



Published in final edited form as:

*Fam Relat.* 2009 July 1; 58(3): 245–258. doi:10.1111/j.1741-3729.2009.00550.x.

## Longitudinal Associations between Maternal Work Stress, Negative Work-Family Spillover, and Depressive Symptoms

**W. Benjamin Goodman, M.S.,**

Department of Human Development and Family Studies, The Pennsylvania State University, S-110 Henderson Building, University Park, PA 16802, (Email: bgoodman@psu.edu, Phone: 814-865-8247).

**Ann C. Crouter, Ph. D., and**

College of Health and Human Development, The Pennsylvania State University, 201 Henderson Building, University Park, PA 16802, (Email: ac1@psu.edu, Phone: 814-865-1420).

### The Family Life Project Key Investigators

### Abstract

The current study examined associations over an 18-month period between maternal work stressors, negative work-family spillover, and depressive symptoms in a sample of 414 employed mothers with young children living in six predominantly nonmetropolitan counties in the Eastern United States. Results from a one-group mediation model revealed that a less flexible work environment and greater work pressure predicted higher levels of depressive symptoms, and further, that these associations were mediated by perceptions of negative work-family spillover. Additionally, results from a two-group mediation model suggested that work pressure predicted greater perceptions of spillover only for mothers employed full-time. Findings suggest the need for policies that reduce levels of work stress and help mothers manage their work and family responsibilities.

### Keywords

work and families; work/family balance; depression; working mothers

---

Over the past 30 years, researchers have increasingly recognized that workplace conditions can contribute to variations in individual well-being over time (e.g., Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). Previous research examining associations between workplace conditions and individual well-being has determined that numerous workplace stressors, including high levels of pressure, lack of workplace flexibility, and low complexity and control over work, are associated with employee depressive symptoms (e.g., Barnett & Brennan, 1995; Paterniti, Niedhammer, Lang, & Consoli, 2002). Further, an examination of the specific mechanisms through which stress in the workplace impacts mental health over time suggests that experiences of work stress may result in perceptions of negative work-family spillover, which in turn predict higher levels of depressive symptoms (e.g., Franche, Williams, Ibrahim, Grace, Mustard, et al., 2006). These studies are consistent with a role stress perspective on workplace stressors and individual well-being, which holds that experiences of stress in the workplace can spill over into the home, diminishing individual well-being (e.g., Bolger, DeLongis, Kessler, & Wethington, 1989).

Despite long-standing interest in associations between workplace conditions and individual well-being, research to date examining associations between workplace stressors, negative work-family spillover, and depressive symptoms has been largely cross-sectional (e.g., Barnett & Brennan, 1995; Franche et al., 2006) limiting the power to draw inferences regarding the direction of associations. Additionally, many studies examining work stress and individual well-being have been conducted with predominantly middle-class (e.g., Barnett & Brennan) or industry specific (e.g., Paterniti, et al., 2002) samples. Little is known about these associations for mothers of infants and young children living in predominantly low-income, nonmetropolitan families despite the fact that nonmetropolitan mothers have had higher employment rates relative to urban mothers for the past 25 years, and in 2004, 69 percent of nonmetropolitan mothers with children under age 6 were employed (Smith, 2007). Previous research suggests that low-income individuals living in rural communities often face limited job opportunities, and those that are available are frequently low-quality, low-wage jobs (Gibbs, Kusmin, & Cromartie, 2005). Employment in low quality jobs may be particularly difficult for mothers with infants and young children, as these jobs may interfere with their ability to balance work and family responsibilities, placing them at increased risk for experiences of depressive symptoms. However, the implications of low quality employment for nonmetropolitan mothers may not be uniform. Previous research has hypothesized that the effects of work stress may vary depending on the extent to which individuals are *exposed* to these stressors (Barnett, 1998), yet little research to date has examined this possibility. As these work-family processes may have serious consequences for both maternal and child well-being (e.g., Gefland & Teti, 1990), examining job conditions that place nonmetropolitan mothers at risk for depressive symptoms is imperative.

The current study sought to address these limitations by examining associations between experiences of three types of workplace stressors -- nonflexible work arrangements, work pressure, and low self-direction -- and depressive symptoms over an 18-month period in a sample of mothers with young children living in predominantly nonmetropolitan communities. Consistent with a role stress perspective, the current study also examined the degree to which associations between work stressors and depressive symptoms were mediated by perceptions of negative work-family spillover. Finally, to explore the potential effects of work stress exposure, we examined whether these associations differed for mothers working part-time versus full-time.

## Links between Workplace Stressors and Depressive Symptoms

The current review examined associations between three specific workplace stressors, nonflexible work arrangements, high levels of work pressure, and low levels of self-direction, and depressive symptoms among mothers. However, given the relative lack of emphasis on work stress and well-being associations among mothers specifically, research on these associations among employed workers in general will be included where relevant.

### Nonflexible work arrangements

Research examining associations between workplace flexibility and depressive symptoms suggests that workplace policies that encourage placing work ahead of personal needs and do not allow employees flexibility to attend to individual or family responsibilities may result in increased depressive symptoms over time. Thompson and Prottas (2005) found that less flexible work arrangements are associated with higher levels of depressive symptoms among working men and women. Further, in a study of employed parents with children under age 16 (99% of whom were mothers), less flexible work schedules predicted higher levels of depression indirectly, through the impact of decreased schedule flexibility on perceptions of work-family control and negative work-family spillover (Thomas & Ganster,

1995). Although little is known about associations between workplace flexibility and depressive symptoms in mothers with very young children, previous research suggests that mothers with more rigid work schedules have greater difficulty managing work and family responsibilities (e.g., Ralston, 1990), which may place them at risk for experiences of depressive symptoms.

### **Work pressure**

Pressure in the workplace, including frequent deadlines, insufficient time to complete work, and excessive work loads, is likely to cause feelings of stress that may result in increased depressive symptoms over time. Indeed, multiple studies have found that jobs with higher levels of pressure were associated with higher concurrent levels of depressive symptoms among employed women (Paterniti et al., 2002; Wang & Patten, 2001). Similarly, in a study of men and women employed in the Northeastern United States, Barnett and Brennan (1995) found that jobs higher in pressure and demands were associated with greater psychological distress.

### **Low self-direction**

Previous research suggests that occupations characterized by low levels of self-direction, such as low levels of control over work and complexity and challenge, may be associated with increased levels of depressive symptoms. Several cross-sectional studies have found that lower levels of self-direction are associated with increased levels of psychological distress and depressive symptoms among employed women (e.g., Barnett & Brennan, 1995; Wang & Patten, 2001), although not all studies find these associations (e.g., Paterniti et al., 2002). Additionally, in a longitudinal study of over 7,000 British civil servants, Griffin, Fuhrer, Stansfeld, and Marmot (2002) found that lower levels of self-direction in the workplace were associated with increased rates of depression six years later, controlling for numerous individual and family characteristics associated with increased depressive symptoms.

## **The Mediating Role of Negative Work-Family Spillover**

Although numerous research investigations suggest work stressors are associated with increased experiences of depressive symptoms, less attention has been devoted to specific mechanisms through which these associations might operate (Eby, et al., 2005). One possibility, consistent with a role stress perspective on work-family relationships (Bolger et al., 1989), is that experiences of stress in the work domain may spill over into the family domain, negatively impacting the worker's ability to attend to personal and family needs. Over time, this inability to meet personal and family needs is likely to be a potent stressor that results in declines in psychological well-being, including increased depressive symptoms. Although this mediation model has yet to be tested extensively in the work-family literature, cross-sectional research by Franche and colleagues (Franche et al., 2006) found that greater reports of work stress among women were positively associated with reports of negative work-family spillover, which in turn positively predicted depressive symptoms. The current study expanded upon this previous research by examining longitudinal associations between multiple work stressors, negative work-family spillover, and depressive symptoms in a sample of mothers working in a wide variety of occupations.

## **Maternal Work Hours: A Possible Moderator**

It is unlikely that workplace stressors will have uniform effects on all individuals. Previous research has hypothesized that the effects of negative job environments on individual well-being may vary according to how much time individuals spend in the workplace (Barnett, 1998). This "dosage" effect of work hours suggests that individuals exposed to negative

workplace environments for shorter periods of time are less likely to experience negative effects due to workplace stress (e.g., depressive symptoms) than individuals who spend long hours on the job. Research by Major, Klein, and Ehrhart (2002) supports this hypothesis: Individuals who spent more time in the workplace experienced significantly greater negative work-family conflict, which in turn was associated with increased experiences of psychological distress. The current study built upon these findings by investigating whether associations between several workplace stressors, negative work-family spillover, and depressive symptoms differed significantly for mothers working part-time (< 35 hours/week) versus those working full-time (35+ hours/week).

## Demographic Characteristics

The current study controlled for numerous individual and family characteristics that may be associated with depressive symptoms. Specifically, we controlled for maternal age, education, race, and partner status, as previous research suggests that older, better educated, White, partnered women are less likely to experience depressive symptoms (e.g., Franche et al., 2006; Griffin et al., 2007; Mausner-Dorsch & Eaton, 2000). Additionally, we controlled for baseline maternal depressive symptoms to account for the possibility that maternal depressive symptoms shape perceptions of work stress and work-family spillover.

## Research Questions

Guided by a role stress perspective on work-family relationships, as well as previous research on associations between experiences of work stress, negative work-family spillover, and depressive symptoms, the following research questions were examined:

1. How are maternal experiences of nonflexible work arrangements, work pressure, and low self-direction associated with subsequent depressive symptoms, and are these associations mediated by perceptions of negative work-family spillover?
2. Do associations between maternal work stressors, negative work-family spillover, and depressive symptoms vary as a function of maternal exposure to workplace stressors (i.e., part-time versus full-time work hours)?

## Method

### Participants

Data for the current study were drawn from an ongoing, longitudinal study of 1292 families living in six predominantly low-income, nonmetropolitan counties in eastern North Carolina and central Pennsylvania. Families were recruited for participation in the study shortly after giving birth to a child; low-income (< 200% of the poverty line) and African American families were oversampled in order to address specific research goals. The current sample focused only on families with an employed female caregiver who was the biological mother of the target child. Data from home visits conducted when the target child was approximately 6-, 15-, and 24-months of age were used to examine the effects of workplace stressors on perceptions of negative work-family spillover and depressive symptoms over time. Of the 1292 families who participated in the first wave of data collection when the target child was approximately 2-months of age, 1102 families (85.3%) of families participated in the next three waves of data collection when the target child was approximately 6-, 15-, and 24-months of age. Of these 1102 families, 425 families (38.6%) contained a biological mother who was employed at all three of these data collection points. Of these 425 families, 11 (2.6%) were dropped from these analyses due to missing data. Thus, the current analyses focused on 414 employed mothers with complete data at all three time points.

The majority of mothers in the current sample were White (66.2%), partnered (75.8%), and employed 35 or more hours per week when the child was approximately 6-months of age (64.0%). Mothers were 28 years of age on average ( $M = 27.93$   $SD = 5.42$ ), and had an education level equivalent to a high school degree plus some additional training ( $M = 15.72$ ,  $SD = 2.32$ ). The most common jobs worked by mothers included nursing or home care aide, cashier, waitress, child care worker, food preparation worker, office clerk, and registered nurse.

## Procedure

Trained research assistants conducted in-home interviews when the target child was approximately 6-, 15-, and 24-months of age. As a part of the larger interview, mothers provided demographic information on all family members, as well as information on all paid jobs at which mothers worked for five or more hours per week. Mothers also completed questionnaires assessing the characteristics of their primary job (defined as the job at which mothers worked the most hours per week when they worked two or more jobs), as well as psychological well-being. Written consent was obtained from all mothers prior to conducting the interviews (for complete information on sample recruitment and data collection procedures, see Crouter, Lanza, Pirretti, Goodman, Neebe, et al., 2006).

## Measures

**Demographic information**—Mothers provided information on their age, race, education level, partner status (single or married / cohabiting), and weekly work hours.

**Income-to-needs ratio**—Family income resources at 6-months were estimated by calculating an income-to-needs ratio score. First, annual income contributions from all family members were summed, along with income from any additional sources (e.g., unemployment, child support, etc.). This total was then divided by the U. S. Government poverty threshold for that year (differentiated by size of family and number of children) to obtain an income-to-needs ratio score. A score of 1.00 corresponds to a family income equal to the poverty threshold ( $M = 2.74$ ,  $SD = 2.04$ ).

**Nonflexible work arrangements**—At the 6-month home visit, mothers completed a modified, 4-item version of the Flexible Work Arrangements Scale (Bond, Galinsky, & Swanberg, 1998), assessing the degree to which the workplace is accommodating towards personal and family responsibilities (e.g., “At my place of employment, employees have to choose between advancing in their jobs or devoting attention to their family or personal lives”). Responses were rated on a 4-point scale, ranging from *strongly agree* to *strongly disagree*; items were reverse scored, such that higher scores reflect lower workplace flexibility ( $M = 2.05$ ,  $SD = 0.77$ ,  $\alpha = .82$ ).

**Work pressure**—Mothers completed a 9-item version of the Work Pressure subscale from the Work Environment Scale (Moos, 1986) at the 6-month home visit. The questionnaire assesses the degree to which the workplace is characterized by high job demands, long work hours, and frequent deadlines (e.g., “There is constant pressure to keep working”). Responses were rated on a 4-point scale, ranging from *strongly agree* to *strongly disagree*; higher scores reflect greater work pressure ( $M = 2.53$ ,  $SD = 0.49$ ,  $\alpha = .76$ ).

**Low self-direction**—Mothers completed a modified, 11-item version of the Occupational Self-Direction Questionnaire (Lennon, 1994), assessing the extent to which their jobs were characterized by autonomy, complexity, and routine (e.g., “The job requires developing new approaches to complicated problems”). Responses were rated on a 4-point scale ranging



from *very much* to *not at all*; items were reverse scored, such that higher scores reflect lower levels of self-direction ( $M = 3.19$ ,  $SD = 0.65$ ,  $\alpha = .92$ ).

**Work status**—Mothers' weekly work hours were calculated by summing the total hours mothers spent working at their primary job at the 6-month home visit. Work status was defined as *part-time* for any mothers working fewer than 35 hours per week and *full-time* for mothers working 35 or more hours per week.

**Negative work-family spillover**—At the 15-month home visit, mothers completed the 4-item Negative Work-Family Spillover Scale (Grzywacz & Marks, 2000), measuring the degree to which the demands of the workplace reduce a person's ability to adequately tend to personal or family needs at home (e.g., "Your job reduces the effort you can give to activities at home"). Responses were rated on a 4-point scale ranging from *strongly agree* to *strongly disagree*; higher scores reflect greater negative work-family spillover ( $M = 2.25$ ,  $SD = 0.65$ ,  $\alpha = .83$ ).

**Depressive symptoms**—At the 6-month home visit, mothers completed the 6-item Depressive Symptoms subscale from the Brief Symptom Inventory 18 (BSI-18; Derogatis, 2000), assessing the extent to which they experienced a number of depressive symptoms over the past 7 days (e.g., "Feeling no interest in things"). Responses were rated on a 5-point scale ranging from *not at all* to *extremely*; higher scores reflect greater depressive symptoms ( $M = 0.31$ ,  $SD = 0.47$ ,  $\alpha = .78$ ).

Mothers completed the 20-item Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) at the 24-month home visit, assessing a variety of depressive symptoms individuals may have experienced over the past 7 days (e.g., "I felt depressed"). Responses were rated on a 4-point scale ranging from *rarely or none of the time* to *most or all of the time*; higher scores reflect greater depressive symptoms ( $M = 0.51$ ,  $SD = 0.45$ ,  $\alpha = .89$ ). Maternal reports of depressive symptoms were not assessed using the CES-D at the 6-month home visit.

**"Parceling" of manifest indicators**—As noted by Little and colleagues (Little, Cunningham, Shahar, & Widaman, 2002), having a large number of manifest indicators associated with a latent construct in a structural equation model may result in a number of problems with misfit in the measurement model, such as an increased likelihood of spurious correlations among residuals. Creating parcels of manifest indicators can reduce the impact of these potential sources of model misfit and is warranted in cases when the primary interest lies in modeling associations among latent constructs, rather than modeling exact relations among manifest items (Little et al.). In the current study, manifest variables for scales containing more than five items (i.e., Work Pressure, Low Self-Direction, and Depressive Symptoms) were "parceled" using a factorial algorithm technique (Rogers & Schmitt, 2004). First, an exploratory principle components factor analysis with an oblique (i.e., Promax) rotation was conducted separately on the items comprising each of the three scales. For each scale, items with factor loadings greater than .55 were retained, per guidelines established by Tabachnick and Fidell (2001). Parcels were then created by standardizing and averaging the highest and lowest loading items in the factor for parcels containing two manifest items, or the highest, middle, and lowest loading items for parcels containing three or four manifest items.

Results of a factor analysis conducted on the 9-item Work Pressure scale revealed six items with factor loadings greater than .55. These six items were retained and three, 2-item parcels were created according to the procedures described above (range for the completely standardized factor loadings of the parcels = 0.64 – 0.75,  $\alpha = .76$ ). For the 11 item Low Self-

Direction scale, factor analysis results revealed nine items with factor loadings greater than .55. These nine items were retained, and three, 3-item parcels were then created (range for the completely standardized factor loadings of the parcels = 0.84 – 0.92,  $\alpha = .92$ ). Factor analysis results for the 6-item BSI-18 Depressive Symptoms scale revealed that all six items had factor loadings greater than .55. All six items were retained and three, two item parcels were created (range for the completely standardized factor loadings of the parcels = 0.77 – 0.82,  $\alpha = .84$ ). Finally, results of a factor analysis on the 20 items comprising the CES-D revealed 16 items with loadings greater than .55. These items were retained, and four, 4-item parcels were created by standardizing and averaging the highest, lowest, and two middle loading items in the factors, then repeating the process until all four parcels were created (range for the completely standardized factor loadings of the parcels = 0.82 – 0.87,  $\alpha = .92$ ).

### Plan of Analysis

One and two group latent mediation models were estimated using LISREL 8.80 (Jöreskog & Sörbom, 2006). Three time points of data were used in order to test the “domino effect” hypothesized by the role stress perspective: namely, that higher levels of work stress result in greater perceptions of negative work-family spillover, and greater perceptions of negative work family spillover, in turn, predict higher levels of depressive symptoms. Goodness of fit for each model was established by examining the chi square value, as well as additional indices of practical fit including the Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993; RMSEA of 0.05 or less represents close model fit), the Non-Normed Fit Index (NNFI; Bentler & Bonett, 1980; NNFI of .90 or greater represents acceptable model fit), and the Comparative Fit Index (CFI; Bentler, 1990; CFI of .90 or greater represents acceptable model fit).

A one group latent mediation model was estimated by calculating the direct effects for nonflexible work, work pressure, and low self-direction on negative work family spillover, the direct effect for negative work-family spillover on depressive symptoms, as well as the indirect effects for nonflexible work, work pressure, and low self-direction on depressive symptoms. Direct and indirect effects for maternal age, race, education level, and partner status were also estimated in order to account for individual characteristics that may be associated with perceptions of negative work-family spillover and depressive symptoms beyond experiences of workplace stress; nonsignificant pathways were removed from the final one-group model. Finally, a two group latent mediation model was estimated to examine whether associations between work stressors and negative work-family spillover, and work stressors and depressive symptoms, varied depending on maternal work status (part-time vs. full-time). Specifically, differences in beta weights across the two groups were examined by constraining all individual pathways to be equal across the two groups, then freeing pathways individually. The change in the chi-square value ( $\Delta\chi^2$ ) between models with individual pathways unconstrained and a baseline model in which all pathways were constrained to be equal was then examined to determine which, if any, paths differed significantly between the two groups.

### Results

Table 1 presents the bivariate associations between maternal individual and demographic characteristics, work stressors, negative work-family spillover, and depressive symptoms. Maternal work stressors, negative work-family spillover, and depressive symptoms were largely associated in ways that would be expected, although low self-direction was unrelated to both negative work-family spillover and depressive symptoms. Maternal characteristics and work stressors were also associated in expected directions, with older and more educated mothers working jobs that were more flexible and higher in self-direction and pressure.

Although mothers were employed at all three time points in the current sample, 24.6% ( $n = 102$ ) mothers reported changing their primary job between the 6- and 15-month home visits, and 23.7% ( $n = 98$ ) reported changing jobs between the 15- and 24-month home visits. Autocorrelations between maternal reports of work stress at the 6- and 15-month visits for mothers who changed jobs were significant and positive ( $r = .26 - .41$ ). Similarly, the autocorrelation between maternal reports of negative work-family spillover at the 15- and 24-month home visits for mothers who changed jobs was also significant and positive ( $r = .36$ ). This suggests that although some mothers experienced employment changes over this 18-month period, these changes did not always result in improved working conditions.

### One Group Latent Mediation Model

Results of the one group latent variable mediation model revealed that several maternal and family characteristics, including maternal age and race, as well as the family income-to-needs ratio, were not significantly associated with either negative work-family spillover or depressive symptoms. These items were removed in order to improve model fit. The chi square value for the final one group model was significant,  $\chi^2(204) = 307.39, p < .001$ . Chi-square tests of significance, however, can be overly sensitive in cases where the sample size is large (Bentler & Bonett, 1980). In such cases, it is possible that even minor deviations from an ideal model would result in a significant chi-square value. As a result, multiple indices of practical model fit that are less sensitive to sample size were examined. These parameters suggested that the final one group model fit the data well (RMSEA = .04, NNFI = .98, CFI = .99).

Examining direct associations between maternal characteristics, negative work-family spillover, and depressive symptoms, both maternal education ( $b = -.05, p < .01$ ) and depressive symptoms at Time 1 ( $b = .39, p < .001$ ) were associated with depressive symptoms at Time 3. Mothers with lower levels of education and mothers with higher levels of baseline depressive symptoms had significantly higher levels of depressive symptoms at Time 3. Additionally, mothers without partners at Time 1 reported significantly higher levels of negative work-family spillover at Time 2. Negative work-family spillover, in turn, predicted higher levels of depressive symptoms at Time 3 ( $b = .21, p < .01$ ) (see Figure 1).

Results also revealed that higher levels of work pressure ( $b = .37, p < .001$ ) and less flexible work arrangements ( $b = .19, p < .01$ ) were both associated with greater perceptions of negative work-family spillover at Time 2. Further, work pressure predicted depressive symptoms indirectly, through negative work-family spillover ( $b = .08, p < .01$ ). A test of the percent of the total effect that was mediated (i.e., indirect effect / total effect; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002) was 47%, suggesting that negative work-family spillover mediated almost half of the association between work pressure and depressive symptoms.

The indirect effect for nonflexible work predicting depressive symptoms through negative work-family spillover was also significant and positive ( $b = .04, p < .05$ ). A test of the percent of the total effect that was mediated was 31%, meaning that negative work-family spillover partially mediated the association between nonflexible work and depressive symptoms. This suggests that nonflexible work predicts depressive symptoms, in part, through its effect on perceptions of negative spillover.

Finally, maternal reports of low self-direction were not significantly associated with Time 2 reports of negative work-family spillover ( $b = -.06, ns$ ). Further, the indirect effect for low self-direction predicting depressive symptoms through negative work-family spillover ( $b = -.02, p < ns$ ), was nonsignificant, suggesting that self-direction in the workplace was not associated with experiences of depressive symptoms over the 18-month period.



## Two Group Mediation Model: Group Differences by Work Hours

To test whether the associations between work stressors, negative work-family spillover, and depressive symptoms varied according to the number of hours mothers spent in their primary job, the sample was split into mothers working part-time or full-time, based on maternal reported weekly work hours at the 6-month home visit. This time point was chosen because it corresponds with when mothers reported on experiences of workplace stress, and thus, best allows us to test the hypothesis proposed by Barnett (1998) that impacts of workplace stress on well-being may vary according to work hours.

To test this hypothesis, a two group model in which all beta weights were constrained to be equal across the two groups was first calculated. An examination of the fit indices suggested that, overall, the model fit the data adequately,  $\chi^2(431) = 611.42$ ,  $p < .001$ , RMSEA = .04, NNFI = .97, CFI = .97. Next, individual pathways in the model were freely estimated, and the change in the chi-square between these models and the baseline model were examined to determine whether allowing pathways to vary significantly improved overall model fit. These tests revealed one significant difference across the two models. Specifically, the association between work pressure and negative work-family spillover depended on whether mothers worked part-time or full-time ( $\Delta\chi^2(1) = 5.68$ ,  $p < .05$ ). An examination of the model without this beta weight constrained revealed that for mothers working full-time, there was a significant positive association between work pressure and negative work-family spillover ( $b = .47$ ,  $p < .001$ ), but for mothers working part-time there was no association ( $b = .14$ , *ns*). Tests of the remaining pathways revealed no additional differences between the two groups (see Figure 2).

## Discussion

The current study sought to examine whether experiences of multiple workplace stressors were associated with maternal depressive symptoms over an 18-month period, as well as whether these associations were mediated by perceptions of negative work-family spillover. We also investigated whether these processes varied according to the number of hours mothers spent in the workplace. Overall, results suggest that experiences of nonflexible work arrangements and work pressure were associated with greater depressive symptoms, and that these associations were mediated, in part, by feelings of negative work-family spillover. Further, an analysis of potential differences in these processes between mothers employed part-time versus full-time suggest that experiences of work pressure were associated with increased negative work-family spillover only for those mothers working full-time.

As hypothesized, perceptions of negative work-family spillover mediated the associations between two workplace stressors -- less flexible work arrangements and high levels of work pressure -- and experiences of depressive symptoms. These findings are consistent with previous cross-sectional research examining associations between nonflexible work, work pressure, and negative work-family spillover (e.g., Byron, 2005), as well as previous cross-sectional work examining associations between work stressors and depressive symptoms, through the impact of work stressors on perceptions of negative work-family spillover (e.g., Franche, et al., 2006). However, the current study extends extant research by examining these associations across three time points over an 18-month period, allowing for stronger inferences regarding the direction of associations between work stressors, negative work-family spillover, and depressive symptoms. Further, the observed associations were found after accounting for baseline levels of maternal depressive symptoms. Thus, these associations are not due to the effects of initial levels of depressive symptoms on maternal reports of workplace stress and later depressive symptoms. These effects were also found despite the fact that approximately one-fourth of mothers changed jobs between each data

collection wave, suggesting that for many mothers in our study, changes in jobs are not necessarily accompanied by improvements in workplace conditions or well-being.

The current study also advances work-family research by examining longitudinal associations between work stress, negative work-family spillover, and depressive symptoms in a sample of mothers with young children. Given that previous research suggests that maternal depression is associated with both lower quality maternal parenting and increased levels of psychopathology and behavior problems in young children (e.g., Cox, Puckering, Pound, & Mills, 1987; Gefland & Teti, 1990), reducing experiences of job-related stress may have benefits not only for mothers' well-being, but for maternal parenting quality and child well-being as well. Future research, however, is needed to examine whether reduction in workplace stressors predict improved child well-being over time, through increases in maternal well-being.

Finally, an examination of potential differential effects of work stressors depending on the length of time mothers spent in their primary job revealed that, for mothers working full-time (35+ hours / week), work pressure was associated with greater feelings of negative work-family spillover. In contrast, there was no association for mothers working part-time. Results from the current study support the stress exposure hypothesis proposed by Barnett (1998), and suggest that the combination of high levels of job-related pressure and long hours in the workplace is especially detrimental for maternal well-being.

Although these results suggest that negative work-family spillover accounts for a substantial amount of the association between nonflexible work and depressive symptoms, as well as work pressure and depressive symptoms, spillover only partially mediated these associations. This suggests that other processes also account for the associations between work stressors and depressive symptoms over time. One possibility is that experiences of workplace stress are associated with higher levels of job distress, which in turn predict higher depressive symptoms (e.g., Frone, Russell, & Cooper, 1992). This is consistent with an additive model of psychological distress, which suggests work stress negatively shapes perceptions of life quality in both the work and family domains, which in turn predict lower levels of individual well-being.

Additionally, associations between nonflexible work and negative work-family spillover, and work-family spillover and depressive symptoms did not vary according to maternal work hours. Although the differential effects of workplace stressors by worker status have not been examined extensively in the literature, it is possible that some mothers may choose part-time work as a means of deliberately incorporating flexibility and balance into their family lives. As a result, when the workplace is unaccommodating to personal and family needs, this may increase feelings of negative spillover, regardless of the number of hours spent in the workplace. This may be especially true for mothers in the current sample, who were all parents of a 6-month old infant at the first wave of data collection. Feelings of negative work-family spillover are also likely to have a negative impact on individual well-being regardless of the number of hours spent in the workplace, although our findings suggest that the underlying mechanisms that cause feelings of spillover may differ somewhat between part-time and full-time workers.

## Limitations

The current study has several limitations. First, all measures of workplace stressors and individual well-being were based on maternal report. Objective reports of work conditions and psychological well-being would provide greater clarity in determining the extent to which work stress predicts spillover and depressive symptoms over time. Additionally, although the longitudinal design of the study allowed for stronger inferences to be made

regarding the causal directions of associations, the associations are correlational nonetheless. Future research incorporating workplace interventions are needed to fully test causal associations between workplace stressors, perceptions of spillover, and depressive symptoms over time. The current study is also limited to a sample of predominantly low-income, nonmetropolitan mothers -- future research is needed to examine the extent to which work stress is associated with negative spillover and depressive symptoms among fathers with young children.

It should also be noted that several sources of stress not examined in the current study may also contribute to feelings of negative work-family spillover and depressive symptoms over time. Future research should explore how other sources of workplace stress not examined in the current study, such as stressful customer, patient, or co-worker interactions, contribute to negative spillover and depression. Further, a small number of mothers in the current sample ( $n = 23$ ) reported working a secondary job. Future research is needed on the impacts of secondary jobs, as it is currently unclear how conditions at these jobs may influence experiences of negative spillover and depressive symptoms relative to conditions at primary jobs. Although the current paper focused on the role of workplace conditions on maternal well-being, additional sources of family stress not examined here may also contribute to negative spillover and depressive symptoms over time. For example, mothers who have a child with serious health or behavior problems, or mothers who have a spouse or partner who does not contribute adequately to home and child care responsibilities, may be at greater risk for increased feelings of negative work-family spillover and depressive symptoms.

### Policy and Practice Implications

Our findings suggest that nonmetropolitan mothers with infants and young children who experience greater levels of workplace stressors are more likely to perceive their work as negatively interfering with their family life, and are more likely to experience higher levels depressive symptoms over an 18-month period. Further, although differences in associations between work pressure and negative work-family spillover were found between part-time and full-time workers, most associations were the same between groups. This suggests that the negative impacts of work stress cannot be eliminated by simply reducing the amount of time mothers with young children spend in the workplace.

Increasing informal supports in the workplace may represent one way to buffer mothers with young children against higher levels of spillover and depressive symptoms. As many nonmetropolitan mothers are employed in service sector jobs requiring high levels of face time, programs that provide employees with advanced knowledge and greater control over their schedules may be particularly beneficial. Specifically, encouraging supervisors to make work schedules available weeks or months in advance and giving workers greater authority to negotiate their work shifts and hours with other employees could provide greater predictability and autonomy for employed mothers, decreasing the likelihood that work responsibilities would spill over into the family domain (Lambert, 2009). Providing employees with greater knowledge and control over their work schedule represents a promising source of informal support, one that companies may be more willing to implement due to their relative economic feasibility.

Another source of support that may help mothers manage their work and family responsibilities is greater access to flexible and formal child care arrangements. Compared to urban mothers, rural mothers have fewer available child care choices, and more frequently rely on relative care or informal care arrangements (Smith, 2006), despite the fact that these arrangements are often less reliable than formal child care (Siegel & Loman, 1991). Policies and programs that support the increased availability of workplace-based childcare or formal

child care options in rural communities may help offset the demands of less flexible workplaces, reducing the burden on mothers to find ways to balance their work and family responsibilities. However, the high cost of child care may inhibit some low-income mothers from using formal care arrangements, even when more readily available in their communities (Thorne, 2004). Therefore, mothers in nonmetropolitan areas might also benefit from community programs that centralize and distribute information on informal child care providers that are flexible, cost effective, and provide high quality care. Such programs could provide mothers with knowledge of caregivers, outside their immediate circle of relatives and neighbors, who could provide affordable, flexible care when formal child care centers are not readily accessible, or when work schedules and financial resources make formal child care arrangements unsustainable options.

Overall, results from the current study suggest that experiences of work stressors have clear implications for maternal well-being, including increased levels of negative work-family spillover and depressive symptoms over time. Future research should examine whether and how modifications in workplace policies reduce maternal levels of work-family conflict and depressive symptoms over time and, in turn, improve the quality of mothers' family relationships.

## Acknowledgments

This research was supported by a grant from the National Institute of Child Health and Human Development (PO1-HD-39667), Lynne-Vernon Feagans and Martha Cox, PIs, with cofunding from the National Institute on Drug Abuse. The Family Life Project Key Investigators include Lynne Vernon-Feagans, Martha Cox, Clancy Blair, Peg Burchinal, Linda Burton, Keith Crnic, Nan Crouter, Patricia Garrett-Peters, Doug Granger, Mark Greenberg, Stephanie Lanza, Adele Miccio, Roger Mills-Koonce, Deborah Skinner, Cynthia Stifter, Lorraine Taylor, Emily Werner, and Mike Willoughby. We thank Nissa Towe-Goodman and Peg Burchinal for their helpful suggestions on previous versions of this paper.

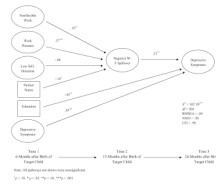
## References

- Barnett RC. Towards a review and reconceptualization of the work/family literature. *Genetic, Social, and General Psychology Monographs*. 1998; 124:125–182.
- Barnett RC, Brennan RT. The relationship between job experiences and psychological distress: A structural equation approach. *Journal of Organizational Behavior*. 1995; 16:259–276.
- Bentler PM. Comparative fit indexes in structural models. *Psychological Bulletin*. 1990; 107:238–246. [PubMed: 2320703]
- Bentler PM, Bonett DG. Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*. 1980; 88:588–606.
- Bolger N, DeLongis A, Kessler RC, Wethington E. The contagion of stress across multiple roles. *Journal of Marriage and the Family*. 1989; 51:175–183.
- Bond, JT.; Galinsky, E.; Swanberg, JE. *The 1997 National Study of the Changing Workforce*. New York: Families and Work Institute; 1998.
- Browne, M.; Cudeck, R. Alternative ways of assessing model fit. In: Bollen, K.; Long, J., editors. *Testing structural equation models*. Newbury Park, CA: Sage; 1993. p. 136-162.
- Byron K. A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*. 2005; 67:169–198.
- Cox AD, Puckering C, Pound A, Mills M. The impact of maternal depression in young children. *Journal of Child Psychology and Psychiatry*. 1987; 28:917–928. [PubMed: 3436997]
- Crouter AC, Lanza ST, Pirretti A, Goodman WB, Neebe E. The Family Life Project Key Investigators. The O\*Net jobs classification system: A primer for family researchers. *Family Relations*. 2006; 55:461–472.
- Eby LT, Casper WJ, Lockwood A, Bordeaux C, Brinley A. Work and family research in IO/OB: Content analysis and review of the literature (1980–2002). *Journal of Vocational Behavior*. 2005; 66:124–197.

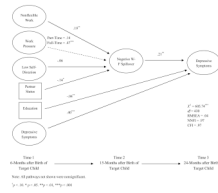
- Derogatis, L. Brief Symptom Inventory 18. Minneapolis, MN: NCS Pearson, Inc.; 2000.
- Franché RL, Williams A, Ibrahim S, Grace SL, Mustard C, Minore B, et al. Path analysis of work conditions and work-family spillover as modifiable workplace factors associated with depressive symptomatology. *Stress and Health*. 2006; 22:91–103.
- Frone MR, Russell M, Cooper ML. Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology*. 1992; 77:65–78. [PubMed: 1556042]
- Gefland DM, Teti DM. The effects of maternal depression on children. *Clinical Psychology Review*. 1990; 10:329–353.
- Gibbs, R.; Kusmin, L.; Cromartie, J. Low-skill employment and the changing economy of rural America. Washington, DC: U.S. Government Printing Office; 2005.
- Griffin JM, Fuhrer R, Stansfeld SA, Marmot M. The importance of low control at work and home on depression and anxiety: Do these effects vary by gender and social class? *Social Science & Medicine*. 2002; 54:783–798. [PubMed: 11999493]
- Grzywacz JG, Marks NF. Reconceptualizing the work-family interface: An ecological perspective on the correlates of positive and negative spillover between work and family. *Journal of Occupational Health Psychology*. 2000; 5:111–126. [PubMed: 10658890]
- Jöreskog K, Sörbom D. LISREL 8.80. Chicago: Scientific Software International. 2006
- Lambert, S. Making a difference for hourly employees. In: Booth, A.; Crouter, AC., editors. *Work-life policies*. Washington, DC: Urban Institute Press; 2009. p. 169-198.
- Lennon MC. Women, work, and well-being. *Journal of Health and Social Behavior*. 1994; 35:235–247. [PubMed: 7983336]
- Little T, Cunningham W, Shahar G, Widaman K. To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling*. 2002; 9:151–173.
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 2002; 7:83–104. [PubMed: 11928892]
- Major VS, Klein KJ, Ehrhart MG. Work time, work interference with family, and psychological distress. *Journal of Applied Psychology*. 2002; 87:427–436. [PubMed: 12090600]
- Mausner-Dorsch H, Eaton WW. Psychosocial work environment and depression: Epidemiologic assessment of the demand-control model. *American Journal of Public Health*. 2000; 90:1765–1770. [PubMed: 11076247]
- Moos, RH. *Work environment scale manual*. 2nd ed.. Palo Alto, CA: Consulting Psychologists Press; 1986.
- Nelson, MK.; Smith, J. *Working hard and making do: Surviving in small town America*. Berkeley, CA: University of California Press; 1999.
- Paterniti S, Niedhammer I, Lang T, Consoli SM. Psychosocial factors at work, personality traits, and depressive symptoms: Longitudinal results from the GAZEL study. *British Journal of Psychiatry*. 2002; 181:111–117. [PubMed: 12151280]
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Ralston DA. How flexitime eases work/family tensions. *Personnel*. 1990; 67:45–48.
- Rogers WM, Schmitt N. Parameter recovery and model fit using multidimensional composites: A comparison of four empirical algorithms. *Multivariate Behavioral Research*. 2004; 39:379–412.
- Siegel, GL.; Loman, LA. *Child care and AFDC recipients in Illinois: Patterns, problems and needs*. St. Louis, MO: Institute of Applied Research; 1991.
- Smith, K. *Reports on Rural America: Fact Sheet No. 7*. Durham, NH: Carsey Institute; 2007. Employment rates higher among rural mothers than urban mothers.
- Smith, K. *Reports on Rural America: Policy Brief No. 3*. Durham, NH: Carsey Institute; 2006. Rural families choose home-based child care for their preschool-aged children.
- Tabachnick, BG.; Fidell, LS. *Using multivariate statistics*. 4th ed.. Needham Heights, MA: Allyn and Bacon; 2001.



- Thomas L, Ganster D. Impact of family-supportive work variables on work-family conflict and strain: A control perspective. *Journal of Applied Psychology*. 1995; 80:6–15.
- Thompson CA, Prottas DJ. Relationship among organizational family support, job autonomy, perceived control, and employee well-being. *Journal of Occupational Health Psychology*. 2005; 10:100–118.
- Thorne, B. Work-family challenges for low-income parents and their children. Crouter, AC.; Booth, A., editors. Mahwah, NJ: Erlbaum; 2007. p. 165-178.
- Wang J, Patten SB. Perceived work stress and major depression in the Canadian employed population, 20–49 years old. *Journal of Organizational Health Psychology*. 2001; 6:283–289.



**Figure 1.** Maternal Work Stress, Negative Work-Family Spillover, and Depressive Symptoms: One Group Mediation Model (N = 414)  
 Note: All pathways not shown were nonsignificant.  
 †  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$



**Figure 2.**  
 Two Group Mediation Model: Part-Time (n = 149) versus Full-Time (n = 265) Workers  
 Note: All pathways not shown were nonsignificant.  
 †  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 1

Intercorrelations among maternal individual and demographic characteristics, work stressors, negative work-family spillover, and depressive symptoms (N = 414).

	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	—											
2. Race <sup>b</sup>	-.22***	—										
3. Education level	.48***	-.23***	—									
4. Income / needs ratio	.39***	-.35***	.50***	—								
5. Partner status <sup>c</sup>	.39***	-.44***	.35***	.38***	—							
6. Work status <sup>d</sup>	.15**	.04	.18***	.18***	.05	—						
7. Nonflexible work	-.14**	.24***	-.23***	-.20***	-.25***	.003	—					
8. Work pressure	.13**	-.03	.14**	.12*	.03	.02	.34***	—				
9. Low self-direction	-.22***	.18***	-.21***	-.21***	-.12*	-.03	.25***	-.08	—			
10. Negative work-family spillover	-.03	.01	-.01	-.03	-.13**	.05	.27***	.33***	-.03	—		
11. Depressive symptoms (Time 1)	-.13**	.16**	-.15**	-.18***	-.19***	.06	.20***	.07	.12*	-.07	—	
12. Depressive symptoms (Time 3)	-.12*	.19***	-.23***	-.20***	-.25***	-.06	.26***	.15**	.03	.26***	.42***	—

<sup>a</sup>State: 0 = North Carolina, 1 = Pennsylvania.

<sup>b</sup>Race: 0 = White, 1 = African American.

<sup>c</sup>Partner Status: 0 = single, 1 = partnered.

<sup>d</sup>Work Status: 0 = part-time, 1 = full-time.

† p < .10.

\* p < .05.

\*\* p < .01.

\*\*\* p < .001.