

Daily Positive Spillover and Crossover From Mothers' Work to Youth Health

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Prior research shows that employees' work experiences can "spill over" into their family lives and "cross over" to affect family members. Expanding on studies that emphasize negative implications of work for family life, this study examined positive work-to-family spillover and positive and negative crossover between mothers and their children. Participants were 174 mothers in the extended care (nursing home) industry and their children (ages 9–17), both of whom completed daily diaries on the same 8 consecutive evenings. On each workday, mothers reported whether they had a positive experience at work, youth reported on their mothers' positive and negative mood after work, and youth rated their own mental (positive and negative affect) and physical health (physical health symptoms, sleep quality, sleep duration). Results of 2-level models showed that mothers' positive mood after work, on average, was directly related to youth reports of more positive affect, better sleep quality, and longer sleep duration. In addition, mothers with more positive work experiences, on average, displayed less negative mood after work, and in turn, adolescents reported less negative affect and fewer physical health symptoms. Results are discussed in terms of daily family system dynamics.

Keywords: positive work–family spillover, crossover, work–family, adolescent health

Parents' work experiences are directly linked to their children's health (Almeida & Davis, 2011). Most research, however, has focused on the negative effects of work on families and neglected possible *positive* effects (Bianchi & Milkie, 2010). Such information could illuminate potentially malleable conditions under which employees thrive (Greenhaus & Powell, 2006). In addition, little research has examined *mechanisms* linking parents' work experiences to youth health, such as parental behaviors and emotions (Crouter, Bumpus, Maguire, & McHale, 1999). In this study, we aimed to fill these gaps in the literature by using daily diary data to examine (a) whether mothers' positive work experiences spilled over to affect their own positive and negative moods after work; (b) whether mothers' mood after work crossed over to affect their adolescent-aged children's mental and physical health; and (c) whether mothers' positive work experiences were indirectly linked

to their children's mental and physical health through mothers' mood after work.

Systems Perspectives on Work–Family Relations

According to Bronfenbrenner's (1979) ecological systems perspective, individuals and families are embedded in a multilayered contextual system that has implications for their behavior, health, and development. In this study, we focused on how exosystem influences—namely mothers' experiences at work—had implications for their children. Our study also is grounded in a family systems perspective, which directs attention to the interconnections among family members (Cox & Paley, 1997). From both ecological and systems perspectives, work and family are dynamic, and thus understanding how they operate to affect individual and family health and well-being requires methods—such as daily diaries—that capture variation and change over time.

The idea that parents' work can indirectly influence children's mental and physical health is grounded in ten Brummelhuis and Bakker's (2012) work–home resources model. This model asserts that work resources have the potential to positively influence home life by increasing the personal resources of the employed individual. For example, schedule flexibility and social support from colleagues at work may increase an employee's resources, including temporal availability, skills, knowledge, positive mood, and physical energy. In turn, these personal resources may improve home life in numerous ways. Employees may be more engaged, such that they are better able to monitor their children's health and promote their health behaviors and may have more positive inter-

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actions with family members, which may lead to a less stressful home environment and better health among family members.

Work–Family Spillover

Work–family spillover involves the transfer of emotions, cognitions, and behaviors between work and home (Edwards & Rothbard, 2000). The majority of research on this topic has focused on negative spillover; that is, negative experiences at work that have adverse implications for employees' family lives (Bianchi & Milkie, 2010). The concern that has dominated work–family research has been that individuals experience stress because of a lack of time and energy to fulfill obligations in multiple roles, and this stress has ripple effects beyond the employee (Zedeck & Mosier, 1990). In contrast, the expansionist hypothesis asserts that there are advantages to having multiple roles (Greenhaus & Powell, 2006): Multiple roles can produce positive outcomes through additive effects on well-being by buffering individuals from the stressors of another role and by spilling over to improve experiences in other roles.

We know little about positive work–family spillover or other similar constructs (e.g., work–family enrichment and facilitation), such as the associations between positive experiences at work and emotions at home (Crain & Hammer, 2013). Ecological momentary assessment (EMA) methods, an approach wherein participants complete brief surveys about their current experiences in real time, often at multiple time points throughout the day, has begun to address this issue. Results of EMA studies showed, for example, that parents' last self-reports of positive mood at work were associated with parents' subsequent reports of positive mood at home after work hours (Song, Foo, & Uy, 2008). In this study, we examined how mothers' reports of positive experiences at work were associated with their moods after work as reported by their children using daily diary data—a method, which like EMA, is grounded in the premise that human behavior is dynamic and varies over time. Prior research tends to rely on parents' reports of both work and family experiences, and our goal in using youth reports was to avoid inflated correlations that can result from single-reporter bias.

Crossover Between Family Members

Spillover, an intraindividual process, can lead to a second interindividual process whereby emotions transfer or cross over from one person to another (Westman, 2001). Larson and Almeida's (1999) emotional transmission model asserts that individuals' daily emotions and events may predict subsequent emotions or behaviors in their family members. In fact, negative experiences— anxiety, burnout, distress, depression, work–family conflict, marital dissatisfaction, and health complaints—have been found to cross over between married–cohabiting partners. We know much less, however, about whether and how experiences cross over among parent–child dyads (Bakker, Westman, & van Emmerik, 2009), and the limited available research focuses on negative crossover. For example, mothers who experience stressful events at work are more likely to withdraw from their children after work (Repetti & Wood, 1997). Research on positive crossover is needed to strengthen work–family theory as well as improve policies and practices aimed at promoting work–family balance (Westman,

2001). Accordingly, this study was designed to contribute much-needed information about positive crossover of mothers' mood to their children's health, as indexed by youth's daily positive and negative affect, physical health symptoms, sleep quality, and sleep duration.

We also studied the crossover of mothers' negative mood to their children's health. Prior research showed that positive and negative emotions are not opposite ends of the same continuum, but instead, represent two distinct constructs. Positive emotion refers to the extent to which a person feels alert and active, whereas negative emotion refers to a general dimension of distress (Watson, Clark, & Tellegen, 1988). A more complete picture of the positive interdependencies between work and family processes requires attention to both kinds of emotion. Positive experiences at work may indirectly influence youth by reducing their mothers' negative mood after work or increasing their positive mood, thereby reducing negative crossover or increasing positive crossover between mothers and children. We tested this idea, examining whether mothers' positive experiences at work indirectly influenced their children's health by increasing mothers' positive mood and decreasing their negative mood after work.

In addition to the level of mothers' positive and negative mood after work, the *variability* in mothers' mood across a work week may have implications for their children's health. That is, day-to-day variation or lability, the extent to which an individual's health and well-being fluctuate over short time periods, may reflect significant psychosocial dynamics (Ram & Gerstorff, 2009). Research has found that variability in perceptions and emotions may have negative implications for relationships. For example, Campbell and colleagues (2010) found that variability in perceptions of relationship quality was associated with more negative and less positive behavior during a conflict resolution task. We know almost nothing about lability in parents' moods, but given prior research documenting the negative implications of inconsistency in parenting for children's well-being (Fiese et al., 2002), we predicted that greater variability in mothers' mood after work would be linked to more negative youth outcomes.

A Daily Diary Approach

Most research on spillover and crossover has relied on cross-sectional data, with the spheres of work and family implicitly treated as static (Almeida, 2004). Ecological and family systems perspectives, however, direct attention to the dynamic nature of work and family processes, which can vary across many time scales—such as across generations, developmental periods, years, seasons—and even across days of the week. A tough day at work filled with numerous demands, for example, may be followed by a day that is relatively smooth and free of unusual challenges. A daily diary approach, which involves collecting data on experiences on a given day for a number of consecutive days, captures this dynamic nature of work and its links with family experiences on that same day. This approach also addresses two other significant limitations that are inherent in cross-sectional designs: self-report biases and unmeasured confounds. By collecting reports on and about a specific day, daily diary methods limit memory demands and avoid self-perception biases that can color global self-reports. In addition, beyond the typically studied questions about between-person associations (e.g., On average, do parents

who report more positive experiences at work have children who report more positive affect?), a repeated-measures design allows investigators to address questions about within-person associations (e.g., On days when parents report more positive experiences at work than usual, do their children also report more positive affect than usual on the same day?). In addition, by treating individuals as their own controls, these within-person associations rule out stable individual or contextual characteristics as third variable explanations of patterns of association.

The Role of Youth Gender and Age

Past research indicates that adolescents identify more with their same-gender parent (Crouter, Manke, & McHale, 1995), that same-gender parent-child dyads report closer relationships and more time together (Shanahan, McHale, Crouter, & Osgood, 2007), and that emotional crossover is most common between mothers and daughters (Larson & Richards, 1994). Thus, many researchers have argued that it is important to consider child gender when studying family dynamics (McHale, Crouter, & Whiteman, 2003). In addition, family dynamics, including crossover processes, may be dependent on youth age. Parental warmth and the time youth spend with parents, for example, decrease across adolescence (Lam, McHale, & Crouter, 2012; Shanahan et al., 2007). Therefore, we examined both youth gender and age as moderators of crossover processes.

The Present Study

The overarching goal of this study was to examine crossover of mothers' mood after work to youth's daily health. We included indicators of both youth's mental (positive-negative affect) and physical health (physical health symptoms, sleep quality and duration) to gain a broader understanding of the implications of mothers' work and mood on youth well-being. Most research on parents' work and youth well-being has targeted psychological and behavioral adjustment. Because health in adolescence has implications in domains such as school and social adjustment and because it sets the stage for health later in life (Wolfson &

Carskadon, 1998), we included physical health markers as a focus of our analyses.

We used a daily diary approach to address three aims. The first was to assess daily positive work-to-family spillover in the form of linkages between mothers' positive experiences at work and their children's reports of mothers' mood after work (Path A in Figure 1). We predicted that more positive work experiences would be linked, on both the between-person and within-person levels, to youth's reports of more positive and less negative maternal moods after work. Second, we assessed work-to-family crossover in the form of linkages between both the level and lability in mothers' moods after work and their children's health (Path B in Figure 1). Here we predicted that mothers' positive mood would be positively related and their negative mood would be negatively related, on both the between- and within-person levels, to their children's health. Further, we expected that greater lability in mothers' moods, particularly lability in negative mood, would be related to poorer youth health. Third, we tested whether mothers' positive work experiences were indirectly linked to youth's health through mothers' mood after work (Path C in Figure 1), testing the prediction that positive work experiences would be linked to more positive and less negative maternal mood, which in turn, would be linked to more positive and less negative youth health outcomes. Both youth gender and age were examined as moderators of the spillover and crossover processes. Because work is most likely to influence parenting if parents and children spend time together (Roeters, Van Der Lippe, & Kluwer, 2010), we expected that crossover effects would be most evident for daughters and younger youth.

Method

Participants

The data came from a larger study focused on the impact of work conditions on the health of employees, their families, and their work organization (Bray et al., 2013; King et al., 2012). Participants in this study included 174 mothers working at 30

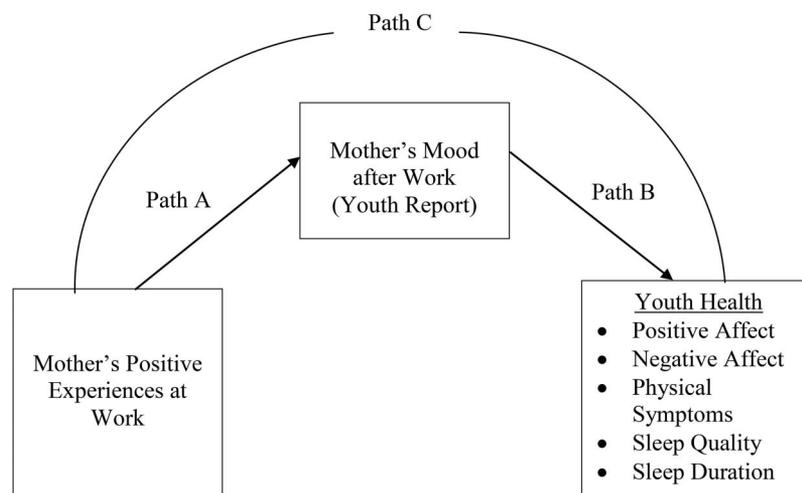


Figure 1. Conceptual model of daily positive work-family spillover and positive and negative crossover.

work sites in the extended care industry (i.e., nursing homes) who had a child between 9 and 17 years of age who agreed to be involved in the study. Most mothers (64.37%) were married or cohabiting. A majority had completed some college ($n = 93$, 53.45%), and some had 4-year college degrees ($n = 17$, 9.77%). Most mothers were White ($n = 108$, 62.07%), with smaller proportions from Hispanic ($n = 26$, 14.94%), African American ($n = 23$, 13.22%), and other ($n = 17$, 9.77%) racial-ethnic backgrounds. On average, mothers had 2.26 ($SD = 1.13$) children living in their homes, worked 36.74 hr per week ($SD = 8.24$), earned between \$40,000 and \$50,000 per year, and had worked for the company for 6.41 years ($SD = 3.42$). Most mothers worked regular daytime schedules ($n = 102$, 58.62%); 36 mothers worked regular evening shifts (20.69%); and the rest of the mothers worked variable, rotating, or split shifts. Youth participants (47.13% male, M age = 13.02, $SD = 2.22$) included biological, step, or adopted youth who were living with their mother for at least 4 days a week. If more than one child was eligible to participate, we recruited the child closest to 13 years of age. Out of 1,392 possible days, the analyses were restricted to a total of 736 completed work day observations (i.e., youth and mothers completed the daily interview). A majority of participants ($n = 147$, 85.0%) reported working 3 or more days during the 8 days of daily diary interviews.

Procedures

The larger study included three components: a workplace interview for employees, and for those with a child aged 9–17 who agreed to participate, a home interview and a series of daily diary interviews that were conducted by telephone. For the workplace interview, employees were recruited through letters and brochures that were sent as an insert with their paycheck, study posters, and informational material posted throughout workplace; and members of the research team participated in workplace meetings and held several “meet and greet” sessions to provide employees with information about the study. For the daily diary, employees who participated in the larger study were recruited at the end of the workplace interview. Eligible employees were provided information about the daily diary through computer-assisted scripts and a brochure.

Trained interviewers conducted computer-assisted personal interviews (CAPI) with the employees at the workplace and with employee-parents and their children in their homes. Data collection began with informed consent-*assent* procedures for workplace, home and diary studies, which were approved by the institutional review boards of the project’s principal investigators. At the end of the home interview, a series of eight consecutive nightly phone calls with the employee parent and her child were scheduled by trained personnel at the University’s survey research center, which has special expertise in collecting diary data. Interviewers were trained by research personnel, with training including human participants’ protections and directions to read all questions as worded in a script, while maintaining a conversational style.

The employee and her child each completed individual interviews on the same 8 days. To increase compliance and to accommodate participants’ busy schedules, nightly interviews

were conducted at times most convenient for families. Interviewers used a computer-assisted telephone interview procedure for each diary interview, which lasted around 25 min for employee parents and 15 min for youth. Before starting the interview, participants were asked to move to a quiet and private location. During each interview, the employee and adolescent reported on their daily stressors, interactions with family members, physical health, affect, and time use. Each family received \$150 dollars for their participation in the diary study.

Employees and youth completed 88.65% and 88.79% of the diary days, respectively. On average, both employees and youth completed just over 7 days (employee, $M = 7.06$, $SD = 1.68$; youth, $M = 7.12$, $SD = 1.69$). Participants ranged from completing 1 day (3.45% of employees and 3.73% of youth) to all 8 days (62.07% of employees and 64.6% of youth). Diaries were not completed if a participant was unable to be reached through telephone or refused to participate on a given day. The current sample included all individuals who participated in at least one diary day ($n = 174$). Days with missing data on the predictor variables were excluded from analyses.

Out of the 393 employees who were eligible for the daily diary portion of the study, 182 parent-child dyads chose to participate. Eight employee fathers were excluded from the analyses because of the small number of men. Independent sample t tests and chi-square analyses indicated that the mothers who chose to participate in the daily diary ($n = 174$) did not significantly differ from mothers who did not participate ($n = 199$) in terms of education, age, age-gender of target child, income, number of children living in the home, tenure, minority status, and marital status.

Measures

Positive experiences at work. After determining whether mothers worked on a given day (i.e., have you worked at your primary job in the past 24 hours?), mothers were asked, “Did you have an experience at your (primary) job that was particularly positive since this time yesterday?” Mothers responded yes (1) or no (0).

Mothers’ mood after work. On days when their mother worked, youth reported on five items pertaining to their mothers’ mood after work (happy, tired, angry, stressed, sad) using a 4-point rating scale (1 = *not at all*, 4 = *very*). For each work day, youth’s ratings of mothers’ happiness were used to index mothers’ positive mood after work; and youth’s ratings of mothers’ tiredness, anger, stress, and sadness were averaged to create an index of mothers’ negative mood. To create measures of the lability of mothers’ positive and negative affect, following Ram and Gerstorf (2009), we used the within-person standard deviation of youth’s reports of mothers’ mood (i.e., the amount of variation from each individual’s own mean across diary days).

Youth health outcomes. Using 11 items adapted from the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), youth reported how often they had experienced positive (e.g., excited, happy) and negative (e.g., upset, nervous) emotions throughout the day using a 5-point rating scale (1 = *none of the time*; 5 = *all of the time*). Items were averaged to create positive and negative affect scores. Negative affect was log-

transformed to account for skewness. To assess physical health symptoms, youth reported whether they had or had not experienced each of six ailments (e.g., headache, stomach ache) using items adapted from [Larsen and Kasimatis's \(1991\)](#) physical symptom checklist. Items were summed to create an indicator of physical health symptoms. To assess sleep quality, youth responded to one item, "How well did you sleep last night," using a 4-point rating scale (1 = *very badly*, 4 = *very well*). This item, which was based on an item from the Pittsburgh Sleep Quality Index, was modified to assess daily sleep quality ([Buysse, Reynolds, Monk, Berman, & Kupfer, 1989](#)). To assess sleep duration, youth reported the time they went to bed at night and woke up in the morning. Sleep duration (in hours) was calculated based on these reports. Because youth reported on the previous night's sleep, lagged analyses were conducted so that mothers' mood after work today would be aligned with their children's sleep that night.

Covariates. Youth gender (0 = female, 1 = male), youth age, day of the study (0 = Day 1, 7 = Day 8), and mothers' education (1 = *completed Grade 1 through 8*; 5 = college graduate) were added as covariates in all models because they were significantly correlated with the measures of interest. In addition, negative work experience was added as a covariate in the model examining the associations between positive work experiences and mothers' mood after work. This variable was significantly related to mothers' mood after work, and in addition, because past research indicated that negative experiences are often more salient than positive experiences, we aimed to assess the effects of mothers' positive experiences net of the effects of their negative experiences ([Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001](#)). Participants were asked about five common negative events that occur at work (e.g., an argument with a coworker, stressful demands were placed on them). Responses were coded to indicate whether participants experienced any negative event at work (0 = no, 1 = yes).

Results

Analytic Strategy

Multilevel models were conducted using SAS Proc Mixed (Version 9.3) to account for the clustered design (days within persons). First, mothers' positive work experiences were examined as predictors of youth's reports of mothers' mood after work (Path A in [Figure 1](#)). Second, youth's report of mothers' positive and negative mood and lability in mothers' mood after work were examined as predictors of youth's positive affect, negative affect, physical symptoms, sleep quality, and sleep duration (Path B in [Figure 1](#)). Next, both mothers' work experiences and youth's reports of mothers' mood after work were examined as predictors of youth's health outcomes. On the basis of recommendations of [Krull and MacKinnon \(2001\)](#), the estimates obtained in Paths A and B were used to calculate the indirect effects of positive work experiences on youth's outcomes through mothers' mood after work. Specifically, the estimates of the associations between positive work experiences and mothers' mood were multiplied by the estimates of the associations between mothers' mood after work and each youth outcome (after controlling for positive experiences at work). [Tofiqhi and MacKinnon's \(2011\)](#) R Mediation package was

used to test the significance of the indirect effects because it accounts for the nonnormal distribution of the product of the estimates obtained in Paths A and B and thus is considered the most accurate estimate of statistical significance.

In testing each model, both between- and within-person effects were examined. To obtain the between-person estimates, individuals' average scores across all days, centered at the sample mean, were entered at Level 2. The time-varying scores, centered at the person mean, were entered at Level 1. An example equation (positive mood after work predicting youth's physical symptoms) follows:

$$Physical\ Symptoms_{di} = \beta_{0i} + \beta_{1i}(WP\ Positive\ Mood\ After\ Work)_{di} + \beta_{2i}(Day\ in\ Study)_{di}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(BP\ Positive\ Mood\ After\ Work)_i + \gamma_{02}(Youth\ Age)_i + \gamma_{03}(Youth\ gender)_i + \gamma_{03}(Mother\ Education)_i + \mu_{0i}$$

$$\beta_{1i} = \gamma_{10} + \mu_{1i}$$

$$\beta_{2i} = \gamma_{20} + \mu_{2i}$$

Effect sizes were calculated for all significant main effects using the proportional reduction in variance statistic (PRV) recommended by [Peugh \(2010\)](#). [Ram and Gerstorf's \(2009\)](#) recommendations for conducting lability analyses were followed to test the effects of day-to-day variation in mothers' mood on youth's health. Here, the within-person standard deviation of mothers' mood after work across the 8 days was entered in a regression model as a predictor of youth's positive-negative affect, physical health symptoms, sleep quality, and sleep duration (all variables are at the between-person level). The analysis was restricted to individuals who had at least three observations to assure that we captured lability (negative mood analyses: $n = 105$, 60.34% of the original sample; positive mood analyses: $n = 102$, 58.62% of the original sample). Independent samples *t* tests indicated that the excluded participants did not significantly differ from the included participants on any of the youth health outcomes. The lability regression analyses included the same covariates as the previous analyses as well as the average level of mothers' mood after work across the 8 days. Eta-squared was calculated to estimate the effect size.

Descriptive Statistics and Covariates

Means, standard deviations, and correlations between study variables are shown in [Table 1](#). Intraclass correlations ranged between .24 and .63, evidence of both between-individual and within-individual variation and supporting the use of a daily diary design. On average, participants reported experiencing a positive event at work during 25% of work days and a negative event at work during 40% of work days. A total of 80 mothers did not report a positive event and 35 mothers did not report a negative event during any of the daily diary work days.

As can be seen in [Table 2](#), many of the covariates were associated with mothers' reports of positive affect after work. Having younger children, having a daughter, and higher levels of mothers' education were associated with youth reporting that mothers were in a more positive mood after work. In addition, on days when mothers reported a negative work experience, children reported that their mothers had less positive affect after work. Further, at the between-person level, mothers' reports of negative experiences at

Table 1
Means (Standard Deviations) and Correlations for Study Variables (N = 174 dyads, N = 736 Work Days)

Variable	M (SD)	1	2	3	4	5	6	7	8	9
Mothers' work experiences										
1. Positive experiences at work	.25 (.43)	.31	.15***	.06	-.07	.06	.02	-.00	.03	-.05
2. Negative experiences at work	.40 (.49)	.29***	.24	-.11*	.14**	-.02	.01	.05	-.05	-.07*
Mothers' mood after work										
3. Positive mood	2.75 (.79)	.06	-.08*	.47	-.39***	.30***	-.07	.01	.26***	.11*
4. Negative mood	1.53 (.47)	-.13**	.13**	-.41***	.57	-.10*	.33***	.18***	-.21***	-.05
Youth health										
5. Youth positive affect	3.16 (.98)	.08*	-.11**	.39***	-.10*	.63	.10*	-.08*	.29***	.16***
6. Youth negative affect	1.33 (.54)	-.01	-.02	-.05	.42***	.13***	.61	.24***	-.12**	-.04
7. Youth physical symptoms	.65 (.90)	-.05	.01	-.07	.27***	-.12***	.32***	.39	-.21***	-.16***
8. Youth sleep quality	3.38 (.68)	-.01	-.16***	.36***	-.27***	.45***	-.16***	-.30***	.36	.26***
9. Youth sleep duration	8.93 (1.85)	-.07*	-.05	.25***	-.09*	.27***	-.01	-.24***	.28***	.31

Note. Descriptive statistics reported for work days only. Diagonals (bold) show intraclass correlations (ICC = between-person level variance/total variance) of the variable. Numbers below the diagonal represent between-person level correlations (N = 174) and numbers above the diagonal indicate within-person level correlations (N = 174). Positive and negative experiences at work were coded yes (1) and no (0), so the mean reflects the percentage of days (on average) that participants reported a positive-negative work experience.

* $p < .05$. ** $p < .01$. *** $p < .001$.

work were positively associated with youth reports of mothers' negative mood after work. Finally, as can be seen in Table 3, older adolescents reported lower levels of positive affect, poorer sleep quality, and shorter sleep duration. Girls reported less negative affect and fewer physical health symptoms than boys.

Research Question 1: Documenting Positive Work-to-Family Spillover

There were no associations between mothers' reports of positive work experiences and youth's reports of mothers' positive mood after work (see Table 2). However, a significant negative associ-

ation between mothers' positive experiences at work and youth's report of mothers' negative mood emerged at the between-person level: Mothers who reported more positive work experiences, on average, displayed lower levels of negative mood after work according to their children, 95% confidence interval (CI) [-0.58, -0.07], PRV = 4.52%.

Research Question 2: Crossover Between Mothers' Mood and Youth Health

Results of the analyses examining between- and within-person effects of youth's reports of mothers' mood after work on their

Table 2
Positive Work-to-Family Spillover: Results of Multilevel Models Linking Mothers' Work Experiences to Youth's Report of Mothers' Mood After Work

Variable	Youth report of mothers' positive affect after work	Youth report of mothers' negative affect after work
	Estimate (SE)	Estimate (SE)
Fixed effects		
Intercept	3.00 (0.10)***	1.53 (0.06)***
Youth age	-0.06 (0.02)*	0.01 (0.02)
Youth gender ^b	-0.20 (0.10)*	0.01 (0.07)
Mother education ^c	0.24 (0.07)***	-0.04 (0.05)
Day in study ^d	-0.02 (0.01)	-0.01 (0.01)
BP positive work experiences ^a	0.08 (0.19)	-0.33 (0.13)*
WP positive work experiences	0.08 (0.08)	0.03 (0.05)
BP negative work experiences ^a	-0.05 (0.19)	0.27 (0.13)*
WP negative work experiences	-0.27 (0.08)***	0.08 (0.04) [†]
Random effects		
Intercept	0.22 (0.04)***	0.12 (0.02)***
Residual	0.32 (0.03)***	0.10 (0.01)***

Note. Youth's reports of mothers' positive and negative moods after work were entered as separate dependent variables. Youth age, gender, mother education, day in study, and negative work experiences were entered as covariates in the models. All between-person (BP) predictors were centered around the sample mean. WP = within person.

^a Positive/negative experiences at work were coded as *yes* (1) or *no* (0). ^b Youth gender was coded as *female* (0) or *male* (1). ^c Mother's education was coded as 1 (*completed Grades 1 through 8*) to 5 (*college graduate*). ^d Day in study was coded as 0 (*Day 1*) to 7 (*Day 7*).
[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3
 Work-to-Family Crossover: Multilevel Results of Youth's Daily Reports of Mothers' Mood After Work Predicting Youth's Health

Variable	Positive affect	Negative affect (log transformed)	Physical symptoms	Sleep quality	Sleep duration
	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Positive mood after work					
Fixed effects					
Intercept	3.23 (0.10)***	0.30 (0.04)***	1.00 (0.10)***	3.43 (0.08)***	9.03 (0.21)***
Youth age	-0.12 (0.03)***	-0.02 (0.01)	-0.01 (0.03)	-0.07 (0.02)**	-0.22 (0.05)***
Youth gender	0.12 (0.14)	-0.11 (0.05)*	-0.32 (0.13)*	0.12 (0.09)	-0.28 (0.22)
Mother education	0.03 (0.10)	-0.01 (0.03)	-0.01 (0.09)	0.08 (0.07)	-0.15 (0.16)
Day in study	-0.02 (0.01)	0.0002 (0.01)	-0.05 (0.02)**	-0.03 (0.01)*	0.01 (0.04)
BP positive mood after work	0.44 (0.12)***	-0.06 (0.04)	-0.02 (0.11)	0.15 (0.08)†	0.40 (0.20)*
WP positive mood after work	0.08 (0.05)	-0.02 (0.02)	-0.01 (0.07)	-0.07 (0.05)	-0.00 (0.15)
Random effects					
Intercept	0.48 (0.07)***	0.05 (0.01)***	0.34 (0.07)***	0.16 (0.03)***	0.65 (0.21)**
Residual	0.28 (0.02)***	0.05 (.004)***	0.52 (0.04)***	0.27 (0.02)***	2.08 (0.19)***
Negative mood after work					
Fixed effects					
Intercept	3.29 (0.10)***	0.28 (0.03)***	1.00 (0.10)***	3.35 (0.08)***	9.06 (0.21)***
Youth age	-0.14 (0.03)***	-0.02 (0.01)*	-0.02 (0.03)	-0.08 (0.02)***	-0.23 (0.05)***
Youth gender	0.04 (0.14)	-0.08 (0.04)*	-0.30 (0.12)*	0.09 (0.09)	-0.35 (0.22)
Mother education	0.13 (0.10)	-0.01 (0.03)	-0.01 (0.09)	0.10 (0.07)	0.03 (0.16)
Day in study	-0.02 (0.01)	0.002 (0.005)	-0.05 (0.02)**	-0.03 (0.01)*	0.02 (0.04)
BP negative mood after work	-0.03 (0.17)	0.31 (0.05)***	0.58 (0.15)***	-0.17 (0.12)	0.03 (0.28)
WP negative mood after work	-0.07 (0.09)	0.03 (0.04)	0.11 (0.13)	-0.13 (0.10)	-0.38 (0.29)
Random effects					
Intercept	0.53 (0.08)***	0.04 (0.01)***	0.30 (0.06)***	0.16 (0.03)***	0.64 (0.22)**
Residual	0.28 (0.02)***	0.05 (0.004)***	0.52 (0.04)***	0.27 (0.02)***	2.19 (0.20)***

Note. All between-person (BP) predictors were centered around the sample mean. Youth's positive-negative affect, physical health symptoms, sleep quality, and sleep duration were entered as separate dependent variables. Because of the skewness of the variable, negative affect was log transformed. Lagged analyses were conducted for sleep quality because youth reported on previous nights' sleep. Youth age, gender, mother's education, and day in study were entered as covariates in the models. Gender was coded as female (0) or male (1). WP = within person.

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

reports of their health outcomes can be seen in Table 3. The 95% CIs and effect sizes for all significant effects, the results of moderation analyses, and the results of lability analyses are presented below.

Youth's positive affect. There was a significant positive association between youth's reports of mothers' positive mood and youth's positive affect at the between-person level. On average, youth who reported that their mothers were happier when they got home from work also reported experiencing higher levels of positive affect, CI [0.21, 0.68], PRV = 11.77%. Day-to-day variability in mothers' positive mood after work was not associated with youth's positive affect.

There was no main effect of mothers' negative mood after work on youth's reports of their positive affect. However, youth age was a significant moderator: for younger children only, at the between-person level, there was a trend level negative association between mothers' negative mood after work and youth's positive affect $B = -0.55, p < .10, CI [-1.15, 0.05]$. In addition, the lability analyses revealed that more day-to-day variability in mothers' negative mood after work was associated with lower positive affect in youth, on average, $B = -1.07, p < .05, CI [-2.09, -0.06], \eta^2 = .04$.

Youth's negative affect. There was no main effect of mothers' positive mood after work on youth's negative affect. However, age was a significant moderator: for younger children only, at the between-person level, there was a negative relation between mothers'

positive mood after work and youth negative affect, $B = -0.12, p < .02, CI [-0.22, -0.02]$. There were no significant effects of mothers' positive mood lability on youth's negative affect.

Youth's reports of mothers' negative mood after work were linked to youth's reports of their own negative affect at the between-person level: youth whose mothers displayed more negative moods after work on average, reported that they experienced more negative affect themselves, CI [0.22, 0.41], PRV = 31.20%. Again, youth age was a significant moderator of the association. Although there was a significant positive association between mothers' negative mood after work and youth's negative affect for both younger and older adolescents, the association was stronger for younger children, young: $B = 0.49, p < .001, CI [0.31, 0.66]$; old: $B = 0.24, p < .001, CI [0.12, 0.35]$. The lability crossover analyses revealed no significant effects.

Physical symptoms. Youth's reports of mothers' positive mood after work and the day-to-day variation in mothers' positive mood were not associated with youth's reports of physical health symptoms.

At the between-person level, youth's reports of mothers' negative mood after work were directly associated with youth's physical health symptoms, CI [0.28, 0.88], PRV = 12.07%. In addition, youth gender moderated the association between mothers' negative mood after work and physical symptoms at the within-person level. On days when mothers displayed higher levels of negative mood after work, their daughters (but not sons) also reported more

physical health symptoms, $B = 0.49$, $p < .05$, CI [0.11, 0.87]. Day-to-day variation in mothers' negative mood after work was not associated with youth's physical symptoms.

Youth's sleep quality. At the trend level, youth's reports of mothers' positive mood after work were linked to their sleep quality at the between-person level: Youth whose mothers displayed more positive moods after work, on average, reported better sleep quality, CI [-0.02, 0.31], PRV = 4.02%. However, day-to-day variation in mothers' positive mood after work was not associated with youth's sleep quality.

No main effects were found for mothers' level of negative mood on youth's sleep quality. However, age was a significant moderator at the within-person level. For older adolescents only, on days when mothers exhibited more negative moods after work, youth later reported that they had slept more poorly that night (on the next evening call), $B = -0.26$, $p < .05$, CI [-0.50, -0.03]. In addition, for the total sample, more day-to-day variability in mothers' negative mood after work was associated with youth's average reports of poorer sleep quality, $B = -0.77$, $p < .05$, CI [-1.30, -0.23], $\eta^2 = .06$.

Youth's sleep duration. Youth's reports of mothers' positive mood after work were linked to their sleep duration at the between-person level: Youth whose mothers displayed more positive moods after work, on average, reported longer sleep duration, CI [0.01, 0.79], PRV = 5.75%. Day-to-day variation in mothers' positive mood after work was not associated with youth's sleep duration. Neither youth's reports of mothers' negative mood after work nor day-to-day variation in mothers' negative mood were associated with youth's sleep duration.

Research Question 3: Indirect Effects of Mothers' Work on Their Children's Health

The indirect effects of mothers' positive work experiences on adolescents' health were tested in cases where previous analyses found evidence of work-to-family spillover (Path A in Figure 1) and crossover (Path B in Figure 1) between mothers and their children. To examine the indirect effects of positive experiences at work on youth's health outcomes, we added mothers' work experience ratings to the models above (i.e., Path B in Figure 1). We multiplied the estimates obtained in Path A, which indicated the association between positive work experiences and mothers' negative mood, $B = -0.33$, $p < .05$, CI [-0.58, -0.07], PRV = 4.52%, by the estimate obtained in Path B, which indicated the association between mothers' negative mood and the youth outcomes after controlling for positive experiences at work ($B = 0.31$, $p < .05$, CI [0.22, 0.41], PRV = 30.73% for youth negative affect; $B = 0.58$, $p < .05$, CI [0.28, 0.88], PRV = 11.72% for youth physical symptoms). Next we conducted R mediation tests (Tofighi & MacKinnon, 2011). The results indicated that there was an indirect effect of mothers' positive experiences at work on youth's negative affect, $B = -0.10$, CI [-0.20 to -0.02], and on youth's physical health symptoms, $B = -0.19$, CI [-0.40 to -0.04]. On average, when mothers experienced more positive events at work, youth rated them as lower in negative mood after work, and in turn, reported less negative affect and fewer physical health symptoms.

Discussion

A body of research has examined the direct effects of work on families, with a majority of studies focusing on the implications of negative experiences at work for family, particularly, for spouses. Far fewer studies have examined links between positive work experiences, parent-child dynamics, and youth outcomes. Using a daily diary design, we addressed these gaps in the literature and found evidence that mothers' positive work experiences were indirectly linked to youth's mental and physical health through lower levels of maternal negative mood after work. More generally, this study showed that positive spillover and crossover processes were evident when we examined mothers' positive and negative mood and that assessing both mood level and mood lability can illuminate crossover processes.

Positive Work-to-Family Spillover and Crossover Between Mothers and Their Children

Mothers who reported more positive experiences at work, on average, exhibited lower levels of negative mood after work, as reported by their children. These findings support Greenhaus and Powell's (2006) work-family enrichment theory that positive experiences in one role may lead to positive experiences in another role. In addition, the findings support the limited research that suggests that work may positively spill over to the home—which has most often been found using data collected from one reporter (Matjasko & Feldman, 2006). Our findings are particularly compelling given the design of this study. First, two different reporters were used to assess mothers' work experiences and mothers' mood after work, which eliminated the possibility of monoreporter bias in tests of this linkage. Second, the temporal ordering of the variables was accounted for by wording items to direct attention to particular time frames: Mothers were asked to report on events at work that day, and youth were asked to report their mothers' mood after work. Thus, work experiences necessarily occurred before the report of mothers' mood at home. Because the associations emerged at the between-person level, however, even in the face of the controls we included (youth gender, age, day of study, mother education), the possibility remains that unaccounted confounding variables helped to explain the associations between positive work experiences and mothers' negative mood after work.

Mothers' positive work experiences were associated with youth's reports of mothers' negative mood but not positive mood. For the current study, four items were used to assess negative mood (tired, angry, stressed, sad), whereas only one item was used to assess positive mood (happy). Thus, there may be more measurement error in the positive mood variable. The negative mood items also assessed a general dimension of stress, which may be easier for youth to identify in others, relative to positive mood. In addition, having a positive event at work may not be sufficient to alter whether a mother feels happy by the end of the day. Rather, mothers may need to experience an exceptionally positive event or an accumulation of positive events across the day for their implications to extend to their children's health.

We found evidence for both positive and negative crossover of mothers' mood to their children's health at the between-person

level. Mothers who exhibited more positive mood, on average, across the 8 days of data collection had children who reported higher levels of positive affect, better sleep quality, and longer sleep duration. In contrast, mothers who exhibited more negative moods had children with higher levels of negative affect and more physical health symptoms. These findings support a family systems perspective, which highlights how experiences of one member reverberate through the family. In addition, the findings corroborate past research indicating that parents' emotions have implications for their children's psychological functioning, including externalizing and internalizing symptoms and adjustment problems (Downey & Coyne, 1990).

Results also provided evidence that day-to-day variability in mothers' mood after work had implications for youth's health. The role of day-to-day fluctuations in interpersonal processes is a relatively new focus of study; only recently have researchers begun to examine lability in affect, self-esteem, and cognition and its implications (Ram & Gerstorf, 2009). Our results added to this literature in documenting that, net of mothers' average mood, lability of mothers' mood helped to explain youth mental and physical health outcomes. Specifically, youth reported lower levels of positive affect and poorer sleep quality when their mothers' moods varied more across days. In keeping with research that documents the importance of consistent parenting and family routines in youth well-being (Fiese et al., 2002), these findings suggest that a lack of predictability in mothers' mood may have negative implications for youth. Future research is needed that identifies mechanisms underlying mothers' variability in mood and youth outcomes—such as youth's trust in their mothers.

In the face of predicted effects at the between-person level, within-person associations between work and family variables were not significant. It is possible that the effects of mothers' mood on youth's health, particularly physical health, may occur through a cumulative process. In other words, the implications of mothers' mood may not be apparent on a daily level, but rather emerge as a function of youth's consistent experiences of their mothers' low levels of positive or high levels of negative mood. This is consistent with the cumulative risk hypothesis, which indicates that exposure to a larger number of stressors has negative implications for children's well-being (Appleyard, Egeland, van-Dulmen, & Sroufe, 2005). The lack of significant findings may also be because of multicollinearity. When assessing within-person effects, the between-person effects are controlled in the models and override within-person effects.

Overall, youth age was a significant moderator of many of the crossover processes. As expected, the associations between mothers' mood and youth positive and negative affect were stronger for younger adolescents. Youth gender also was a significant moderator of the crossover processes related to physical health. On days when mothers were in a more negative mood after work, daughters (but not sons) reported more physical health symptoms. The effect may be stronger for younger adolescents and for mother–daughter dyads because younger adolescents and daughters spend more time with their mothers, relative to older adolescents and sons (Lam, McHale, & Crouter, 2012), and prior work shows that crossover is most likely to occur when individuals spend more time together (Roeters et al., 2010).

Indirect Effects of Work on Families

Evidence also supported Bronfenbrenner's (1979) ecological systems perspective, which asserts that contexts external to a developing child (in this case, mothers' workplace) may influence youth health and development. Our findings showed that mothers' positive experiences at work were indirectly related to youth's negative affect and physical health symptoms through their effects on mothers' negative mood after work. However, no indirect effects were found between work experiences and youth's positive affect, sleep quality, or sleep duration. It is unclear why positive work experiences indirectly influenced youth's negative affect and physical health, but not their positive affect, sleep quality, and sleep duration. On average, however, youth in this sample reported positive sleep quality and positive affect above the scale midpoint, resulting in possible ceiling effects on these measures (sleep quality, $M = 3.38$, range = 1–4; positive affect, $M = 3.16$, range = 1–4). Overall, the results support past research suggesting that work may indirectly influence youth's mental health through parenting dynamics—also referred to as work-to-family crossover (Crouter et al., 1999).

Conclusion

This study contributed to the literature by addressing gaps in past research on work and family. More specifically, the study focused on positive work–family spillover and crossover, included child outcomes (rather than focusing on spouse outcomes), and investigated mechanisms through which work may influence family life. Additional strengths include the multireporter data from mother and youth, the daily data collection, and the inclusion of several covariates (e.g., mother education, daily negative experiences at work) at the between- and within-person levels. This design reduced the likelihood that spillover from mothers' work experiences to their family functioning was overestimated because of the use of a single reporter, it allowed us to examine between-person and within-person spillover processes, and it reduced the likelihood of unmeasured third variable confounds. Our diary design also allowed us to study whether day-to-day variations or lability in mothers' mood after work crossed over to their children's health. Our findings add to a relatively new literature on the implications of within-person variability for family functioning and youth health.

In the face of these strengths, however, our study also sets the stage for additional research on crossover effects. First, significant findings at the between-person level could be accounted for by unmeasured third variables. For example, a mother and youth may have engaged in enjoyable joint activities after work, causing both members of the dyad to experience more positive moods. Second, mother–youth associations may be because of bidirectional effects. For example, a mother who comes home to a sick child may display less positive emotions. Future research that gathers data at multiple time points through a day—such as EMA methodologies—may be better able to examine the possibility of bidirectional effects. Third, because the sample was limited to mothers working in the extended care industry, further research is needed to determine whether the results of the study are generalizable to fathers and individuals working in other occupations. Fourth, positive work experiences were assessed using one item (“Did you have an experience at your [primary] job that was particularly positive

since this time yesterday?”), which was open to interpretation from participants. Future diary research should gain more detailed information about the positive experiences including the type (e.g., positive interactions with coworkers, meeting a project deadline), salience, context, and perceived benefits of the events. Finally, although we collected maternal reports of work experiences and youth reports of mothers' mood after work in an effort to best illuminate work to family spillover, we relied on youth reports of their health, meaning that estimates of crossover between mothers' mood and youth health outcomes may be inflated.

This study has potential implications for work organizations. Findings suggested that creating more positive work environments for employees may have positive benefits for their children. Prior research shows that family stressors can reduce employees' work-related performance, work-career satisfaction, organizational commitment, turnover intentions, burnout-exhaustion, absenteeism, and organizational citizenship behavior (Amstad, Meier, Fasel, Elfering, & Semmer, 2011). Thus, promoting positive work environments may enhance work organizations outcomes, in part, by reducing employees' stressors at home.

In our study, we also found evidence that individuals within families continually influence one another as proposed by the family systems perspective. In contemporary western societies, many women struggle to balance work and family demands, often leaving little time to focus on their own well-being. Our results suggest that mothers' mood has implications for their children's mental and physical health. Therefore, it may be beneficial for youth if mothers are able to engage in activities that enhance their mood. Some research suggests, for example, that engaging in leisure activities may be beneficial for an individuals' mental health (Sonntag, 2001). Encouraging employed mothers to focus on their own well-being may serve to minimize stress contagion and possibly enhance positive emotional crossover to other family members.

Mothers' occupational choices may also have important implications for children. Mothers who choose occupations they enjoy may also have more positive work experiences, with positive implications for their children's health. It is important to note, however, that the term *occupational choice* is misleading given that individuals do not always have a choice in occupations. For example, a single mother with little education may choose to work in a less than optimal job to financially support her family. Therefore, lower socioeconomic status may have implications for youth health not only because of limited resources but also because of their parents' limited occupational choices and less optimal work environments. These implications may also hold for fathers, too, but we were unable to assess fathers because of the small sample of fathers who participated in the study. At the most general level, our findings provide additional support for the idea that work and family are not separate spheres—but instead are entwined in a reciprocal cycle of influence, a cycle which has implications for workers and their families.

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