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Maternal Employment, Child Care Choices and Depression

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Abstract

Mothers of young children experience high rates of depression, and some research suggests that "stay-at-home" mothers are especially at risk. This paper explores the connections between employed and nonemployed mothers' reasons for choosing child care and their risk of depression, a topic that has received little previous attention. Using the NICHD Study of Early Child Care, we find that nonemployed mothers are no more likely than employed mothers to experience depression symptoms once we adjust for a rich set of measured controls and fixed effects. But, among both employed and nonemployed mothers, those who chose a child care arrangement because they believed it to be of high quality were least depressed. These findings suggest that when mothers can secure care that they select because of its quality they may be better able to benefit from the advantages of the employment role and avoid the disadvantages of a full-time caregiving role.

A classic finding in the literature on social roles and mental health is the greater depression of full time homemakers than employed women. Based on role theory, scholars expected that homemakers would lack the benefits of multiple roles (including the employment role) and would suffer from social isolation (Gove 1972). Women's labor force participation rates have increased dramatically since this literature began, including employment rates of mothers with young children. Today, almost 80 percent of mothers with children under age 18 are employed, and employment rates and annual hours worked rose rapidly between 1970 and 2000 for mothers with children under age six as well as for mothers of older children (Bianchi & Raley, 2006). More recent studies find that parenthood, unlike employment and marriage, does not confer mental health benefits (McLanahan and Adams, 1987) and that mothers benefit less from the employment role, on average, than do childless women (Schnittker 2007). A small set of recent studies also documents that among employed mothers, characteristics of child care help explain variation in depression symptoms.

We bring together these various lines of literature in the current study. We consider mothers' employment status and regular child care arrangements simultaneously. Among mothers who use child care, we distinguish those who report choosing it because of its quality from those who choose it for other reasons such as its low cost or convenience. For "stay at home" mothers, we expect that use of quality child care could provide a break from exclusive caregiving and allow mothers to supplement their own caregiving strengths and weaknesses (e.g., by accessing the social and academic benefits of a formal, group care setting), thereby reducing some of the strains of parenthood. As far as we are aware, ours is the first study examining how nonemployed mothers' use of child care relates to their mental health. For most employed mothers, we expect that child care is an essential feature of their lives. Good child care has the potential to help mothers access the benefits of an employment role for their mental health. But, when parents settle on less than ideal care arrangements, any benefits of employment may be offset by problems and worries about their care arrangements.

Our paper also improves on the prior primarily cross-sectional literature by taking advantage of longitudinal data to adjust for selection bias. In examining the consequences of the employment role, for all women and for mothers, it is important to consider the potential for selective sorting into roles. To the extent that women of varying levels of mental health (or with varying risk factors for mental health) are more likely to be employed, or not, then associations between these roles and depression may reflect these selective differences rather than true causal attributes of the roles. The same may be said for women who choose care for quality and other reasons. Our models adjust for a rich array of measured characteristics as well as statistically adjust for unmeasured but stable biasing factors.

In sum, we draw on Phase I of the NICHD Study of Early Child Care and Youth Development, which followed children and their families from birth to age three, to consider the following research questions:

(1) Do we see the well-established association between women's employment and lower depression in this recent study of mothers of young children?

(2) Does this association hold when we add our extensive measured controls and fixed effects?

(3) Are women able to accrue more of the benefits of employment and avoid more of the isolation of full-time homemaking when they use child care, especially when it is chosen for quality reasons?

Literature Review

Examining how maternal employment and child care arrangements associate with mental health is important, given the uneven distribution of symptoms and consequences of depression across society. Rates are between one and a half to three times higher for women as for men, with studies estimating that as many as one in six women experience an episode of major depression in their lifetime (Goodman, 2007). Maternal depression can have negative consequences for family members, including children. Children whose mothers report

symptoms of depression are negatively affected across multiple domains, including cognition and interpersonal skills and their own affect, with at least part of this association operating through less sensitive and harsher parenting by depressed mothers (Goodman, 2007; NICHD, 1999). The timing of maternal depression may be important, since young children are especially dependent on their primary caregivers' nurturance and support.

Maternal employment and depression. One early line of research that attempted to explain these sex differences in depression considered women's roles as housewives. One of the major initiators of this line was Gove (1972) who hypothesized that being a homemaker might be associated with poorer mental health for a number of reasons. Most important for our purposes were expectations that the homemaker role might be isolating and that the parenting role might be frustrating. Importantly, Gove (1972) suggested that women who were exclusive homemakers would lack a second employment role where they might make up for some of the dissatisfactions in their homemaker role. Men, in contrast, might find solace at their job if their home life was dissatisfying.

Although a key element of this social role's argument is the employment status of women, it is also connected to their marital status, considering full-time homemakers were typically married women with an employed spouse. Much of the subsequent literature has focused on marital status, although a smaller subset of studies has unpackaged the ideas about the homemaker role. For example, Seal, Wright and Sheley (1993) find that among married women, those with preschool-aged children were less satisfied with life than those without preschool age children; This finding applied to both housewives and employed women. Riley and Keith (2003) found that married women working in professional positions had fewer depressive symptoms than did homemakers, but that this differential was largely explained by differences in their economic circumstances. Shehan, Burg and Rexroat (1986) found that housewives who had larger social networks were less depressed than those with smaller social networks. As far as we are aware, however, no study has examined whether and how mothers

who do not work in the paid labor force might utilize child care to reduce the potential isolation and stress of full-time caregiving.

Child care arrangements and depression. There is also a small set of studies documenting that among employed mothers, characteristics of child care contribute to variation in depression risk. A small set of studies has directly examined the association between characteristics of child care and maternal depression (Bird 1997; Fagan 1994; Hughes and Galinsky 1994; Kontos et al. 1995; Press, Fagan and Bernd 2006; Ross and Mirowsky 1988; Vandell, Hyde, Plant and Essex 1997). Two nationally-representative telephone surveys found that mother's ease of arranging regular care for the child while she worked were associated with less maternal depression (Bird 1997; Ross and Mirowsky 1988). In three additional studies, drawn from communities or employers, mothers reported more symptoms of depression when their usual arrangement fell through or when problems with child care interfered with work (Hughes and Galinsky 1994; Kontos et al. 1995; Press, Fagan, and Bernd 2006). And, mothers in one of these community-based studies and a separate clinic-based study were found to be less depressed when they used their preferred type of care and when they reported being more satisfied with their arrangement (Press, Fagan and Bernd 2006; Vandell et al. 1997). Ross and Mirowsky (1988) also found that mothers who used family caregivers tended to report less depression. These findings suggest that the ease of arranging care, satisfaction with the type of care and the particular care setting are associated with parents' mental health.

Although these initial studies cited lay important groundwork regarding likely associations between child care and maternal depression, all report cross-sectional estimates and could examine only a limited number of mechanisms through which child care might influence maternal depression. They also vary greatly in their sample recruitment strategies and ages of the children studied. None has considered the potential benefits to nonemployed mothers of using care arrangements that they perceive to be high quality. We contribute to this literature by examining the association between child care use and depression symptoms among mothers who

are in the labor force and those who stay at home full time, distinguishing care selected because of its quality and care selected for other reasons.

Method

Data

The National Institute of Child Health and Human Development Study of Early Child Care is a multi-site, prospective longitudinal study of 1,364 children and their families (NICHD Early Child Care Research Network, 1999a). The study began in 1991 when newborns were sampled from hospital birth records at 10 sites in 9 states (Arkansas, California, Kansas, Massachusetts, North Carolina, Pennsylvania, Virginia, Washington, and Wisconsin). The enrollment process had three stages: (a) a hospital screening within 48 hours of birth, (b) a 2-week phone call with a subset of screened eligibles, and (c) a 1-month interview with contacted families who agreed to enroll in the study (NICHD Early Child Care Research Network, 1999a). Although not based on a nationally-representative design, the SECC sample is similar to the U.S. population on a number of characteristics (Gordon, Kaestner, and Korenman, 2007). We focus on the first phase of the study, which followed the children to age three. A baseline in-person interview was conducted at 1-month followed by major in-person interviews at 6-months, 15-months, 24-months, and 36-months old. Attrition was modest across waves. At 3 months 1,331 of the 1,364 children (98%) were re-interviewed. By 36 months, 1,234 children (90%) remained. Item non-response was also moderate. Our final paper will compare results from two strategies for recovering item-level missing data: (a) simple mean imputation and (b) multiple imputation using the *ice* and *mim* commands in Stata (Acock, 2005; Royston, 2005). The current version of the paper reports only the results based on simple mean imputation.

Measures

Descriptive statistics for key measures are found in the Appendix.

Maternal Depression

Maternal depression was assessed using the Center for Epidemiological Studies Depression scale (CES-D; Radloff, 1977). Respondents reported the frequency of experiencing 20 symptoms on a four-level rating scale (*0*=less than 1 day a week, *1*=1-2 days a week, *2*=3-4 days a week, *3*=5-7 days a week). Example items include *I felt sad*, *I had crying spells*, and *My sleep was restless*. The simple sum can range from 0 to 60. A score 16 or above has been used as a screen for possibly clinically significant depressive symptoms (Beeghly et al. 2002, NICHD, 1999). Prior research indicates that the scale has "high internal consistency, acceptable test re-test stability, good concurrent and construct validity" (Roberts, 1980, p. 2) and correlates highly with other measures of depression (Radloff, 1977; Weissman et. al. 1977).

Central Employment and Child Care Categories

Each mother reported her current employment status and whether anyone other than herself was caring for the child on a regular basis. At each wave, mothers who were currently using child care reported the most important reason for choosing each of up to three current child care arrangements. On average over 95% percent of the time children spent in non-maternal care, took place in their primary arrangement (used for the most hours), and we indicated whether the mother reported choosing this setting because of her perceptions of the *quality* of the provider, environment, or program versus for *accessibility* reasons (cost, location, or availability), due to *preference* for the selected kind of care, or for *other* reasons. Our results showed that the only significant contrast on maternal depression among these reasons for choosing a provider was between choosing for quality and choosing for any other reason. Thus, we created a six category variable to capture the mothers' employment and child care statuses:

(1) Not employed and not using child care

(2) Not employed and did not choose care for a quality reason

(3) Not employed and chose care for a quality reason

(4) Employed and not using child care

(5) Employed and did not choose care for a quality reason

(6) Employed and chose care for a quality reason

Our regression models, reported below, include dummy indicators of the first five categories with employed mothers who chose care for a quality reason as the reference category.

Controls

Type of child care currently used. Mothers provided information about up to three child care arrangements used for the target child. The arrangement used for the most hours was coded into four types: care in a private home by (1) *fathers*, (2) *relatives* (siblings, grandparents or other relatives), (3) or non-relatives (friends, neighbors or other unrelated adults providing care in the child's home or in their own home, including family day care), and (4) *child care centers* (care in centers, nurseries, and other locations). *Match of child care type used with ideal type of care.* At the one-month interview, mothers responded to the question: "*If you could choose any kind of child care, other than caring for your baby yourself, what would you choose*?" Mothers could report up to three ideal types of care, although most mothers (78%) reported only one ideal type of child care. The first type of ideal care that the mother reported was coded into the same categories as type of care used. For each wave, a dummy variable indicated whether the type of care currently used for the most hours matched the type reported as ideal at one month.

Perceptions of child care. Mothers reported whether they would recommend their child care arrangements to a friend. Because few mothers reported that they would have doubts or advise against a friend using the care setting, a single dummy variable indicated whether the mother would *strongly recommend* the arrangement versus *recommend, have doubts about recommending* or *advise against*. Two additional items measured mothers' perception of child care as *good* and *affordable*. The former is measured by the item '*I am working right now because I have good child care.'* The latter is a scale combined from the two items of '*I am working right now because I have child care I can afford'* and '*I am working right now because I earn enough to make it worthwhile even after paying for child care.'* Mothers who were not

currently working responded to similar questions with reverse wording (e.g., *not working now because I do not have*…)

At each interview, the mother reported about work absences that were associated with child care. Missing work due to child care problems captured whether the mother reported that she or her spouse/partner had stayed home from work because the child care provider was not available, including the provider being ill, the provider's family member being ill or the setting being closed for a scheduled or unscheduled reason. Separate dummy variables indicated whether the child had been sick on a work day since the last interview and (a) the mother had to stay home with the baby or take baby to work (b) the mother was able to use her regular child care or (c) the mother used other arrangements (including partner, relative, friend, hired sitter, other child or arrangement for sick kids) versus (d) the child had not been sick. We also include a dummy indicator of whether the mother used multiple arrangements and the percentage of time spent in the primary arrangement.

A final item measuring the strain connected to child care was taken from the Work-Family Strains and Gains Scale (Marshall and Barnett, 1993): '*Thinking about your children interferes with your performance at work.'* The item ranged from *1*=Not at all true to *4*=Very true. The remaining Work-Family Strains and Gains Scale items included 13 strains (e.g. *working leaves you with too little time to be the kind parent you want to be; during work time you feel resentful not spending time with your family*) and 8 benefits (e.g. *having work and family responsibilities challenges you to be the best you can; working makes you a better parent*). The scale for each item ranged from *1*= Not at all true to *4*= Very true. Following the standard scoring procedures, the averaged gains item were subtracted from averaged strain items and the scale had possible range from -3 to 3.

Perceptions of parenting. We sum parent role salience related items from three available subscales of the *Parental Stress Index*: Attachment, Restrictions of Role and Sense of Competence (Abidin, 1982) with the resulting score ranging from 25 to 125. Additionally, we

use a 20-item revised version of *Parental Locus of Control Scale* that measures a total internal vs. external locus of control, parental efficacy, parental responsibility, child control of parent's life, parental belief in fate/chance, and parental control of the child behavior (Campis, Lyman and Prentice-Dunn, 1986). The scale ranges from 20 to 100. Finally, the *Parenting Experience* measure was adapted from Marshall and Barnett (1991) Parent-Role Scale and consists of 10 concern and 10 reward items. Each item ranges from *1*=Not at all a concern to *4*=Extreme concern. The standard scale score's theoretical range is from -3 to 3, with higher scores indicating higher parenting stress.

Employment characteristics. Measures of mother's employment include her current work hours from up to four jobs, her occupation and work shifts, and the flexibility of her hours. An adaptation of the *Job Role Quality Scale* captured the mother's concerns about lack of advancement opportunities, lack of appreciation and respect, too much to do, lack of support, lower than deserved earnings as well as rewards, including recognition, important work, team work, and sense of accomplishment (Marshall and Barnett, 1993). Following the standard scoring procedures, the averaged positive job characteristics items were subtracted from averaged negative job characteristics items and the scale had possible range from -3 to 3. A higher score indicated a more negative job experience.

Each mother responded to a question about the salience of her current role depending on her current work and school status. The item was worded "*Being a mother/my work/going to school] is important to the way I see myself*" and responses ranged from *1*=definitely false to *5*=Very true. Dummy variables also indicated whether the mother felt her ideal situation was (a) working or studying full time or (b) working or studying part time versus (c) staying home full time. And, the *Maternal Separation Anxiety Scal*e (DeMeis et.al., 1986) measured mothers' level of worry, sadness and guilt when separated from the baby, including items such as *I like to have my child close to me most of the time* and could range from 21 to 105. We also coded separately

one item that represents parental role salience concretely *"When away from my child, I often wonder if his/her physical needs (dry diapers, enough to eat, etc) are being met"*.

The *Attitude Toward Maternal Employment* measure (Greenberger et al, 1988) captures perceived employment costs. Each item ranges from *1*=disagree very strongly to *6*= agree very strongly. We constructed a *Positive Employment Attitudes* subscale from 5 items like *'For children, working mothers are good role models for leading busy and productive life.'* and a *Negative Employment Attitudes* subscale from 6 items such as '*Working mothers more likely to have children with psychological problems than mothers who do not work outside the home'*, and ranges from 6 to 36. Mothers also filled out the *Work Commitment Scale* (Greenberger and Goldberg, 1989) items that ranged from *1*=strongly disagree to *6*=strongly agree. We pulled out one item that especially reflects the commitment toward the work role:'*My career is central to my self-esteem.'*

Income. Mothers' earnings, fathers' income and other sources of income were adjusted to 2005 dollars. Total household income summed these items. A dummy variable of public assistance indicated mothers' report of receiving Food Stamps, Aid to Families with Dependent Children, or WIC.

Potential social support. Dummy variables indicated the presence of a spouse or partner and of other adults in the household. Emotional and instrumental support were measured using a modified version of the *Social Support Scale* (Marshall and Barnett, 1993). Each item ranged from *1*=none of the time to *6*=all of the time. The emotional support sub-scale included 7 items, such as *People who are important encourage me when I feel discouraged or down.*. Instrumental support sub-scale included 3 items, such as *When I need someone to help me out, I can usually find someone*.

Additional controls. We adjusted for time-varying indicators of life events, including family members' lay offs, death, or illness or the mother's report of a "big difference" happening in family and the mother's reports of her own, the baby's and, where applicable, her partner's

health. Time-constant covariates included mother's age at the child's birth, her educational level, her income before the child was born, her race, whether the child was female and the number of days the child spent in the hospital. We also adjusted for the baby's temperament with a scale consisting of 14 items ranging from *1*=Almost never to *6*=Almost always; a higher score indicates a more difficult child temperament. A separate item specifically measured difficult child temperament versus easier temperament. Additionally, we adjusted for the quality of the marital relationship as reported by mothers at the 1 month interview; higher average scores indicated a better mother/partner relationship. Lastly, benefits – parental, sick, and vacation leave with or without the pay – were assessed from the mothers' report of her employment in the year before the child was born.

Results

Maternal Employment and Depression

We begin in Table 1 by replicating the well-documented result from prior

(TABLE 1 ABOUT HERE)

research that women's employment is associated with better mental health. We run four regression models, two OLS models without fixed effects and two fixed effects models, one of each with minimal measured controls (site and wave dummies and an indicator for the number of variables with a missing value) and the other with the extensive measured controls listed in the Appendix. We stack the four follow-up major assessments (6-, 15-, 24- and 36-months) and use robust standard errors to adjust for multiple observations per family.

First, looking at the model without fixed effects and minimal measured controls we find that within our sample of mothers of young children, mothers who are employed are significantly less depressed than those who are not (see Table 1, Model 1). The difference is over two points on the CES-D, nearly one-quarter of the measure's standard deviation of 8.35. Specifically, the model predicts that women who are not employed score a 10.56 on the CES-D whereas women who are employed score a 8.55, on average. This difference is reduced substantially in

magnitude and becomes nonsignificant when we add numerous measured controls (Model 2) and the difference is smaller still when we introduce fixed effects into the model (Models 3 and 4). Predictions based on Model 3 illustrate the similar depression levels of women who are and are not employed, once fixed effects are adjusted: Mothers who are not employed average a 9.25 on the CES-D whereas women who are employed average a 9.06. These results reveal that the descriptive association between maternal employment and better mental health is evident in our sample, consistent with prior research, but that adjustment for measured and unmeasured controls is important as we interpret this association. Specifically, our findings suggest that the descriptive association is explained by characteristics that both (1) correlated with whether the mother is employed or not employed and (2) correlate with the mother's symptoms of depression, rather than a causal effect of those roles on mental health. We next look at employed and nonemployed mothers characteristics on some of these rich measured controls, further separating them by whether they use child care and, if so, their reasons for choosing it.

Maternal Employment Status and Reasons for Choosing Child Care

As we review above, prior research on employment status and depression has generally not considered the family's child care arrangements. This is especially true for nonemployed mothers, where potential use of child care arrangements has been virtually ignored. The sample sizes at the top of Table 2 indeed confirm that the most typical statuses are not employed and not

(TABLE 2 ABOUT HERE)

using child care, and employed using child care, with employed women split fairly evenly between those who chose for quality and for other reasons. But, a nontrivial fraction of nonemployed mothers use child care (218, or 16% not chosen for quality; 188, or 14% chosen for quality) and about 12% of employed mothers do not use child care, typically because they work part time and/or from home.

The remainder of Table 2 shows the measured characteristics that most distinguish these groups. The first several rows of Table 2 show that mothers who chose care for quality reasons

are older and more educated and more likely to be white. This is true for both employed and nonemployed mothers. Within both groups, those who chose care arrangements for quality reasons average nearly 30 years of age and have about 15 years of schooling and are nearly 90% white, in contrast to the generally younger, less educated, and more often minority mothers in the remaining groups.

The next set of rows describe the family economic resources across the groups. Again, the mothers who chose care for quality look advantaged relative to the other groups, but this is especially true for the mothers who are *not* employed. The Not Employed/Chosen for Quality group has the highest total household income and the highest paternal and other income across all groups. Although these mothers also had higher incomes in the year before the child was born than the other mothers who were not currently employed, their own pre-birth incomes were lower than the mothers who were employed and using child care.

Several variables about care perceptions that are available early in the study also demonstrate a gradient in favor of mothers who use care for quality reasons. Mothers who later chose care for quality reasons reported less separation anxiety (worry, sadness and guilt when separated from the baby) at one month. This gradient was again evident within both employed and nonemployed mothers, although employed mothers also show lower levels of separation anxiety than nonemployed mothers within each child care category. A similar gradient is evident within employment categories for maternal perceptions of child care being good and affordable, although for these variables mothers who were employed and not using child care were least likely to say that they were working because they could find good care that they could afford.

The final rows present some characteristics that are only available for employed mothers or for mothers who are using child care. These rows show that employed mothers who chose care for quality reasons are more likely to have professional/managerial jobs and to work 9-to-5 weekday schedules. In terms of the characteristics of the current care arrangement, among both mothers who are employed and nonemployed, those who chose care for quality reasons are ten or

more percentage points more likely to say they would strongly recommend it to a friend. And, within employment status, mothers who report choosing care for quality reasons are more likely to be using center care or home-based non-relative care than are mothers who report choosing care for other reasons.

Maternal Employment Status, Reasons for Choosing Child Care, and Depression

Table 3 shows results of a regression model predicting maternal depression by the six-

(TABLE 3 ABOUT HERE)

category employment and child care variable, controlling for the measured characteristics just examined in Table 2 as well as the remaining measured characteristics listed in the Appendix and fixed-effects that adjust for unmeasured, stable characteristics.[1] The reference category is mothers who are employed and chose child care for quality reasons, and asterisks indicate significant differences between the included categories and this group. Subscript letters indicate significant contrasts among the included categories. The results first confirm the general lack of differences in average depression levels between employed and nonemployed mothers, with measured controls and fixed effects in the models. That is, within each of the child care categories (No Child Care, Not Chosen for Quality, and Chosen for Quality) there are no significant differences by employment status. But, for both employed and nonemployed mothers, those who chose care for quality reasons are the least depressed.

Specifically, all of the coefficients (except for the Not Employed/Chosen for Quality category) are positive in sign, indicating more depression symptoms in those groups than the reference category (Employed/Chosen for Quality). In the two included categories with the largest sample sizes (Not Employed/No Child Care and Employed/Not Chosen for Quality) these positive coefficients are significant, indicated by asterisks. The subscripts also indicate that the

[1] We found similar results in a specification that included separate variables for employment status, child care status, and reasons for choosing child care. In these models, we tested for, but did not find, interactions by maternal employment status and by use of child care, consistent with the contrasts among the six categories reported below. We also tested for but did not find interactions by the child's age (wave).

Not Employed/Chosen for Quality group has significantly lower average depression than three of the four other included groups, adjusted for measured characteristics and fixed effects. The exception is the contrast with mothers who are Not Employed and use child care Not Chosen for Quality; here depression levels are still higher than among the mothers who are Not Employed and use child care Chosen for Quality but the standard errors are largest for these two smallest groups, and the difference is not statistically significant.

Figure 1 presents the predicted means based on the model presented in Table 3, further illustrating the pattern and magnitude of these differences. As noted, women who are not employed and are using care they chose for quality reasons have the lowest average depression scores – less than 8 points on average. This level is statistically equivalent to the average depression scores of women who are employed and using care they chose for quality, which is less than 9 points. The average depression scores for all of the remaining groups are all above 9 points and do not differ significantly from one another, although several differ significantly from one or both groups of women who chose care for quality reasons. The largest differences is nearly two points in magnitude (e.g., between the leftmost bar *Not Employed/No Child Care* and the middle bar *Not Employed/Quality*), which is over 20% of the sample standard deviation of the CES-D measure.

Thus, when we take child care characteristics into account we further illuminate the finding of prior research that isolated mothers who are not working in the paid labor force have high levels of depression. However, the contrast with employed mothers depends on the reason mothers chose their child's care. It is only mothers who are employed and using care they chose for quality reasons who are less depressed than "stay at home" mothers. Mothers who are employed and chose care for other reasons are equally as depressed as mothers who "stay at home." Furthermore, although the smallest group in the sample, mothers who "stay at home" but use child care that they chose for quality reasons have low levels of depression; they are significantly less depressed than those who "stay at home" but do not use any child care, and

have equivalently low levels of depression as those who are employed and use child care that they chose for quality reasons. Importantly, the significant differences between mothers who chose care for quality reasons and the other groups are evident after we added numerous measured time-constant and time-varying characteristics and fixed effects to adjust for additional unmeasured, stable characteristics.

Discussion

These preliminary findings add to the body of literature on maternal employment and depression by demonstrating that mothers of young children benefit from employment only when their child care arrangements were selected for quality reasons. When mothers chose their child care arrangement for cost or convenience, purely for preference for the type of care, or other reasons, they report depression levels that are equivalently as high as mothers who "stay at home." We also find that among mothers who "stay at home" depression levels are lower when they are using child care arrangements that they chose for quality reasons. Although a relatively smaller absolute number of women in this sample, they make up nearly 15% of "stay at home" mothers. Their use of quality child care may reduce some of the isolation and stress associated with full-time parenting.

Table 1
Regression Models Predicting Maternal Depression by Maternal Employment Status and Covariates

	No Fixed Effects/ Minimal Measured Controls (1)	No Fixed Effects/ Extended Measured Controls (2)	Fixed Effects/ Minimal Measured Controls (3)	Fixed Effects/ Extended Measured Controls (4)
Mother is Employed	-2.01**	-0.27	-0.20	-0.11
	(0.40)	(0.33)	(0.38)	(0.36)
Mean (*SD*) of Outcome		9.11 (8.35)		

Note: Unstandardized regression coefficients. Robust standard errors adjusting for heteroskedasticity and multiple observations per child in parentheses. The extended measured controls are listed in the Appendix. n = 4,766 observations from 1,302 mothers.
**$p < .01$. (two-tailed test).

Table 2
Means of Measured Variables by Child Care and Maternal Employment Categories

	Child Care and Maternal Employment Categories					
	Not Employed			Employed		
	No Child Care (n=933)	Not Chosen for Quality (n=218)	Chosen for Quality (n=188)	No Child Care (n=413)	Not Chosen for Quality (n=1,568)	Chosen for Quality (n=1,407)
Mother's Age, Education and Race						
Mom's Age	27.51	26.92	29.54	27.84	28.35	29.52
Mom's Education	13.47	13.80	14.98	13.86	14.54	15.03
Mom's Race						
White	0.77	0.79	0.87	0.88	0.80	0.90
Black	0.18	0.17	0.10	0.08	0.13	0.07
Other	0.05	0.04	0.03	0.04	0.07	0.03
Family Economic Resources						
Current Total Household Income	49437.01	57362.58	92329.16	56945.91	73513.67	85218.12
Current Maternal Income	-	-	-	9365.16	28724.51	33058.48
Current Paternal Income[b]	40713.55	44287.83	70757.82	40316.03	37706.30	44516.33
Current Other Income	8443.34	12994.57	21657.01	7047.96	6968.20	7511.40
Current Public Assistance	0.37	0.36	0.24	0.23	0.15	0.08
Mom's Income Before the Birth[c]	11245.89	14957.69	21439.31	18206.18	31792.10	35929.21
General Child Care Perceptions						
Maternal Separation Anxiety Scale[a]	73.44	71.23	70.54	70.98	68.52	67.43
Perceive Child Care as Good[a]	3.47	3.76	3.68	3.39	3.71	3.89
Perceive Child Care as Affordable[a]	6.60	7.20	7.13	6.54	7.30	7.54
Mother's Occupation and Shift						
Occupation is Professional/Managerial	-	-	-	0.19	0.39	0.45
Shift						
Exclusive Day Shift	-	-	-	0.54	0.62	0.74
Varying Shift	-	-	-	0.15	0.11	0.08
Some Weeknight/Weekend	-	-	-	0.19	0.25	0.17
Characteristics of Current Care Arrangement						
Would Strongly Recommend to Friend?	-	0.69	.79	-	0.69	0.82
Type of Child Care						
Father	-	0.20	0.07	-	0.27	0.08
Relative	-	0.38	0.10	-	0.25	0.12
Family Day care	-	0.17	0.41	-	0.30	0.48
Center	-	0.25	0.40	-	0.17	0.31

Notes:
[a] Variable measured at 6 months.
[b] The variable was assigned to 0 if spouse or partner was absent from household.
[c] The variable was assigned to 0 if mother was not employed in the year before baby was born.

Table 3

Regression Model Predicting Maternal Depression by Child Care and Maternal Employment Categories

Child Care and Maternal Employment Categories		*n*	Fixed Effects/ Extended Measured Controls
Not Employed	No Child Care	933	1.05*$_{a}$ (0.46)
	Not Chosen for Quality	218	0.36 (0.59)
	Chosen for Quality	188	-0.87$_{a,b,c}$ (0.60)
Employed	No Child Care	413	0.52$_{b}$ (0.47)
	Not Chosen for Quality	1568	0.60*$_{c}$ (0.27)
	Chosen for Quality	1407	--
Mean (*SD*) of Outcome			9.11 (8.35)

Note: Unstandardized regression coefficients. Robust standard errors adjusting for heteroskedasticity and multiple observations per child in parentheses. Full models adjust for variables listed in the Appendix. n = 4,727 observations from 1,300 mothers.

-- Omitted category.

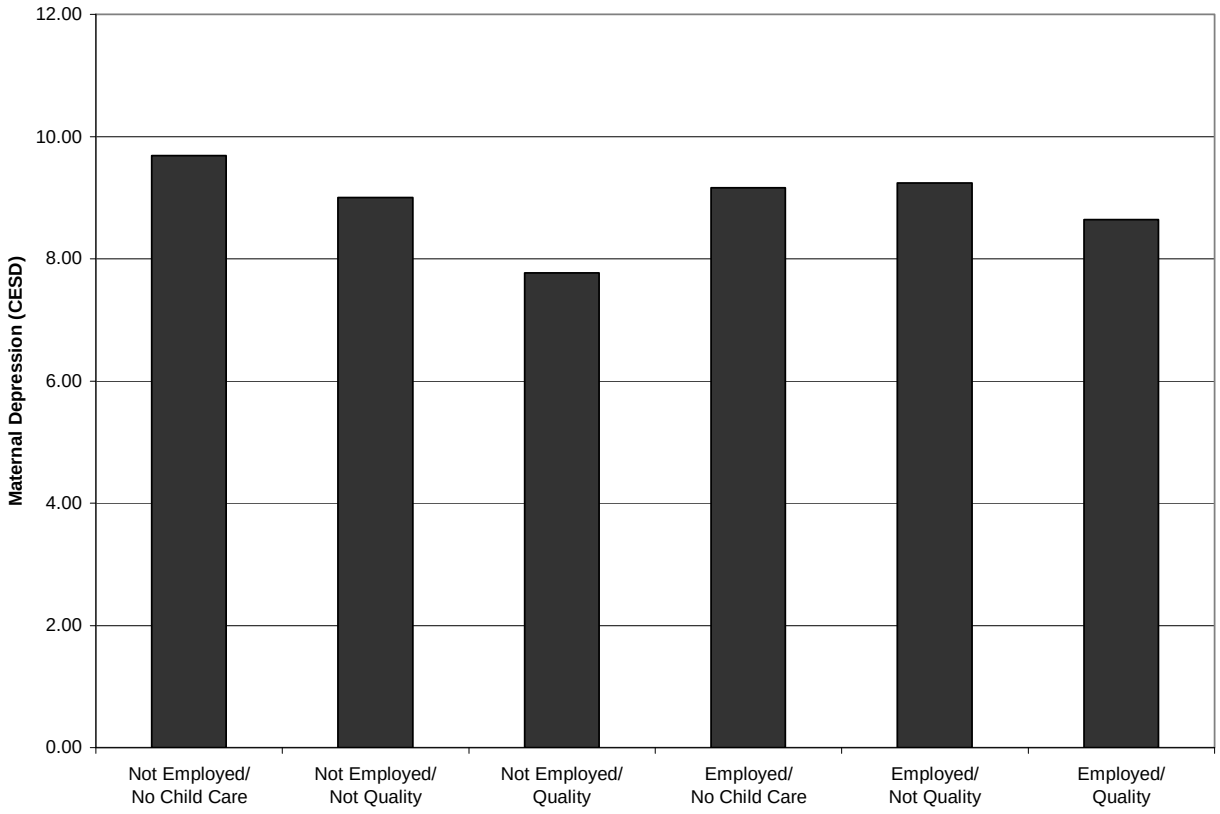
$_{a,b,c}$ Within columns, coefficients with the same subscript letters differ significantly at $p < .05$.

*$p < .05$. (two-tailed tests).

Figure Caption

Figure 1. Predicted means of maternal depression within categories of child care and maternal employment.

Note: Values are predicted means from the regression models summarized in Table 3. The values were calculated by substituting 0s and 1s for the five dummy variables to indicate the six categories, while allowing each case to retain its covariate values, and then averaging the predictions.



Appendix

Definition and Descriptive Statistics of Covariates

Variables	*N*	*M*	*Min*	*Max*
Dependent Variable				
Maternal Depression	4766	9.11	0	57
Child Care Variables				
Characteristics of Care				
Mom is Using Care	5053	0.71	0	1
Type of Child Care				
Home-Based Father[c]	5037	0.13	0	1
Home-Based Relative[c]	5037	0.14	0	1
Home-Based Non-Relative[c]	5037	0.17	0	1
Center[ac]				
Type Used Matches Ideal Type[c]	5037	0.29	0	1
Maternal Perceptions of Child Care				
Reason for Choice of Child Care:				
Accessibility[c]	5000	0.12	0	1
Preference[c]	5000	0.19	0	1
Perceived Quality[ac]	5000	0.33	0	1
Other[c]	5000	0.07	0	1
Would Strongly Recommend to Friend?[c]	5015	0.53	0	1
Perceive Child Care as Good[bc]	5088	3.69	1	5
Perceive Child Care as Affordable and Can Earn[b]	5092	7.14	2	10
Strain Associated with Child Care				
Percent Time Spent in Primary Arrangement[c]	5052	0.69	0	1
Multiple Arrangements[c]	5053	0.21	0	1
Missed Work Due to Provider-Related Problems[e]	4951	0.05	0	1
Sick Care				
Child Sick and Mom took Care[e]	4954	0.13	0	1
Child Sick and Used Regular Arrangement[ae]	4954	0.09	0	1
Child Sick and Other Arrangements Used[e]	4954	0.04	0	1
Child not Sick[e]	4954	0.35	0	1
Thinking About Child When at Work Interferes with Performance?[d]	2397	0.18	0	1
Moderators				
Social Support				
Spouse or Partner in Household	4945	0.85	0	1
Number of Other Adults in Household	4944	0.09	0	5
Perceived Emotional Support	4826	34.78	8	42
Perceived Instrumental Support	4838	14.73	3	18
Income				
Total Household Income	4724	70729	0	699474
Maternal Income[d]	5014	19748	0	348004
Paternal Income[f]	4906	41575	0	358480
Other Income	4811	8306	0	358480
Public Assistance	4830	0.20	0	1

Table Continues

Appendix

Definition and Descriptive Statistics of Covariates

Variables	*N*	*M*	*Min*	*Max*
Role Salience				
Employment/School Role Salience[b]	5452	3.79	1	5
Parental Role Salience (Maternal Separation Anxiety Scale)[b]	5324	70.16	35	105
When Away From Child, Wonder if Physical Needs are Being Met[b]	5432	3.76	1	5
Perceptions of Ideal Work/Family Situation[b]				
Ideal Type-Work or School Full Time	5452	0.13	0	1
Ideal Type-Work or School Part Time	5452	0.53	0	1
Ideal Type-Stay Home Full Time[a]	5452	0.34	0	1
Attitude Toward Maternal Employment (standard scaling)	5412	34.13	11	63
Positive Employment Attitudes	5440	19.19	5	30
Negative Employment Attitudes	5420	18.33	6	36
Career Central to Self-Esteem	5448	3.64	1	6
What Employment Means to Me	5420	25.77	8	47
Feelings about Parenting	5412	53.18	27	94
Children and Their Parents (Parental Locus of Control)	5380	47.79	24	75
Parent experiences	4916	-1.59	-3	0.8
Control Variables				
Time-Varying Characteristics				
Employment				
Mom is Employed	5045	0.71	0	1
Occupation is Professional, Administrative, Executive, Managerial[d]	4999	0.28	0	1
Job Experience Scale[d]	4350	-0.78	-3	2.53
Work Hours[d]	5045	22.01	0	134
Shift				
Exclusive Day Shift[d]	4724	0.45	0	1
Varying Shift[d]	4724	0.07	0	1
Other Shift (Some Weeknight/Weekend)[d]	4724	0.16	0	1
Work Flexibility				
Inflexible Work[d]	4724	0.26	0	1
Somewhat Flexible Work[d]	4724	0.27	0	1
Flexible Work[ad]	4724	0.16	0	1
Life Events				
Job Loss in Family	4943	0.20	0	1
Illness in family	4944	0.34	0	1
Death In Family	4943	0.24	0	1
Big Difference in Family	4943	0.43	0	1
Health				
Poor Health - Baby	4945	0.14	0	1
Poor Health - Mom	4943	0.15	0	1
Poor Health - Partner	4945	0.11	0	1

Table continues

Appendix

Definition and Descriptive Statistics of Covariates

Variables	*N*	*M*	*Min*	*Max*
Household Composition				
Number of Preschool Age Children in Household	4944	0.16	0	5
Number of School Age Children in Household	4944	0.07	0	7
Time-Constant Characteristics				
Mom's Age	5456	28.10	18	46
Mom's Education	5452	14.23	7	21
Mom's Race				
White[a]	5456	0.81	0	1
Black	5456	0.13	0	1
Other	5456	0.05	0	1
Baby is Female	5456	0.48	0	1
Days Mom Stayed in Hospital After Birth	5456	2.34	0	10
Mom's Income Before the Birth[g]	5416	26013	0	399700
Leave Benefit with Pay	5344	0.44	0	1
Leave Benefit with No Pay	5308	0.40	0	1
Marital Quality Scale	5080	4.02	1.17	5
Child Temperament Scale	5036	3.32	1.42	5.35
Child with Difficult Temperament	5448	.004	0	1

Note: Wave and site dummies not shown. Data were distributed evenly for these variables (each site contained 9 - 11 % of the sample and each wave contained 25% of the sample).

[a] Omitted category.
[b] Time-constant version of the variable presented.
[c] The variable was assigned to 0 if mother did not use child care arrangements.
[d] The variable was assigned to 0 if mother was not employed.
[e] The variable was assigned to 0 if mother did not use child care or was not employed.
[f] The variable was assigned to 0 if spouse or partner was absent from household.
[g] The variable was assigned to 0 if mother was not employed in the year before baby was born.

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