. These include a range of sociodemographic characteristics, many of which are demonstrated determinants of subsidy receipt (Blau & Tekin, 2004): maternal age, race, education, marital/cohabiting status, maternal intelligence, and number of children. Child characteristics may also affect family well-being outcomes (Belsky, 1984) and, thus, I adjust for child gender, age, birth weight, and general level of health. I also control for the number of hours a mother works per week, as increased work hours may lead to poorer mental health and decreased parenting. Other factors associated with employment, such as non-standard work hours, are likely endogenous with subsidy receipt and, therefore, are not included as controls.

Finally, I take into account a range of social resources that have been shown to affect family well-being. These include perceived social support, relationship quality with the father, presence of a grandparent in the household, and the number of adults in the household. Social support and partner relationship quality have buffer effects on maternal parenting stress and a positive influence on mental health (Cardoso, Padilla, & Sampson, 2010; Osborne, 2004; Belsky, 1984). Grandparents and other adults in the household may provide support to the mother in the form of child care or emotional support, and therefore must be taken into account.

DATA AND METHODS

Data and Sample

Data for this study are drawn from the Fragile Families and Child Wellbeing Study, an ongoing longitudinal study based on a cohort of 4,989 children and their parents. For the study, a three-stage sampling process was used to achieve a nationally representative sample of non-marital births in large U.S. cities. Cities were selected based on welfare generosity, strength of the child support system, and strength of the local labor market conditions in order to achieve a sample of individuals from diverse policy environments and economic conditions (Reichman, Teitler, Garfinkel, & McLanahan, 2001). Between 1998 and 2000, baseline interviews were conducted with mothers in 75 hospitals in 20 U.S. cities within 48 hours after the birth of a child. The initial baseline survey consists of about 1,000 mothers who were married and about 4,000 who were unmarried at their child's birth. Mothers were re-interviewed by phone when the child was one year old, three years old, and five years old. The response rate for each follow-

up survey was near 90%. At year-one 89% of unmarried mothers and 90% of married mothers completed the survey. At year-three, 86% of unmarried mothers and 89% of married mothers completed the survey (Fragile Families Study, 2008).

In addition to the follow-up telephone surveys, the Fragile Families study includes the In-Home Longitudinal Study of Pre-School Aged Children, conducted at years three and five when the focal child was around three and five years old. The in-home data consist of in-person interviews of the primary caregiver (usually the mother) and in-home assessments. The surveys include questions regarding parenting, child health, and child development, while the assessments allowed the interviewer to evaluate these same three themes directly. Of the original baseline sample, 62% of respondents completed the in-home year three assessment. Broken down by marital status, 64% unmarried mothers from the baseline and 57% of married mothers from the baseline completed the year-three assessment (Fragile Families Study, 2008).

The current study uses a subsample of Fragile Families data containing the baseline, mothers' year-three follow up survey and the year three in-home assessment. The independent variable of interest, subsidy receipt, and family well-being outcome variables of interest are all measured at year three. This is because at year three, the focal child in the study was approximately 3 years old and not yet able to enter kindergarten, making it more likely that mothers in the year three sample would be using child care subsidies. Further, the Fragile Families in-home assessments, which contain measures of child behavior and cognition, are only available at year three and year five. Thus, restricting measures of subsidy receipt and family well-being outcomes to the year three data (the follow-up survey and in-home assessment) allows me to investigate child care

subsidy receipt, maternal outcomes, and child outcomes all at once. Certain covariates which do not vary across time, such as maternal race, are measured at the baseline survey.

Mothers were selected for the analytic sample if they reported receiving a child care subsidy or were eligible for, but not receiving, a subsidy at year three (n = 1,378). Following Forry & Hofferth (2011), those mothers classified as eligible for, but not receiving, subsidies serve as the comparison group for this analysis. Mothers were classified as eligible to receive a child care subsidy if their self-reported household income fell below the state-specific eligibility cutoff for their state of residence. In addition, mothers were only included in the comparison group of eligible subsidy recipients if they reported employment in the week prior to the survey. As almost all states require child care subsidy recipients to be employed, this restriction best captures those who would be eligible under CCDF policy guidelines and also serves to hold employment constant between subsidy recipients and non-recipients. The final analytic sample consists of 482 subsidy recipients and 711 eligible, non-recipients.

Due to the fact that the comparison group is constructed as opposed to experimental, systematic differences between subsidy recipients and the comparison group may bias the results. Descriptive statistics will demonstrate whether any significant differences exist between groups, and I will control for these observable differences. Further, extensions of the main analysis will provide robustness checks.

Missing Data

I use listwise deletion for missing data on covariates in the sample. As such, 185 cases are dropped from the sample due to missing values on one or more independent

variables (n = 1,193). For each of the five models I estimate, I allow the number of observations to vary according to how many cases are missing for each of the five dependent variables.

I conduct t-tests and chi-squared tests to evaluate the 185 observations omitted due to missing values on one or more of the covariates. I find only a few significant differences between those omitted from the sample and those included. Those excluded from the analytic sample due to missing data are significantly more likely to be Hispanic and more likely to have less than a high school degree. The omitted respondents are also less likely to be married or cohabiting and report lower relationship quality with the father. These significant differences (lower levels of education and lower rates of partnership and partner support) suggest that mothers omitted from the sample would likely have worse mental health and children with poorer well-being. Therefore, any bias from the omission of missing data from the sample will likely produce an underestimate of the parameters on maternal and child well-being.

Dependent Variable

Maternal Parenting Stress. The Fragile Families study uses the Aggravation In Parenting Scale developed by Child Trends, Inc. to measure parenting stress (Fragile Families and Child Well-Being Study, 2006). Two of the four items that make up the Aggravation in Parenting Scale were taken from the Parenting Stress Index (PSI), originally developed by Abidin (1983). The PSI is widely used in analyses of parenting stress and has been demonstrated to have high internal consistency and reliability among low-income populations (Hutcheson & Black, 1996; Whiteside-Mansell, Ayoub, McKelvey,

Faldowski, Hart, & Shears, 2007). The other items included in the Aggravation in Parenting Scale are drawn from the Panel Study of Income Dynamics (PSID).

The Aggravation in Parenting Scale includes the following four items, reverse coded to a scale of 1 (strongly disagree) to 4 (strongly agree): being a parent is harder than I thought it would be; I feel trapped by my responsibilities as a parent; I find that taking care of my child(ren) is much more work than pleasure; and, I often feel tired or exhausted from raising a family. Parenting stress is measured using the mean score of these four items, following Cardoso et al. (2010), Osborne (2004), and Ryan, Tolani, and Brooks-Gunn (2009). In these studies, the internal reliability (α) for the four-item parenting stress measure ranges from .61 to .63. The internal reliability of the parenting stress scale for my analytical sample, $\alpha = .64$, is consistent with other studies and suggests that the scale is an adequately reliable measure for parenting stress.

Maternal Depression. Using a series of questions from the Composite International Diagnostic Interview – Short Form (CIDI-SF), Section A (Kessler, Andrews, Mroczeck, Utsun & Wittchen, 1998), the Fragile Families study constructs the likelihood that a respondent is at risk of a Major Depressive Episode (MDE). The CIDI is a widely used tool used to assess mental disorders in epidemiological, cross-cultural, and other research studies (Fragile Families and Child Well-Being Study, 2006). The CIDI-SF items included in the Fragile Family study asked whether respondents had feelings of dysphoria (depression) or anhedonia (inability to enjoy what is usually pleasurable) in the past year that lasted for two or more weeks. If they responded affirmatively, further questions were asked regarding the length of these feelings throughout a day and whether they experienced a loss of interest, felt tired, experienced weight fluctuations, had trouble

sleeping or concentrating, felt worthless, or thought about death. Respondents were classified as probable cases of depression if they endorsed three or more symptoms included in the CIDI-SF.

Child Cognitive Development. The Fragile Families study includes three measures of cognitive outcomes: the Peabody Picture Vocabulary Test-Revised (PPVT-R), the Woodcock-Johnson (WJ-R) Letter-Word Identification subtest, and the Attention Sustained sub-test from the Leither-R battery. Of the three measures, the PPVT-R is the most widely used to assess child cognitive development and is the measured used in the current study. The test is administered to children ages three and older and provides a measure of their vocabulary capabilities and academic readiness. The PPVT-R is administered orally and uses pictures to allow respondents to identify the word presented.[1] As such, the PPVT-R is useful in assessing young children who cannot yet read or write (Dunn & Dunn, 1997). PPVT scores are also highly correlated with verbal performance, and full-scale intelligence quotient scales on the Wechsler Intelligence Scale for Children-III, demonstrating the reliability of the PPVT-R. I use the standardized PPVT-R score available in the Fragile Families data to measure child cognitive development. Limitations of this measure are that it exclusively captures verbal ability. Thus, the PPVT-R may provide an underestimated score for children who are spatially or mathematically gifted but less verbally competent.

Child Behavior. A variety of scales and measures are used within the Fragile Families study to assess child behavior. The Child Behavior Checklist (CBCL) is the most widely

[1] The Test de Voculario en Imagenes Peabody (TVIP) serves as an equivalent measure of cognitive development for Spanish speaking children.

used measure for assessing problematic behavior in children (Bronte-Tinkew, Horowitz, & Scott, 2009; Hale, Berger, LeBourgeois, Berger, Brooks-Gunn, 2011) and is available in the year three in-home assessment data. Thus, the CBCL is used to measure child development in the current study. The CBCL consists of anxious/depressed, withdrawn, aggressive, and destructive behavior subscales. The subscales can be organized into two broader subscales: total internalizing (all anxious/depressed and withdrawn items) and total externalizing (all aggressive and destructive items) behavior. For each item in the subscales mothers must rate whether the behavior is not true (0), somewhat/sometimes true (1), or very/often true (2) of their child. Some items from the internalizing behavior subscale include whether the child clings to adults or shows little interest in things. The externalizing behavior subscale consists of items such as the child is defiant or is easily frustrated. In this analysis, I use the CBCL internalizing and externalizing subscales because child care subsides may impact both types of behavior. Specifically, previous research has shown child care subsidy receipt to influence externalizing behavior **(**Herbst & Tekin 2010**)**. Scores for each subscale are summed and treated as continuous.

The CBCL is completed by the child's primary caregiver, usually the mother in the case of the Fragile Families study, which could lead to biased reports of behavior. Even if mother-reported behavior is accurate, mothers' observation of child behavior in the home may not capture child behavior in other contexts, such as in day care or with peers. Despite these limitations, the CBCL is the best measure available in the Fragile Families data and is considered a valid instrument for measuring child behavior. The internal reliability (α) for the internalizing scale in the overall fragile families sample is .82 and for the externalizing scale α = .88. Ryan, Kalil, and Leininger (2009) use these

same measures for a subsample of the fragile families data and document an internal reliability of α = .69 for internalizing behavior and α = .86 for externalizing behavior at year three. My alpha value for internalizing behavior, α = .73, falls within the range of α =.82 for the entire Fragile Families sample and α = .69 in Ryan, Kalil and Leininger's (2009) subsample. Further, the internal reliability for externalizing behavior in my subsample is α = .88, higher than the values documented for the Fragile Families sample and Ryan, Kalil and Leininger's (2009) analytic subsample.

Independent Variable

Measures of Child Care Subsidy Receipt. The main independent variable of interest in this analysis is whether or not a mother is receiving a child care subsidy. Following Forry & Hofferth (2011), affirmative responses to the question "Did the government give you money, a voucher, or a scholarship to help pay for child care?" will constitute subsidy receipt for a mother.

The comparison group for this analysis is constructed according to child care subsidy eligibility policies within each state. While child care subsidies are funded through the federal CCDF, state agencies administer the program and have a considerable amount of freedom in setting their income eligibility cutoff levels. Depending on one's state of residence, eligibility for child care subsidies can vary greatly. I use administrative data from the Administration for Children and Families (ACF) on CCDF historical state eligibility to determine income eligibility cutoffs for each state. The ACF's income eligibility levels were available for Fiscal Year 2001 and Fiscal Year 2002-2003. I applied the year-appropriate eligibility cutoff according to the date of the respondent's

year three interview. Further, the ACF only provides income eligibility thresholds for families of three. For the purposes of this analysis, the family-of-three eligibility cutoff was applied to all respondents, regardless of family size, to determine potential subsidy eligibility.[2] Self-reported household income is used along with state identifiers to determine whether respondents not receiving subsidies are financially eligible to receive them in their state of residence.

Furthermore, only respondents who report being employed in the week prior to the survey (the best measure of employment available in the Fragile Families survey) are included in the group of potentially eligible subsidy recipients. This is because most states require maternal employment to be eligible for a subsidy. By restricting the comparison group to employed, financially eligible mothers, employment is held constant between subsidy recipients (who must fulfill a work requirement) and eligible non-recipients.[3]

Determining subsidy recipients and the comparison group as described relies on certain assumptions. The first is that all mothers receiving child care subsidies are aware of the fact that they are receiving money/vouchers/scholarships from the government. At times, as some subsidy payments go from the state directly to the child care provider, and therefore respondents might believe that the child care center is providing the subsidized

[2] While true financial eligibility for child care subsidies varies by family size, the family-of-three cutoff provides an approximate threshold for subsidy eligibility for the overall sample. Sensitivity analyses compare overall results to results estimated for only families of three and find no substantial differences between the two.

[3] A small share of the pool of subsidy recipients (29% of subsidy recipients) did not report employment in the week prior to the survey. Most states allow subsidy recipients to maintain their subsidy for a short period of unemployment if they have lost their job. Therefore, those subsidy recipients who did not report work are nonetheless included in the sample of subsidy recipients in order to capture the true pool of mothers using subsidies. Sensitivity analyses reveal that excluding the subsidy recipients who do not report work from the sample does not substantially change the overall results of the study.

or free care. Therefore, an alternate measure of child care subsidy receipt is whether the respondent reported receiving money, a voucher, or a scholarship from any non-family source. This alternate measure of subsidy receipt will be tested and compared to the traditional measure.

Second, the employment measure based on whether or not the respondent worked in the past week used to create the comparison group may not provide a reliable measure of steady full-time or part-time employment. However, this is the best employment measure given the Fragile Families data. Lastly, by only examining subsidy recipients and eligible recipients who are employed, the analysis does not pertain to mothers who may qualify for and receive child care subsidies through enrollment in school as opposed to through work activities.

Control Variables

Sociodemographic Characteristics. In order to account for differences in sociodemographic characteristics, I include continuous variables to control for mother's age, number of biological children, and WAIS-R score at the year three follow-up survey. Both maternal race and level of education are categorical variables measured at the baseline survey. Race is measured as Hispanic, non-Hispanic Black, or non-Hispanic/non-Black. Level of education is based on categories of less than a high school degree, a high school degree or equivalent, and any postsecondary education (some college, college, or graduate school). A dichotomous variable captures whether the mother is married to or cohabiting with the child's father at the year three follow-up survey.

Child Characteristics. I include a categorical variable to indicate whether the focal child is male. Two dichotomous variables indicate whether the child was born at a low birth weight at the baseline survey or was reported to have fair or poor health by the mother at year three. I measure the age of the focal child at both the year three follow-up survey and the in-home survey, including the appropriate measure depending on whether the outcome variable in a given model is measured at the year three follow-up or during the in-home survey. I construct the measure of the focal child age at the year three follow-up. Because baseline interviews were conducted within 48 hours of the birth of the focal child, I use the number of months between a mother's baseline interview and her year three interview to estimate focal child age at year three. A direct measure of focal child age, also measured in months, is available for the year three in-home survey.

Employment Characteristics. To adjust for the influence of time-intensive employment, I control for the number of hours a mother worked per week at her last job, reported during at the year three follow up, as there is no measure of current hours worked per week in the Fragile Families study. I use three categorical variables, 1-19 hours worked per week, 20-34 hours worked per week, and 35+ hours worked per week, with the first as the omitted category.

Social Resources. A measure of perceived social support at year three is based on three questions asking if the mother could rely on someone to provide her with a place to live, to help her with child care in an emergency, or loan her $200. Perceived support is measured on a scale from 0 to 1 based on the mean response to the three items. The mother's relationship quality with the father is measured as a continuous variable based on the mother's report of her relationship quality with the father from the year-three

survey. Responses are reverse coded to range from poor (1) to excellent (5). I include a dichotomous measure to indicate whether a grandfather, grandmother, or both are living in the household at the time of the year three follow-up. I also control for the number of adults living in the household at year three.

Empirical Approach

The ideal parameters of the effects of subsidy receipt on family well-being would be obtained from estimates based on experimental data, in which families were randomly assigned child care subsidy receipt and non-receipt. However, without such experimental data, I compare subsidy recipients with a constructed comparison group of those employed and financially eligible for subsidies. I use Ordinary Least Squares (OLS) regression and logistic regression when the outcome is a dichotomous measure to estimate the following base model:

$$Y_{is} = \gamma + \alpha S_{is} + \beta X_{is} + \varepsilon_{is}, \quad (1)$$

where Y_{is} is one of five family well-being outcomes of interest taken for respondent i in state s during the year three follow-up or year three in-home survey; S_{is} is one of two indicators of child care subsidy receipt in year three for respondent i in state s; X_{is} is a vector of other factors that determine family well-being (sociodemographic characteristics, child characteristics, employment characteristics, and social resources) measured at either the baseline, year three follow-up or year three in-home assessment; and ε_{is} is random error. I cluster standard errors at the state level to account for the fact that observations within states are likely not independent.

Using OLS/logistic regression to estimate Equation (1) may produce a biased estimate of α, the parameter on child care subsidy receipt, if any unobserved factors exist that predict both subsidy receipt and family outcomes. This may be the case if mothers who seek child care subsidies are systematically different from eligible mothers who do not seek subsidies in ways not accounted for by the vector of controls in this analysis. For example, mothers receiving subsidies may be more successful at navigating the child care subsidy system as a result of higher levels of motivation. Increased motivation may make subsidy recipients better able to balance work and family and maintain higher levels of mental health than non-recipients, leading to an overestimate of α for maternal well-being outcomes. Similarly, mothers receiving subsidies may be better at seeking out higher quality care for their children, leading to an overestimate of α for child well-being outcomes. However, if mothers tended to have higher levels of parenting stress or depression which led to them to seek out a child care subsidy in the first place, α may underestimate the influence of subsidy receipt on maternal and child well-being.

I conduct extensions of my analysis in order to address potential biases and explore mediating variables and variation by subgroups. First, I use Baron and Kenny's (1986) mediation framework to test whether parenting stress and/or maternal depression mediate the relationship between subsidy receipt and child well-being. This model requires that a significant relationship exists between: the independent variable and dependent variable, the independent variable and the mediating variable, and the mediating variable and the dependent variable. To test for mediation within this framework, I estimate a regression of the independent variable on the dependent variable and include the mediating variable as a covariate. Mediation occurs if the inclusion of the

mediating variable in the equation substantially attenuates the magnitude and/or significance of the coefficient on the independent variable.

To examine whether the influence of subsidy receipt and family well-being varies by subgroup I include interaction terms in my estimation of Equation (1). I test whether the influence of subsidy receipt on family well-being varies for mothers with male versus female children, mothers of different races, single and two-headed households, amd families of greater disadvantage, those below 50% of the poverty level. Because levels of disadvantage based on the poverty measure may be affected by increases in income associated with subsidy receipt, I also test for subgroup variation among mothers with less than a high school degree as a proxy for level of disadvantage.

Finally, to investigate potential selection and omitted variables bias, I instrument for child care subsidy receipt using a Two Stage Least Squares (2SLS) model. I exploit state-level policy variation in child care subsidy eligibility to create a simulated instrument for subsidy receipt. This technique, developed by Currie and Gruber (1996), involves using a nationally representative sample of mothers to calculate the fraction of that sample that would be eligible for child care subsidies in each state. The result, the simulated fraction eligible per state, serves as the instrument. This approach, in which the fraction eligible in each state is calculated using the same nationally representative group of women, ensures that the variation in eligibility is identified based off of differences in state policy rules, not differences in demographics by state that are correlated with rules. For the purposes of this analysis, the entire sample of mothers from the Fragile Families year three follow-up (n = 4,231) is used to calculate the simulated fraction eligible for each state. Due to the fact that mothers in the year three follow-up were surveyed during

different years (between 2001 and 2003), the average fraction eligible across the years for each state serves as the instrument. This approach aims to tease out any causal relationship between child care subsidies and family well-being that may exist.

RESULTS

Descriptives

Table 1 compares sample means and percentages for the analytic sample. In the overall sample used to estimate the first two models on parenting stress and maternal depression (n = 1,193), 40% of the sample is made up of subsidy recipients (n = 482), and 60% consists of those eligible for, but not receiving, subsidies (n =7 11). For the three models estimating child PPVT score, internalizing child behavior, and externalizing child behavior, the sample sizes are smaller (n = 721, n = 779, n = 779, respectively), and subsidy recipients consist of 44% of the sample and the comparison group consists of 56% of the sample for each.

As seen in Table 1, mothers in the overall sample are relatively young, with an average age of 26.64 years old. About 59% of mothers in the sample are Black, while about 26% are Hispanic and roughly 15% are non-Hispanic, non-Black. Mothers in the sample tend toward lower levels of education with the largest percent of respondents having less than a high school degree and nearly three-fourths with a high school degree or less. A little over one-fifth of the sample is either married or cohabiting with their child's biological father. The average mother in the sample has 2.47 children. The percent of low birth weight children and children with children with poor health is rather low (9.72% and 1.84% respectively). Most mothers in the sample report working close to full-time hours at their last job, with approximately 69% of the sample reporting 35+ hours

Table 1. Sample Means and Percentages by Subsidy Receipt

	Total Sample			Subsidy Recipients		Eligible, Non-Recipients	
	Mean	Std. Dev.	N	Mean	Std. Dev.	Mean	Std. Dev.
Sociodemographic Characteristics							
Maternal age	26.64	5.234	1193	26.03***	4.962	27.06	5.374
Black	58.93%		1193	72.20%***		49.93%	
Non-Hispanic, Non-Black	15.42%		1193	12.03%**		17.72%	
Hispanic	25.65%		1193	15.77%***		32.35%	
Less than high school	40.74%		1193	38.38%		42.33%	
High school/equivalent	32.02%		1193	32.99%		31.36%	
Any postsecondary education	27.24%		1193	28.63%		26.30%	
Married/cohabiting	22.38%		1193	20.75%		23.49%	
Number of children	2.47	1.403	1193	2.59*	1.412	2.39	1.393
Mother's WAISR score (0-14)	6.54	2.530	1193	6.68	0.107	6.44	2.648
Child Characteristics							
Male Child	52.81%		1193	56.02%†		50.63%	
Child age at Year-3 Survey (in months)	35.76	2.456	1193	35.61†	2.317	35.87	2.541
Child age at In-Home Survey (in months)	38.78	3.258	957	38.41	2.956	39.03	3.431
Low birth weight child	9.72%		1193	9.54%		9.85%	
Poor child health	1.84%		1193	2.28%		1.55%	
Employment Characteristics							
1-19 hours worked per week	5.95%		1193	4.77%		6.75%	
20-34 hours worked per week	24.64%		1193	23.65%		25.32%	
35+ hours worked per week	69.40%		1193	71.58%		67.93%	
Social Resources							
Perceived social support (0-3)	0.84	0.292	1193	0.84	0.287	0.84	0.296
Quality of relationship with father (1-5)	2.82	1.378	1193	2.68**	1.331	2.91	1.402
Grandparent in household	14.92%		1193	15.35%		14.63%	
Number of adults in Household	1.90	0.922	1193	1.83*	0.881	1.95	0.946
Dependent Variables							
Parenting stress (1-4)	2.25	0.675	1193	2.34***	0.665	2.19	0.675
Maternal depression	22.13%		1193	28.01%***		18.14%	
Child standardized PPVT-R score (40-123)	84.37	15.153	721	83.61	15.114	84.96	15.176
Child internalizing behavior (0-26)	5.67	3.928	779	5.95†	4.151	5.45	3.734
Child externalizing behavior (0-49)	15.61	9.336	779	17.04***	9.613	14.50	8.973

Note: Chi-square tests were used to test between-group differences in dichotomous variables and t-tests were used to test between-group differences in continuous variables.

*** p < .001, ** p < .01, * p < .05, † p < .10

worked per week. Finally, about 15% of families in the sample have a grandparent living with them, and the average number of adults in the house is 1.90.

Table 1 also shows significant differences between subsidy recipients and the comparison group of non-recipients. Compared with mothers who are eligible for, but not receiving subsidies, mothers receiving subsidies are younger, more likely to be Black, and less likely to be non-Hispanic, non-Black or Hispanic. Subsidy recipients tend to have significantly more children, poorer relationship quality with the father of their child, and fewer adults living in the household. Lastly, the results in Table 1 show that differences exist on the bivariate level for parenting stress, maternal depression, and externalizing child behavior between subsidy recipients and the comparison group. The difference between subsidy recipients' and non-recipients' internalizing child behavior scores approaches significance at $p < .10$. Child PPVT scores are not significantly different between subsidy recipients and non-recipients at the bivariate level.

Multivariate Analysis

Columns 1 through 5 in Table 2 show the results of five OLS/logistic regressions estimating the impact of subsidy receipt on maternal and child well-being outcomes. In model 1, I test the relationship between child care subsidy receipt and maternal parenting stress, holding constant mothers' sociodemographic characteristics, child characteristics, employment characteristics, and social resources. In this model, subsidy receipt significantly predicted higher levels of parenting stress. Further, subsidy receipt was among the largest in magnitude of the predictors of parenting stress and was associated with a 19% of a standard deviation increase in parenting stress.

The results of model 2 show that subsidy receipt was associated with a 67%

Table 2. Results from OLS/Logistic Regression Models Predicting Family Well-Being

	(1) Parenting Stress (OLS)	(2) Maternal Depression (Logistic)	(3) Child PPVT Test Score (OLS)	(4) Internalizing Child Behavior (OLS)	(5) Externalizing Child Behavior (OLS)
Subsidy Receipt	0.128**	1.666**	-0.525	0.435	2.298**
	(0.0393)	(0.266)	(1.607)	(0.287)	(0.716)
Sociodemographic Characteristics					
Maternal age	-0.0004	0.998	0.086	-0.0391†	-0.134†
	(0.00537)	(0.0184)	(0.116)	(0.0224)	(0.0659)
Black	0.014	0.579***	-7.260**	-0.0394	-2.026†
	(0.0456)	(0.0949)	(2.035)	(0.368)	(1.003)
(Non-Hispanic, Non-Black)					
Hispanic	-0.003	0.429***	-6.499**	0.316	-1.085
	(0.0408)	(0.0700)	(1.948)	(0.493)	(1.269)
(Less than high school)					
High school/equivalent	-0.0904†	1.141	0.047	-0.558*	-0.033
	(0.0451)	(0.235)	(1.132)	(0.233)	(0.752)
Any postsecondary education	-0.113*	1.564*	3.024*	-1.533***	-1.437
	(0.0421)	(0.302)	(1.202)	(0.395)	(1.048)
Married/cohabiting	0.055	0.853	0.077	-0.00299	0.730
	(0.0415)	(0.180)	(1.398)	(0.327)	(0.604)
Number of children	0.026	1.021	-0.202	0.174	0.666*
	(0.0216)	(0.0723)	(0.284)	(0.103)	(0.290)
Mother's WAIS-R score (0-14)	0.005	1.014	0.568†	-0.152*	0.141
	(0.00628)	(0.0351)	(0.300)	(0.0548)	(0.156)
Child Characteristics					
Male Child	0.0627†	1.064	-1.838	0.486	0.980
	(0.0350)	(0.230)	(1.158)	(0.306)	(0.772)
Child age at Year-3 Survey	-0.001	0.998			
	(0.00869)	(0.0286)			
Child age at In-Home Survey			0.254	-0.0647*	-0.263*
			(0.209)	(0.0310)	(0.109)
Low birth weight child	0.014	0.813	-3.599†	0.466	1.943†
	(0.0656)	(0.276)	(1.969)	(0.310)	(0.946)
Poor child health	-0.032	3.300*	-0.608	0.876	0.716
	(0.127)	(1.933)	(3.471)	(0.756)	(1.856)
Employment Characteristics					
(1-19 hours worked per week)					
20-34 hours worked per week	-0.106	0.957	0.005	-0.637	-2.587
	(0.0686)	(0.443)	(2.328)	(0.795)	(1.565)
35+ hours worked per week	-0.166*	0.904	0.942	-0.671	-3.650*
	(0.0719)	(0.327)	(2.617)	(0.750)	(1.689)
Social Resources					
Perceived social support	-0.191†	0.374***	2.845	-1.907***	-0.984
	(0.105)	(0.0844)	(1.682)	(0.383)	(0.919)
Quality of relationship with father (1-5)	-0.070***	0.796***	-0.137	-0.168	-0.791**

	(0.0130)	(0.0530)	(0.437)	(0.108)	(0.236)
Grandparent in household	0.067	1.029	4.221*	-0.385	-0.539
	(0.0645)	(0.268)	(1.860)	(0.432)	(1.145)
Number of adults in household	-0.0282	1.000	-0.760	0.404*	0.658†
	(0.0259)	(0.0622)	(0.782)	(0.151)	(0.374)
Constant	2.706***	0.491*	74.25***	11.87***	31.87***
	(0.400)	(0.206)	(8.013)	(2.201)	(5.358)
Observations	1193	1193	712	779	779
R-squared	0.055	0.073	0.085	0.103	0.082

Clustered robust standard errors in parentheses
*** p ≤ .001, ** p ≤ .01, * p ≤ .05, † p ≤ .10

increase in the likelihood of maternal depression, net of other covariates. Again, the magnitude of the influence of child care subsidy receipt was sizeable when compared to other significant predictors of maternal depression in the model. Only poor child health had a larger impact than subsidy receipt on maternal depression.

Of my three measures of child well-being, subsidy receipt only significantly predicted externalizing child behavior. The coefficient on child care subsidy receipt in model 5 shows a positive relationship between child care subsidies and externalizing child behavior, holding constant all other factors. In fact, subsidy receipt was the most significant predictor of externalizing child behavior and the largest in magnitude with subsidy receipt predicting a 25% of a standard deviation increase in externalizing child behavior. The coefficients on subsidy receipt in model 4 on child PPVT score and model 5 on internalizing child behavior failed to reach significance. The findings from OLS/logistic regression suggest that subsidy receipt has a negative influence on measures of maternal well-being and externalizing child behavior.

In addition to the five models estimated using a sample of subsidy recipients and non-recipients, I also ran the same five models using a larger analytic sample based on the alternate definition of subsidy receipt: whether the respondent reported receiving

money, a voucher, or a scholarship from any non-family source. The use of this alternate definition of subsidy receipt only increased the number of "subsidy recipients" by 92 and did not appreciably change the results of the analyses (results not shown), suggesting that most mothers receiving subsidies are well-informed about their participation in the child care subsidy system and are accurately captured by the traditional definition of subsidy receipt.

EXTENTIONS

Mediating Role of Maternal Well-Being Variables

Child care subsidies have the potential to influence child outcomes through changes in maternal mental health and well-being. As presented in Table 2, column 5, child care subsidies are associated with significant increases in externalizing child behavior. Therefore, I test whether parenting stress and maternal depression mediate the relationship between subsidy receipt and externalizing child behavior. Models 1 and 2 (Table 2) show that subsidy receipt is a strong predictor of both parenting stress and maternal depression. The same relationship holds between subsidies and maternal outcomes when the sample is restricted to the 779 respondents from the in-home survey. Two OLS regressions (not shown) also restricted to the smaller in-home sample demonstrate that both parenting stress and maternal depression are significant predictors of increased externalizing child behavior. Therefore, the initial requirements of the Barron and Kenny (1986) mediation framework were met.

Next, I include a measure of parenting stress within the model estimating the impact subsidy receipt on externalizing behavior. The inclusion of the parenting stress

Table 3. Results from OLS Regression Testing Mediating Variables

	(1) Externalizing Child Behavior (OLS)	(2) Externalizing Child Behavior (OLS)	(3) Externalizing Child Behavior (OLS)
Subsidy Receipt	2.298**	1.953*	2.079**
	(0.716)	(0.710)	(0.675)
Potential Mediating Variables			
Parenting Stress	-	3.328***	-
	-	(0.304)	-
Maternal Depression	-	-	3.525**
	-	-	(0.801)
Sociodemographic Characteristics			
Maternal age	-0.134†	-0.116†	-0.133
	(0.0659)	(0.0594)	(0.0709)
Black	-2.026†	-2.216*	-1.647†
	(1.003)	(0.922)	(0.940)
(Non-Hispanic, Non-Black)			
Hispanic	-1.085	-1.162	-0.106
	(1.269)	(1.115)	(0.793)
(Less than high school)			
High school/equivalent	-0.033	0.0752	-0.106
	(0.752)	(0.784)	(0.739)
Any postsecondary education	-1.437	-1.003	-1.564†
	(1.048)	(0.971)	(0.867)
Married/cohabiting	0.730	0.384	0.792
	(0.604)	(0.630)	(0.879)
Number of children	0.666*	0.556†	0.611**
	(0.290)	(0.273)	(0.273)
Mother's WAIS-R score (0-14)	0.141	0.0855	0.125
	(0.156)	(0.136)	(0.134)
Child Characteristics			
Male Child	0.980	0.686	0.982
	(0.772)	(0.786)	(0.660)
Child age at In-Home Survey	-0.263*	-0.272*	-0.239*
	(0.109)	(0.106)	(-0.103)
Low birth weight child	1.943†	2.059*	2.225*
	(0.946)	(0.848)	(1.034)
Poor child health	0.716	0.802	-0.377
	(1.856)	(1.978)	(2.173)
Employment Characteristics			
(1-19 hours worked per week)			
20-34 hours worked per week	-2.587	-1.753	-2.740†
	(1.565)	(1.600)	(1.556)
35+ hours worked per week	-3.650*	-2.906+	-3.767*
	(1.689)	(1.680)	(1.479)
Social Resources			
Perceived social support	-0.984	-0.570	-0.414
	(0.919)	(0.817)	(1.195)

Quality of relationship with father (1-5)	-0.791**	-0.603*	-0.616*
	(0.236)	(0.241)	(1.195)
Grandparent in household	-0.539	-0.792	-0.458
	(1.145)	(1.031)	(1.073)
Number of adults in household	0.658†	0.807+	0.668
	(0.374)	(0.409)	(0.458)
Constant	31.87***	23.42***	29.28**
	(5.358)	(5.905)	(4.808)
Observations	779	779	788
R-squared	0.082	0.134	0.103

Clustered Robust standard errors in parentheses
*** p < .001, ** p < .01, * p < .05, † p < .10

measure does not substantially alter the coefficient on subsidy receipt. The magnitude of the coefficient on subsidy receipt is attenuated slightly, falling from 2.298 to 1.953, and the significance on the coefficient drops from $p < .01$ to $p < .05$ (See Table 3, column 2). Nevertheless, the impact of subsidy receipt on externalizing child behavior remains sizeable despite the inclusion of parenting stress in the model. As such, parenting stress may partially mediate the relationship between subsidy receipt and child externalizing behavior, but does not explain a large part of the variation in externalizing child behavior by subsidy receipt.

Next, I include a measure of maternal depression in the model on externalizing behavior. The addition of maternal depression to the model does not change the significance of the coefficient on subsidy receipt and only attenuates the coefficient slightly (see Table 3, column 3). Maternal depression does not appear to mediate the relationship between subsidy receipt and externalizing behavior.

Variation by Subgroup

While regression results indicate differences in maternal and child well-being for subsidy recipients compared to eligible non-recipients, these relationships may operate differently for different subpopulations of the sample. To investigate if the main results vary by subgroup, I interact subsidy receipt with an indicator of child gender, indicators of maternal race, an indicator for married/cohabiting mothers, an indicator of deep poverty, and an indicator for mother's level of education. The interaction terms do not show meaningful subgroup differences by child gender, single- versus two-parent families, nor level of poverty (results not shown).

However, interactions between subsidy receipt and maternal race provide interesting results (see Table 4). Across the five family well-being outcomes, subsidy receipt predicts less negative family well-being outcomes for Hispanics. While subsidy receipt increases the likelihood of depression by 130% for the overall sample, Hispanic mothers receiving subsidies only have a 23% increased likelihood of depression ($p < .10$). Similarly, there is suggestive evidence that Hispanic children receiving child care subsidies have higher PPVT scores than Hispanic children not receiving subsidies (Table 4, column 3), whereas in the main model subsidy receipt did not have any impact on child cognitive functioning. Similarly, interaction terms expose a relationship between child care subsidies and child internalizing behavior by maternal race that did not exist in the main model. With the inclusion of interaction terms for child care subsidy receipt and maternal race, child care subsidy receipt significantly predicts a 1.943 increase in child internalizing behavior scores for non-Hispanic, non-Blacks and Blacks. However, for Hispanics, subsidy receipt only predicts a .074 increase in child internalizing behavior

Table 4. Results from OLS/Logistic Regressions with Subsidy Receipt and Race Interactions

	(1) Parenting Stress (OLS)	(2) Maternal Depression (Logistic)	(3) Child PPVT Test Score (OLS)	(4) Internalizing Child Behavior (OLS)	(5) Externalizing Child Behavior (OLS)
Subsidy Receipt	0.200*	2.294†	-3.384	1.943*	3.668*
	(0.0769)	(1.006)	(3.432)	(0.867)	(1.360)
Sociodemographic Characteristics					
Subsidy*Black	-0.0796	0.825	2.489	-1.725	-1.685
	(0.0973)	(0.355)	(3.390)	(1.003)	(1.893)
Subsidy*Hispanic	-0.0989	0.321†	6.136†	-1.869†	-1.268
	(0.127)	(0.193)	(3.476)	(0.949)	(1.814)
(Subsidy*non-Hispanic, non-Black)					
Black	0.0406	0.606*	-7.988**	0.598	-1.410
	(0.0641)	(0.134)	(2.509)	(0.535)	(1.523)
Hispanic	0.0269	0.615*	-8.484**	0.940	-0.658
	(0.0574)	(0.134)	(2.603)	(0.590)	(1.658)
(Non-Hispanic, non-Black)					
Maternal age	-0.000491	0.997	0.0766	-0.0388†	-0.134†
	(0.00537)	(0.0186)	(0.117)	(0.0214)	(0.0649)
(Less than high school)					
High school/equivalent	-0.0905†	1.159	0.0687	-0.576*	-0.0519
	(0.0456)	(0.241)	(1.108)	(0.233)	(0.753)
Any postsecondary education	-0.114*	1.564*	3.142*	-1.552***	-1.452
	(0.0423)	(0.310)	(1.225)	(0.396)	(1.060)
Married/cohabiting	0.0554	0.843	0.0781	6.73e-05	0.735
	(0.0422)	(0.186)	(1.411)	(0.329)	(0.606)
Number of children	0.0267	1.024	-0.184	0.182†	0.676*
	(0.0212)	(0.0726)	(0.283)	(0.104)	(0.287)
Mother's WAIS-R score (0-14)	0.00577	1.021	0.542†	-0.147*	0.141
	(0.00662)	(0.0346)	(0.301)	(0.0561)	(0.159)
Child Characteristics					
Male Child	0.0632†	1.067	-1.882	0.481	0.973
	(0.0349)	(0.234)	(1.157)	(0.312)	(0.775)
Child age at Year-3 Survey (in months)	-0.00138	0.997			
	(0.00869)	(0.0278)			
Child age at In-Home Survey (in months)			0.247	-0.0642†	-0.264*
			(0.204)	(0.0313)	(0.108)
Low birth weight child	0.0167	0.838	-3.780†	0.513†	1.964†
	(0.0659)	(0.287)	(1.995)	(0.296)	(0.962)
Poor child health	-0.0381	3.163*	0.0190	0.712	0.579
	(0.127)	(1.832)	(3.644)	(0.751)	(1.746)
Employment Characteristics					
(1-19 hours worked per week)					

20-34 hours worked per week	-0.108	0.953	0.265	-0.807	-2.740†
	(0.0681)	(0.441)	(2.253)	(0.795)	(1.507)
35+ hours worked per week	-0.168*	0.906	1.163	-0.811	-3.764*
	(0.0708)	(0.333)	(2.606)	(0.746)	(1.622)
Social Resources					
Perceived social support	-0.192†	0.352***	3.005†	-1.894***	-0.928
	(0.105)	(0.0765)	(1.563)	(0.369)	(0.872)
Quality of relationship with father (1-5)	-0.0699***	0.799***	-0.137	-0.163	-0.787**
	(0.0132)	(0.0536)	(0.439)	(0.109)	(0.237)
Grandparent in household	0.0703	1.075	4.180*	-0.349	-0.503
	(0.0642)	(0.281)	(1.898)	(0.433)	(1.133)
Number of adults in Household	-0.0288	0.992	-0.781	0.404*	0.660†
	(0.0265)	(0.0644)	(0.778)	(0.154)	(0.376)
Constant	2.686***	0.474*	75.51***	11.39***	31.46***
	(0.383)	(0.201)	(8.038)	(2.207)	(5.437)
Observations	1193	1193	712	779	779
R-squared	0.055	0.080	0.089	0.109	0.082

Clustered Robust standard errors in parentheses
*** p < .001, ** p < .01, * p < .05, † p < .10

scores (p <.10), again indicating that Hispanic families do not experience the negative influence of subsidy receipt as strongly as do families of other races.

The influence of subsidy receipt on family well-being by mother's education level produces significant but inconsistent results (see Table 5). For example, mothers who have completed a high school degree or higher and are receiving subsidies have a significantly greater likelihood of experiencing depression than mothers who have not completed high school and are receiving a subsidy. Whereas mothers with higher levels of education receiving subsidies are worse off in terms of their likelihood for depression, the children of these mothers have significantly lower internalizing behavior scores. Subsidy receipt predicts a 1.26 increase in internalizing child behavior scores for mothers with less than a high school degree but a .089 decrease in internalizing child behavior scores for mothers with a high school degree or greater.

Table 5. Results from OLS/Logistic Regressions by with Subsidy Receipt and Education Interactions

	(1) Parenting Stress (OLS)	(2) Maternal Depression (Logistic)	(3) Child PPVT Test Score (OLS)	(4) Internalizing Child Behavior (OLS)	(5) Externalizing Child Behavior (OLS)
Subsidy Receipt	0.0782	1.682	1.682	1.260**	3.181*
	(0.0658)	(2.129)	(2.129)	(0.416)	(1.174)
Sociodemographic Characteristics					
Subsidy*High school degree or higher	0.0805	-3.481	-3.481	-1.349*	-1.462
	(0.0740)	(2.683)	(2.683)	(0.639)	(1.445)
High school degree or higher	-0.132***	2.824	2.824	-0.357	0.0358
	(0.0330)	(1.763)	(1.763)	(0.308)	(0.860)
Maternal age	-0.000795	0.125	0.125	-0.0506*	-0.151*
	(0.00539)	(0.125)	(0.125)	(0.0235)	(0.0665)
Black	0.0172	-7.568**	-7.568**	-0.00468	-1.949+
	(0.0459)	(2.036)	(2.036)	(0.356)	(0.984)
(Non-Hispanic, Non-Black)					
Hispanic	-0.00390	-6.573**	-6.573**	0.302	-1.109
	(0.0415)	(1.941)	(1.941)	(0.511)	(1.289)
Married/cohabiting	0.0546	0.130	0.130	0.00636	0.775
	(0.0414)	(1.419)	(1.419)	(0.340)	(0.615)
Number of children	0.0264	-0.238	-0.238	0.214+	0.720*
	(0.0217)	(0.287)	(0.287)	(0.105)	(0.290)
Mother's WAIS-R score (0-14)	0.00496	0.664*	0.664*	-0.181**	0.105
	(0.00659)	(0.281)	(0.281)	(0.0563)	(0.160)
Child Characteristics					
Male Child	0.0636+	-2.045	-2.045	0.525	1.040
	(0.0353)	(1.224)	(1.224)	(0.306)	(0.783)
Child age at Year-3 Survey (in months)	-0.00108				
	(0.00834)				
Child age at In-Home Survey (in months)		0.240	0.240	-0.0610+	-0.257*
		(0.215)	(0.215)	(0.0314)	(0.108)
Low birth weight child	0.0179	-3.667+	-3.667+	0.517+	2.034*
	(0.0651)	(1.964)	(1.964)	(0.279)	(0.913)
Poor child health	-0.0322	-0.376	-0.376	0.873	0.724
	(0.126)	(3.541)	(3.541)	(0.752)	(1.836)
Employment Characteristics					
(1-19 hours worked per week)					
20-34 hours worked per week	-0.106	0.0411	0.0411	-0.496	-2.459
	(0.0681)	(2.430)	(2.430)	(0.789)	(1.603)
35† hours worked per week	-0.167*	0.995	0.995	-0.576	-3.602*
	(0.0731)	(2.705)	(2.705)	(0.751)	(1.700)
Social Resources					
Perceived social support	-0.193+	2.912+	2.912+	-1.890***	-0.970
	(0.105)	(1.598)	(1.598)	(0.392)	(0.924)

Quality of relationship with father (1-5)	-0.0711***	-0.0724	-0.0724	-0.155	-0.785**
	(0.0128)	(0.446)	(0.446)	(0.104)	(0.236)
Grandparent in household	0.0644	4.572*	4.572*	-0.391	-0.536
	(0.0654)	(1.763)	(1.763)	(0.441)	(1.133)
Number of adults in household	-0.0274	-0.948	-0.948	0.428*	0.682+
	(0.0259)	(0.797)	(0.797)	(0.159)	(0.383)
Constant	2.731***	72.65***	72.65***	11.48***	31.51***
	(0.389)	(8.311)	(8.311)	(2.134)	(5.416)
Observations	1193	712	712	779	779
R-squared	0.056	0.083	0.083	0.101	0.080

Clustered Robust standard errors in parentheses
*** p ≤ .001, ** p ≤ .01, * p ≤ .05, † p ≤ .10

Instrumental Variable Analysis

While the OLS/logistic regression results demonstrate that child care subsidy receipt is associated with decreased family well-being, the results may be biased to the extent that mothers who seek out subsidies possess certain unobservable characteristics that also influence family well-being. To address this potential bias, I use a simulated instrument technique to estimate the influence of child care subsidy receipt on family well-being outcomes.

The results of the first stage equation (not shown) reveal that the simulated fraction eligible for subsidies by state is a weak instrument, as the instrument does not significantly predict subsidy receipt in the first state for any of the five models. The results from the second stage equation are presented in Table 6. Not surprisingly, all five models fail to identify a relationship between child care subsidy receipt and maternal and child well-being. While the null IV results cast doubt on the relationship between subsidies and family well-being demonstrated by the OLS/logistic regression models, the

Table 6. Results from 2SLS Regression Instrumenting for Subsidy Receipt

	(1) Parenting Stress (2SLS)	(2) Maternal Depression (2SLS)	(3) Child PPVT Test Score (2SLS)	(4) Internalizing Child Behavior (2SLS)	(5) Externalizing Child Behavior (2SLS)
Instrumented Subsidy Receipt	-3.074	-.0394	-908.3	61.26	-102.8
	(23.42)	(6.003)	(22822)	(269.2)	(1049)
Sociodemographic Characteristics					
Maternal age	-0.0201	-0.0058	-6.538	0.453	-0.882
	(0.175)	(0.0448)	(166.6)	(2.065)	(8.271)
Black	.0256	0.0025	91.33	-6.273	9.970
	(2.238)	(0.571)	(2498)	(29.23)	(114.3)
(Non-Hispanic, Non-Black)					
Hispanic	-0.0097	-0.0734	16.81	-0.357	0.762
	(0.214)	(0.0626)	(653.3)	(3.782)	(22.16)
(Less than high school)					
High school/equivalent	0.0159	-0.0192	25.19	-2.470	2.691
	(0.665)	(0.167)	(670.6)	(7.963)	(32.86)
Any postsecondary education	0.00995	0.0043	9.414	-2.307	0.304
	(0.402)	(0.0999)	(108.4)	(2.760)	(19.30)
Married/cohabiting	-0.0047	0.0090	-11.40	0.881	-0.366
	(0.0924)	(0.0305)	(244.7)	(2.178)	(12.14)
Number of children	0.0845	0.0157	7.361	-0.609	1.457
	(0.371)	(0.0975)	(203.4)	(3.094)	(12.33)
Mother's WAIS-R score (0-14)	-0.00502	0.0052	2.253	-0.228	-0.0017
	(0.0114)	(0.0039)	(40.86)	(0.348)	(0.301)
Child Characteristics					
Male Child	0.109	0.00361	42.99	-2.012	4.931
	(0.550)	(0.136)	(1131)	(10.14)	(40.48)
Child age at Year-3 Survey	-0.0059	-0.0011			
	(0.0137)	(0.0046)			
Child age at In-Home Survey			1.986	-0.0033	-0.230
			(41.91)	(0.146)	(0.256)
Low birth weight child	-0.104	-0.0163	-16.57	0.135	0.220
	(0.508)	(0.123)	(300.1)	(1.143)	(1.934)
Poor child health	0.0898	0.208†	25.78	-2.422	9.076
	(0.373)	(0.123)	(629.3)	(18.10)	(67.35)
Employment Characteristics					
(1-19 hours worked per week)					
20-34 hours worked per week	0.0238	0.0157	54.75	-2.962	5.086
	(0.973)	(0.245)	(1354)	(13.90)	(60.00)
35+ hours worked per week	-0.0780	0.0022	25.68	-1.743	2.344
	(0.375)	(0.0932)	(360.1)	(7.151)	(35.73)
Social Resources					
Perceived social support	-0.197	-0.191	50.05	-4.838	4.163
	(0.504)	(0.140)	(1206)	(14.38)	(58.59)
Quality of relationship with father (1-5)	-0.136	-0.0540	-21.57	1.303	-3.286

	(0.637)	(0.161)	(551.7)	(6.619)	(24.42)
Grandparent in household	0.110	0.0199	19.26	-0.533	0.750
	(0.454)	(0.100)	(427.2)	(4.627)	(7.578)
Number of adults in household	-0.110	-0.0072	-26.33	1.743	-2.822
	(0.690)	(0.175)	(657.2)	(7.974)	(29.65)
Constant	3.968	0.744	263.1	-9.150	61.32
	(8.441)	(2.151)	(4801)	(84.08)	(303.0)
Observations	3436	3436	1985	2288	2283
R-squared	--	--	--	--	--

Clustered robust standard errors in parentheses
*** p < .001, ** p< .01, * p < .05, † p < .10

weak instrument in the first stage suggests that more work needs to be done to identify an effective instrument for subsidy receipt and tease out any causal relationships.

Sensitivity Analyses

By determining subsidy eligibility in the current analysis according to the family-of-three income eligibility threshold, there is the possibility that smaller families (for whom the threshold would be lower) were mistakenly included as eligible for child care subsidies within the analytical sample. To evaluate whether the application of the family-of-three income cutoff to the entire sample affects the results, I conduct sensitivity analyses. I estimate the five main OLS/logistic regressions restricting my sample to only families of three, for whom the income eligibility threshold most directly applies. The results of the OLS/logistic regression models on the family-of-three sample are quite similar to the results for the overall sample, suggesting that regression results are not sensitive to the application of the family-of-three cutoff to the overall sample.

In addition, in order to evaluate whether the inclusion of the 29% of subsidy recipients who do not report work in the past week changes the results of the analysis, I estimate the five main OLS/logistic regressions restricting my sample to only subsidy

recipients who report work and the comparison group. Omitting subsidy recipients who do not report work in the prior week (and are likely maintaining their subsidies as they search for work) from the sample does not have any effect on the overall findings of the analysis. This suggests that the inclusion of the entire subsidy sample, even those who did not report work, does not bias the results.

DISCUSSION

In the present study, I sought to examine what influence, in any, child care subsidies had, above and beyond maternal employment, on mothers' socioemotional well-being and children's cognitive functioning and behavior. By holding employment constant and comparing those mothers receiving subsidies to those eligible, not receiving, subsidies, the results of my multivariate regression analysis showed that subsidy use was associated with poorer maternal well-being and increased externalizing child behavior, net of an extensive set of covariates. In addition, I investigated whether changes in maternal well-being associated with subsidy receipt explained the relationship between child care subsidy receipt and child behavior. Mediation analyses provided suggestive evidence that parenting stress might serve as a partial pathway through which subsidies affect child externalizing behavior but weak evidence for the mediating role of maternal depression. Finally, I also explored whether the relationship between child care subsidies and family well-being outcomes varied for different subpopulations. Subgroup analyses revealed a consistent pattern that subsidy receipt was less detrimental for family well-being outcomes for Hispanics than for families of other racial backgrounds. Inconsistent differences were also found for mothers of different levels of education receiving subsidies.

The overall results of this study are largely consistent with the more recent literature focusing on the role that child care subsidies play in lives of mothers and children. Previous research demonstrates that child care subsidy use is associated with poorer maternal mental health outcomes and poorer child cognitive and behavioral outcomes (Baker et al., 2008; Herbst & Tekin, 2012; 2010). The current study's findings that subsidy use was associated with increased parenting stress, increased likelihood of maternal depression and higher levels of externalizing child behavior, holding employment constant, add to the growing body of literature and suggest that subsidy receipt in and of itself may account for some of these negative outcomes.

Although, Herbst and Tekin (2012) suggest that changes in maternal well-being due to subsidy receipt may explain the negative role subsidies play in child development, I found only suggestive evidence for the mediating role of parenting stress and weak evidence for maternal depression as a mechanism. While a sizeable body of literature demonstrates the link between parental well-being and children's cognitive and behavioral outcomes, the results of this study suggest that other pathways are at work when it comes to the influence of child care subsidies on child behavior. Future research should test other potential mechanisms driving these relationships in order to better understand exactly what factors associated with subsidy receipt lead to worse outcomes for families.

Finally, literature on variations in child care preferences by race provides a potential explanation as to why child care subsidy receipt may have had less of a negative influence on Hispanic families. First, research shows that Hispanic families are most likely to use informal, kin and kith care, Blacks are most likely to use center-based care,

and Whites use both similarly (Capizzano et al, 2006). Second, Hispanic families' preference for informal care is often used to explain why Hispanic families are less likely to use child care subsidies because subsidies are most easily applied to cover center-based child care (Fuller, Holloway, & Liang, 1996; Holloway & Fuller, 1996). Therefore, subsidy use is more likely to result in a transition from kin or kith care to center-based care for Hispanic families than it is for Black or White families. This transition from informal to formal, center-based care through the use of child care subsidies may increase the quality of child care (Ryan et al., 2011). As such, it may be that Hispanics families using child care subsidies realize an increase in child care quality more so than families of other races who may have already been using center-based care before receiving the subsidy, which would explain why subsidies are not as negatively associated with family well-being outcomes for Hispanics. Future research should directly investigate whether changes in the type of child care arrangements used by Hispanic families due to subsidy receipt explain the association between child care subsidies and differential family well-being outcomes for Hispanics.

When interpreting the overall findings of this study, it important to consider the limitations of the analysis. One concern is how accurately the subsidy-eligible comparison group used in the analytic subsample reflects the true subsidy-eligible population. Due to the use of the family-of-three income eligibility cutoff for families of all sizes, it is likely that some smaller families who were classified as eligible in this analysis were not truly eligible. Similarly, it is likely that larger families who would have been eligible under a higher, family size-adjusted income threshold were not included in the analytic subsample. However, sensitivity analyses demonstrate that even when the

analysis is estimated only using a sample of families of the three, the results are consistent.

A related issue pertains to the employment outcome used to restrict the sample to only employed mothers. The Fragile Families study does not have a variable that asks about long-term employment. Therefore, I measured employment based on whether mothers reported having a job in the week prior to the survey. It is possible that some mothers in my sample may have been employed in the week prior to the survey, but unemployed for the entirety of the prior year. These mothers may experience different levels of parenting stress and depression and their children increased behavioral problems due to irregular maternal employment that could not be accounted for in this analysis. Comparing employment responses at year three to responses at year one reveals that 59% of mothers who reported work in the last week at the year three follow-up also reported work in the last week at the year one follow-up. This suggests that the employment measure captures some level of steady employment for the majority of mothers in the analytic sample.

Finally, without experimental data, it is possible that mothers included in the comparison group may be systematically different than those receiving subsidies in ways not controlled for in the analysis, which would bias the results. Indeed, instrumental variable analyses failed to produce significant results for the effect of subsidy receipt on family well-being, although the negative relationship between eligibility and subsidy receipt in the first stage relationship indicates a potential weakness in the instrument. Despite the null IV results, the extensive set of covariates included in the regression models demonstrates the strength of the results found using regression analyses.

CONCLUSIONS

In conclusion, the findings suggest that while child care subsidies have been shown to increase maternal employment and improve economic outcomes for mothers, they may not have the same positive benefits for maternal and child well-being. Moreover, although previous studies examining subsidy receipt and family well-being have failed to disentangle the effects of subsidy receipt and maternal employment, in the current study I hold employment constant and find that subsidy receipt alone predicts decreased well-being outcomes. In addition, the influence of subsidies on child well-being is not explained by changes in maternal mental health associated with subsidy receipt. Lastly, the evidence provided indicates that subsidies have less of a negative influence on Hispanic families, perhaps because they may facilitate a switch from informal to formal, center-based child care.

Disentangling the role of child care subsidies from the influence of maternal employment is important because each mechanism has different policy implications. As the findings in this study suggest, child care subsidy use may have negative consequences for family well-being above and beyond maternal employment. Further, because the relationship between subsidies and child behavioral problems is not explained by changes in maternal mental health this indicates that another mechanism is at play. Future research should aim to identify what mechanisms explain the influence of subsidy receipt on both maternal and child outcomes in order to effectively hone in on policy levers to promote family well-being among subsidy recipients. For example, if subsidies fail to allow families already using center-based care to access better quality center-based care, as Ryan et al. (2011) suggest, and as a result lead to increased parenting stress, maternal

depression and behavioral problems, then future policies should aim to increase quality child care options for subsidy recipients. Although the current analysis cannot identify which policy changes are necessary, the findings emphasize the need for an increased focus on promoting family well-being for low-income families attempting to transition off of welfare or maintain stable employment through the use of child care subsidies.

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