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Journal of Occupational Health Psychology

1076-8998/17/$12.00 http://dx.doi.org/10.1037/ocp0000103

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Your Job Is Messing With Mine! The Impact of Mobile Device Use for Work During Family Time on the Spouse's Work Life

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Dawn S. Carlson
Baylor University

Merideth J. Thompson
Utah State University

Wayne S. Crawford
University of Texas at Arlington

Wendy R. Boswell and Dwayne Whitten
Texas A&M University

The use of mobile technology for work purposes during family time has been found to affect employees' work and family lives. Using a matched sample of 344 job incumbents and their spouses, we examined the role of mobile device (MD) use for work during family time in the job incumbent–spouse relationship and how this MD use crosses over to affect the spouse's work life. Integrating the work–home resources model with family systems theory, we found that as job incumbents engage in MD use for work during family time, work-to-family conflict increases, as does the combined experience of relationship tension between job incumbents and spouses. This tension serves as a crossover mechanism, which then contributes to spouses' experience of family-to-work conflict and, subsequently, family spills over to work outcomes for the spouse in the form of reduced job satisfaction and performance.

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Keywords: mobile device use, work–family conflict, relationship tension, crossover

As organizations face the reality of employees' ubiquitous use of technology, research has begun to look at its impact on and beyond the workplace. Technology addiction, or even the modest use of technology after hours, affects the work life of a job incumbent through the experience of work overload, burnout, and turnover (Ferguson et al., 2016; Turel, Serenko, & Bontis, 2011). Beyond the workplace, the use of technology outside of the traditional work boundaries influences a job incumbent's family life through work–life conflict, daily exhaustion, and family role performance (Boswell & Olson-Buchanan, 2007; Derks & Bakker, 2014; Derks, Bakker, Peters, & van Wingerden, 2016). The focus of the present research is on the use of a mobile device (MD) to engage in a work task during family time (Ferguson et al., 2016) and how this shapes the relationship between job incumbents and their spouses, as well as the spouse's own attitudes and behaviors at work.

Prior work has revealed that a job incumbent's work demands can spill over to the family domain and cross over to affect a spouse's family domain (i.e., Bakker, Shimazu, Demerouti, Shimada, & Kawakami, 2014; Beehr, Johnson, & Nieva, 1995; Bolger, DeLongis, Kessler, & Wethington, 1989; Carlson, Ferguson, Perrewé, & Whitten, 2011; Carlson, Kacmar, Zivnuska, & Ferguson, 2015; Westman, Etzion, & Danon, 2001). For example, Bakker, Demerouti, and Dollard (2008) developed an integrated model to explain how demands from one individual and his or her experience of work-to-family conflict (WFC) crosses over to influence the spouse's experience of family-to-work conflict (FWC) and subsequent emotional exhaustion. We build on this to test the spillover–crossover–spillover that occurs when the experiences of one individual in one domain (e.g., the job incumbent in the work domain) affect the experiences of another individual in a different domain (e.g., the spouse in her or his family domain) and the resulting impact this has on the work domain of the receiving individual (e.g., the spouse in the work domain; Bakker, Demerouti, & Burke, 2009; Westman, 2006). Therefore, our research goes the next step in this process beyond initial spillover from job incumbent (Person A) from work to family and beyond the crossover from one spouse (Person A) to the other spouse (Person B) by also considering the spillover from the family on to the job of the spouse (in Organization B) from the originating source of the job incumbent's work (in Organization A). In other words, this research connects the work domain of Person A with the work domain of Person B through the family.

Our goal in this research is to examine MD use for work during family time and understand its spillover and crossover effects on spouses in dual-career couples. By building on the crossover model of work demands (Bakker et al., 2008), we examine the role of MD use for work during family time and its potential to contribute to a job incumbent's experience of WFC and relationship tension and, ultimately, the work experiences of the spouse.

Dawn S. Carlson, Department of Management, Hankamer School of Business, Baylor University; Merideth J. Thompson, Department of Management and Marketing, Jon M. Huntsman, School of Business, Utah State
AQ: 25 University; Wayne S. Crawford, Department of Management, University of Texas at Arlington; Wendy R. Boswell, Department of Management, Mays Business School, Texas A&M University; Dwayne Whitten, Department of Information and Operations Management, Mays Business School, Texas A&M University.

Merideth J. Thompson was formerly known as Merideth Ferguson.

Correspondence concerning this article should be addressed to Merideth J. Thompson, Jon M. Huntsman School of Business, Utah State University, 3555 Old Main Hill, Logan, UT 84322-3555. E-mail: merideth.thompson@usu.edu

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As such, we extend existing research that has considered MD use for work during family time's impact on a job incumbent's own work domain via, in part, spousal reactions (Ferguson et al., 2016) to go to the next step and consider the impact of MD use for work during family time on the "spouse's work" domain. Although much of the previous research has examined the spillover and crossover of the job incumbent's work domain to the spouse in the family domain (Ferguson, Carlson, & Kacmar, 2015; Lu, Lu, Du, & Brough, 2016), we also examine the spillover of the family on the "receiving spouse's work" domain originating from the job incumbent's work domain. We accomplish this goal by testing an integrated model of the spillover and crossover of MD use for work during family time (see Figure 1) within working couples.

This research makes a number of contributions. First, the present research provides additional and incremental evidence for the work–family crossover model theorized and tested by Bakker and colleagues (2008) to show how technology plays a role as a critical work demand. Second, our research extends existing crossover research and provides evidence of the implications that work dynamics can have for the spouse's job attitudes and behaviors in his or her own work domain. More specifically, our research explores how MD use for work during family time works through the incumbent's WFC to spill over and then cross over and shape the couple's experiences with one another (i.e., relationship tension) and spills over for the spouse and his or her work outcomes.

Theoretical Foundations

Building on the WFC crossover model (Bakker et al., 2008), we apply family systems theory (FST; Bowen, 1971) as an overarching theory to explain how one spouse's experiences and actions cross over to influence the other spouse's experiences and actions. FST considers family dynamics and how interactions within the family unit affect members' behaviors (Day, 1995). More specifically, as each family member is part of a family system, one family member's attitudes and behaviors affect those of others in the family system (Bronfenbrenner, 1977). Additionally, we integrate the work–home resources (W-HR) model to theorize how MD use for work during family time relates to resource depletion in the work–home process (i.e., WFC) and in the home–work process (i.e., FWC). The W-HR model is grounded in the conservation of resources theory, which argues that individuals will strive to both accumulate and protect resources important to achieving goals (Hobfoll, 1989, 2001). As such, individuals are motivated to act in a way to protect those resources and may experience stress at the risk of resource loss or the lack of resource gain following an outlay of resources (Hobfoll, 1989).

Integrating these two theories, we explore the process by which the work demand of MD use for work during family time creates interference between work and family and contributes to the relationship tension of both a job incumbent and the spouse as personal resources are depleted. Then, we further explore how this resource loss from MD use for work during family time crosses over and affects the family system by considering the FWC of the spouse owing to the tension created. Finally, we contend that the spouse will be negatively influenced as the depletion of the job incumbent's personal resources crosses over into the family domain of the spouse and ultimately spills over to affect attitudes and performance of the spouse in his or her own work domain. Although there may be benefits of MD use beyond the boundaries of the work domain (Diaz, Chiaburu, Zimmerman, & Boswell, 2012) both to the job incumbent and the spouse by affording, for example, flexibility in managing demands, our model focuses on the adverse effects to the family (WFC and relationship tension) and crossover to the spouse's family and ultimately spillover to the

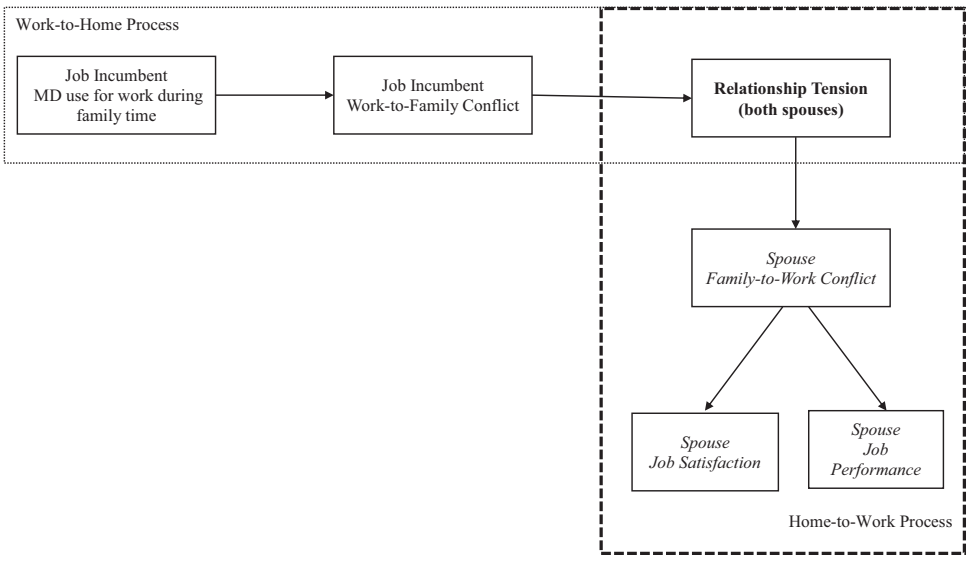

Figure 1. Hypothesized model of mobile device (MD) use for work during family time spillover and crossover on spouse job satisfaction and performance. Job incumbent responses are in standard case, spouse responses are in italics, and responses from both spouses are in bold. Model fit information: $\chi^2 = 349.86$, $df = 168$, comparative fit index = .96, Tucker–Lewis index = .96, root mean square error of approximation = .06.

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spouse's own work as a job incumbent's personal resources are directed toward work demands while in the family domain.

Spillover: MD Use for Work During Family Time to WFC

MD use for work during family time involves the use of a smartphone or Internet-enabled tablet for work purposes in the family domain (Ferguson et al., 2016). An MD provides the advantage of flexibility in when and where one engages in work activities while also tethering one to work beyond the boundaries of a typical workday. Distinct from the broader notion of having a mobile job, as is consistent with the management information systems literature (Picoto, Bélanger, & Palma-dos-Reis, 2014), MD use for work during family time refers to the use of an MD to engage in work activities during traditional personal time. Therefore, this complements the work on the use of technology and the psychosocial functioning of individual workers, or technostress, as it specifies the domain in which the technology is being used and the purpose for which it is being used (O'Driscoll, Brough, Timms, & Sawang, 2010). Because MD use for work during family time diverges from typical conceptualizations of work demands in that it crosses the time and space boundaries of the usual workplace, it also defies assumptions about work demands (Towers, Duxbury, Higgins, & Thomas, 2006). Employees who engage in MD use for work during family time operate in two places and times simultaneously (e.g., both at work and away from work), which is similar to boundary blurring (Sarker, Xiao, Sarker, & Ahuja, 2012). Further, prior research suggests that MD use for work during family time, and e-mail in particular, reaches beyond the traditional boundaries separating work and family, which undermines an individual's "downtime" or ability to recover from work (O'Driscoll et al., 2010; Sonnentag & Bayer, 2005).

Consistent with the W-HR model, we posit MD use for work during family time as a contextual demand in that it requires individuals to deal with work matters in the family domain, and in doing so they must adapt to distractions, requiring energy and time, drawing attention and focus away from the family domain. This is consistent with Proposition 1 of the W-HR model, which states that contextual work demands lead to poor home outcomes through the experience of WFC. This also aligns with prior work (Boswell & Olson-Buchanan, 2007; Ferguson et al., 2016; Lapierre, van Steenbergen, Peeters, & Kluwer, 2016), which states that the competing demands from engaging in MD use for work during family time result in work interfering with WFC or family demands. WFC is "a form of inter-role conflict in which the role pressures from the work and family domains are mutually incompatible in some respect" (Greenhaus & Beutell, 1985, p. 77). Our argument aligns with constructs of pressure or addiction to technology outside of work being associated with higher levels of WFC (Ayyagari, Grover, & Purvis, 2011; Derks & Bakker, 2014; Harris, Marett, & Harris, 2011). Accordingly, and to provide a replication of prior work (Boswell & Olson-Buchanan, 2007; Ferguson et al., 2016), we first expect MD use for work during family time to relate positively to experiences of WFC.

Hypothesis 1: Job incumbent MD use for work during family time is positively related to job incumbent WFC.

Crossover: WFC to Relationship Tension

Although spillover occurs in that the job may interfere with the employee in the home domain, thus fostering WFC (Hypothesis 1), FST suggests that as family members are a unit, crossover is also likely. As noted, crossover occurs when the experiences of one individual influence the experiences of another individual in a dyadic relationship, like that of a job incumbent and the spouse (Westman, 2006). Distress from one person has been found to cross over to affect marital satisfaction of a partner (Westman, Vinokur, Hamilton, & Roziner, 2004). Thus, as a job incumbent experiences WFC owing to addressing work issues with an MD during family time, these behaviors are likely to increase distress between the spouses as well. AQ: 7 AQ: 8

Relationship tension is the degree to which partners are annoyed or irritated by one another (Matthews, Del Priore, Acitelli, & Barnes-Farrell, 2006). Previous research suggested that conflict in one partner directly affects his or her relationship tension and also crosses over to affect the other partner's relationship tension (Matthews et al., 2006). This is due in part to the married couple's dyadic nature and that one spouse's experiences influence the other's (Green, Bull Schaefer, MacDermid, & Weiss, 2011). Furthermore, because relationship tension is an outcome of the complex interplay between the behaviors and reactions of both a job incumbent and the spouse, we believe it is important to capture this variable as a combination of both a job incumbent's and the spouse's perceptions to provide a more complete picture of the family domain, as it has been done in previous research (Carlson et al., 2015). Indeed, self-reports of relationship tension within couples are highly correlated (Matthews et al., 2006). AQ: 9 AQ: 10

Building on the W-HR model, the contextual demand of MD use for work during family time increases relationship tension within the couple through the job incumbent's experience of WFC. The conflict is a loss of personal resources such as time, attention, and energy (Ten Brummelhuis & Bakker, 2012), which then leads to relationship tension, as stress is placed on the partnership. FST suggests that one spouse's experiences and actions affect those of the other spouse, and thus, we expect that the job incumbent's MD use for work during family time and associated WFC will influence the couple's experience of tension in their relationship. Consistent with this, prior work has found that a job incumbent's experience of work-related conflict relates to subsequent tension between a job incumbent and the spouse (Carlson, Ferguson, Kacmar, Grzywacz, & Whitten, 2011; Carlson et al., 2015; Matthews et al., 2006). Extending this to the work–home process proposed by the W-HR model, we expect a similar process whereby engagement in MD use for work during family time will contribute to the loss of resources through the experience of WFC, which will exacerbate relationship tension between a job incumbent and the spouse.

Hypothesis 2: Job incumbent MD use for work during family time is positively related to relationship tension through job incumbent WFC.

Crossover: Relationship Tension to FWC

As noted, relationship tension captures the tension between a job incumbent and his or her spouse. We also expect that in addition to relationship tension within the couple, the spouse will experi-

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ence FWC. As evidenced in FST, because spouses are influenced by, and respond to, each other's experiences, FWC is a likely response to tension in the marital relationship. Consistent with the W-HR model, as resources are used to address the tension, fewer resources are available to dedicate to the work domain, thus contributing to FWC. We note that relationship tension is difficult to overcome and recover from (Matthews et al., 2006), making it likely to be carried to work by the spouse, where it diverts personal resources from the job (Ten Brummelhuis & Bakker, 2012). In other words, an individual is likely to be distracted and/or to spend time ruminating about the personal stress, which will ultimately affect one's job (as discussed later).

Previous research demonstrated that the family situation, in terms of family role stress, is positively related to experiences of FWC (Grandey & Cropanzano, 1999; Michel, Mitchelson, Kotrba, LeBreton, & Baltes, 2009; Michel, Mitchelson, Pichler, & Cullen, 2010), providing support for the proposed relationship between tension and FWC. Similarly, research on relationship tension caused by the job incumbent's work environment demonstrates a crossover effect on spousal perceived family functioning (Carlson et al., 2011). This supports the crossover proposed here from the work environment of one person to the experience of relationship tension and, ultimately, the interference of the family domain with his or her own work. Therefore, we contend that as a job incumbent engages in MD use for work during family time and experiences WFC, tension between a job incumbent and the spouse will escalate, resulting in FWC for the spouse.

Hypothesis 3: Job incumbent MD use for work during family time is positively related to spouse FWC through job incumbent WFC and the couple's relationship tension.

Spillover: FWC to Spousal Work-Related Outcomes

One of the primary goals of this research is to examine whether a job incumbent engaging in MD use for work during family time plays a role in the spouse's own work attitudes and behaviors. Consistent with the home–work process proposed by the W-HR model, as resources are drained through the experiences of relationship tension and FWC, individuals have fewer resources to devote to the demands of each domain. Specifically, here we are considering that the role conflict of family interfering with work spills over to decreased affect toward the job and/or that the conflict from the originating domain affects quality of performance in the receiving domain (Frone, Yardley, & Markel, 1997; Michel et al., 2009).

Job satisfaction is a work-related attitude defined as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976, p. 1304). As the family domain interferes with the work domain, there are fewer resources to contribute to work, and job satisfaction will decrease. This negative relationship between FWC and job satisfaction has been demonstrated in a meta-analysis of the FWC and job satisfaction relationship (Ernst Kossek & Ozeki, 1998) as well as over time (Drummond et al., 2017). Further, FWC has been found to contribute to job satisfaction as well as to overall life satisfaction (Li, Shaffer, & Bagger, 2015), Thus, this research extends these previous findings to examine if the resource loss from a job incumbent can translate into lower job satisfaction for the spouse through relationship tension and FWC.

We also examine the spouse's behavior on the job, similarly expecting that a job incumbent's experienced resource loss will translate into relationship tension and FWC for the spouse, subsequently contributing to lower performance. We focus here on job performance as an individual effectiveness measure of behavior that is explicitly part of an employee's job (Katz & Kahn, 1978). As resources become scarce, workers withhold engagement in behaviors to conserve personal resources. Previous research demonstrated that the experience of FWC contributed to lower task and contextual performance (Carlson, Witt, Zivnuska, Kacmar, & Grzywacz, 2008; Nohe, Michel, & Sonntag, 2014; Witt & Carlson, 2006) as well as more generalized job performance using both manager reports and self-reports (Hoobler, Hu, & Wilson, 2010). The general argument is that the personal resource loss caused by FWC (Ten Brummelhuis & Bakker, 2012) may make employees less motivated to expend effort at work and performance suffers. We expect this extension of the W-HR model to hold for the spouse, as the resource loss from a job incumbent's work–home process crosses over to affect the spouse's FWC and spills over to play a role in terms of job satisfaction and performance. The following hypotheses incorporate our expectation for the spousal work-related outcomes.

Hypothesis 4a: Job incumbent MD use for work during family time is negatively related to spouse job satisfaction through job incumbent WFC, the couple's relationship tension, and spouse FWC.

Hypothesis 4b: Job incumbent MD use for work during family time is negatively related to spouse job performance through job incumbent WFC, the couple's relationship tension, and spouse FWC.

Method

A total of 344 pairs of job incumbents and their spouses completed online surveys. We used a data management service firm (Survey Sampling International) to contact survey participants who were married, worked full time (at least 30 hr), (both spouses) had an MD (specified as a smartphone or tablet), and (both spouses) used the MD for work and nonwork purposes as part of their day. Using their database, Survey Sampling International offered the survey to respondents who met the criteria and when the job incumbent had completed his or her survey, a link was sent via e-mail to the spouse to complete her or his survey. The spouses were not allowed to see each other's responses, they were both guaranteed confidentiality in their responses, and each survey was completed at different times. The respondents were compensated with reward points for the successful completion of both a job incumbent and spouse survey. This research was approved by the institutional review board of one of the authors' university.

Of the job incumbent sample, 61% were male and 79% were Caucasian. The average job incumbent was 41 years of age and worked 42 hr a week. Of the spouse sample, 39% were male and 82% were Caucasian. The average age and hours worked per week for the spouse sample were 40.5 years and 43 hr, respectively. The couples were married an average of 13 years, and 68% of the couples had children living at home.

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Measures

We used a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), unless otherwise indicated.

Measures From the Job Incumbent

MD use for work during family time. We used three items developed by Ferguson et al. (2016), which they termed *mWork*, to capture the frequency with which individuals use their MD for work during family time. Example items include "To what extent do you use a mobile device to perform your job during family time?" and "How frequently do you use a mobile device to handle some of your work demands during family time?" (1 = *not at all*, 5 = *a lot*; $\alpha = .95$).

Work-to-family conflict. We used the nine-item scale developed by Carlson, Kacmar, and Williams (2000) to capture the interference of work with family. The scale taps three dimensions of WFC (time, strain, and behavior), with three items for each dimension. An example item is "Due to all the pressures at work, sometimes when I come home I am too stressed to do the things I enjoy" ($\alpha = .93$).

AQ: 14 **Relationship tension.** Three items developed by Matthews and colleagues (2006) were used to capture relationship tension. The items are "I frequently feel my spouse doesn't understand me," "I frequently feel tense from fighting, arguing, or disagreeing with my spouse," and "I frequently feel irritated or resentful about things my spouse did or didn't do." We asked both the job incumbent and the spouse each of the three items. Although each set of items loaded on a specific factor, each first-order factor loaded on a second-order factor to create a comprehensive measure or relationship tension for the couple (combined $\alpha = .91$).

Measures From the Spouse

Relationship tension. As noted above, we used a three-item measure developed by Matthews and colleagues (2006) to capture the spouse's experience of relationship tension. We combined this measure with that of the job incumbent's measure of relationship tension to create a comprehensive measure of the couple's relationship tension.

Family-to-work conflict. We used the nine-item scale developed by Carlson et al. (2000) to capture the interference of family with work. Similar to the WFC measure, the FWC measure taps three dimensions (time, strain, and behavior), with three items for each dimension. An example item is "Tension and anxiety from my family life often weakens my ability to do my job" ($\alpha = .92$).

Job satisfaction. A three-item scale was used to capture global job satisfaction (Cammann, Fichman, Jenkins, & Klesh, 1979). A sample item is "All in all, I am satisfied with my job" ($\alpha = .93$).

Job performance. A three-item measure of general job performance developed by Liden, Wayne, and Stilwell (1993) was used. A sample item is "I am a strong performer on the job" ($\alpha = .67$). We chose to focus on self-rated performance because employees have the most knowledge of their own general performance (Harris & Schaubroeck, 1988) and there is significant overlap in self versus other ratings of workplace performance (Carpenter, Berry, & Houston, 2014).

Control Variables

To reduce the possibility of obtaining spurious results, we controlled for the following five variables: frequency of spouse's MD use for work during family time, hours worked per week, sex, AQ: 15 number of children living at home, and length of marriage. We controlled for spouse's MD use for work during family time owing to the possibility of the hypothesized effects being mitigated for spouses who also engage in MD use for work during family time. Also, prior research demonstrated that both job satisfaction and performance may be related to hours worked per week (Behrman & Perreault, 1984; Brett & Stroh, 2003). We also controlled for sex, number of children living at home, and length of marriage, as these variables may affect both the family and work domains.

Results

To test our hypothesized theoretical model, we used structural equation modeling in M*plus* 7.3 (Muthén & Muthén, 2012). The raw data were used for the input file. Prior to testing the hypothesized structural model, shown in Figure 1, we examined the fit of the measurement model. In addition to the hypothesized model, we examined three additional alternative models to examine whether our hypothesized model provided the best representation of the data. We conducted chi-square difference tests between the hypothesized model and each alternative model to determine the best fitting model. In addition to chi-square difference tests, we considered the Bayesian information criterion (BIC) values for each model, as this measure rewards model simplicity and, unlike chi-square, is not sensitive to sample size (Rigdon, 1998). For our indirect effects, we calculated 95% bootstrapped confidence intervals (CIs) based on 10,000 bootstrapped samples to evaluate significance (Preacher, Rucker, & Hayes, 2007). Ninety-five percent bootstrapped CIs not including zero provide evidence of a significant indirect effect ($p < .05$). Arguments have been made favoring the bootstrapping approach to Sobel test of indirect effects, which includes standard errors of the parameter estimates to test significance (Cheung & Lau, 2008). As the Sobel test is based on the standard error of the estimate, an assumption is made that the indirect effect follows a normal distribution, which is not appropriate.

Preliminary Analysis

Table 1 provides the means, standard deviations, and correla- T1 tions among our study and control variables. We first tested a measurement model including the 33 items that make up our substantive variables loading on seven factors. We found evidence of strongly correlated residuals in the work–family measures and, thus, created item parcels for the WFC and FWC measures. Little and colleagues noted that when researchers are primarily interested in relationships between latent variables, rather than validating the measure of those variables, parcels are an acceptable technique to use for dealing with correlated residuals (Little, Cunningham, Shahar, & Widaman, 2002). Thus, as the WFC and FWC measures have been previously validated (Carlson et al., 2000), we parceled these measures to further investigate the relationship among latent variables. To create our parcels, we combined the three items for each dimension based on the theoretical development of the scale

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Table 1
Means, Standard Deviations, and Correlations Among Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11
Measures from job incumbent													
1. MD use for work during family time	2.83	1.27	(.95)										
2. Work-to-family conflict	2.70	0.94	.23***	(.89)									
3. Relationship tension	2.13	1.06	.08	.36***	(.91)								
Measures from spouse													
4. Relationship tension	2.22	1.08	.09	.28***	.59***	(.92)							
5. Family-to-work conflict	2.26	0.79	.15**	.32***	.27***	.40***	(.92)						
6. Job satisfaction	3.77	0.90	.05	−.07	−.12*	−.23***	−.17**	(.93)					
7. Job performance	4.33	0.60	.13*	−.07	−.05	−.04	−.20***	.26***	(.67)				
Control variables													
8. Hours worked per week	41.93	6.97	.17**	.09	−.03	.05	.16**	.00	.00				
9. Sex	0.60	0.49	.08	.08	−.05	.04	−.13*	.04	.08	−.07			
10. Length of marriage	12.97	10.02	.02	−.11	−.07	−.12*	−.08	.08	.04	−.09	−.03		
11. Number of children	1.22	1.15	.05	.04	.04	.12*	.13*	.03	.03	−.00	.09	−.00	
12. Spouse MD use for work during family time	2.71	1.11	.25***	.10	−.00	.08	.34***	.05	−.01	.12*	−.16**	−.08	.05

Note. $N = 344$. Cronbach's alpha reliability estimates appear on the diagonal when applicable. MD = mobile device.
* $p < .05$. ** $p < .01$. *** $p < .001$.

for both measures, resulting in three parcels for WFC and three parcels for FWC. The measurement model demonstrated excellent fit to the data ($\chi^2 = 349.96$, $df = 168$, comparative fit index [CFI] = .96, Tucker–Lewis index [TLI] = .96, root mean square error of approximation [RMSEA] = .06). To assess the discriminant validity between the job incumbent WFC and spouse FWC, we ran an alternative measurement model, where all WFC and FWC items loaded on a single factor. Compared with our hypothesized seven-factor measurement model ($\chi^2 = 349.96$, $df = 168$, CFI = .96, TLI = .96, RMSEA = .06), the six-factor model ($\chi^2 = 760.19$, $df = 174$, CFI = .88, TLI = .86, RMSEA = .10, $\Delta\chi^2 = 410.23$, $\Delta df = 6$) fit the data significantly worse, thus providing support for the hypothesized measurement model. Second, to assess common method variance, we also compared the hypothesized measurement model with a two-factor alternative where all items rated by the same person loaded on a latent factor. Compared with our hypothesized model, the two-factor model ($\chi^2 = 3{,}116.86$, $df = 188$, CFI = .42, TLI = .35, RMSEA = .21, $\Delta\chi^2 = 2{,}767.00$, $\Delta df = 20$) fit the data significantly worse, again providing support for the hypothesized measurement model. For our hypothesized measurement model, we found all item factor loadings to be significant ($p < .001$) and of adequate magnitude (i.e., >.40; see Figure 2). F2

Model Testing

To test the hypothesized relationships, we first examined the overall hypothesized model (see Figure 1). In this model, we included a second-order factor for the two relationship tension latent variables. Of interest in the current study is relationship tension at the couple level, which has an effect on relationship tension ratings provided by each partner. In other words, the relationship tension that exists in the couple drives the ratings of relationship tension provided by each partner. For such effects, we use the common-fate model (CFM; Ledermann & Kenny, 2012). As group members (i.e., partner in dual-career couples) are influenced by a relational variable of interest (i.e., couple-level relationship tension), the appropriate unit is the dyad or couple (Ledermann & Kenny, 2012). When the couple-level variable of interest is latent in nature (i.e., not observable—such as relationship harmony, relationship tension, etc.), the CFM approach offers an appropriate methodological technique for analyzing relation-

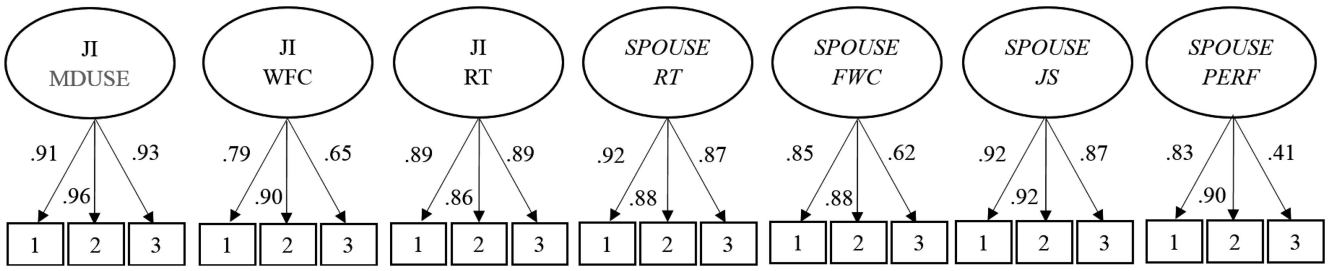

Figure 2. Structural equation model results for the measurement model. The values presented are standardized path estimates. All loadings are significant at $p < .001$. Job incumbent responses are in standard case; spouse responses are in italics. MDUSE = mobile device use for work during family time; WFC = work-to-family conflict; FWC = family-to-work conflict; RT = relationship tension; JS = job satisfaction; PERF = performance. Latent variable correlations and all standard errors are suppressed for clarity. Both WFC and FWC were parceled according to their theoretical dimensions.

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ships that include the dyad-level variable of interest. The CFM technique, originally introduced by Kenny and La Voie (1985) and further developed by Ledermann and Kenny (2012), accounts for the dyad-level variable by using a second-order factor approach where each partner's ratings of the variable serve as reflective first-order factors. This was done to reflect a general relationship tension latent variable as rated by both the job incumbent and his or her spouse. We allowed both first-order factors to load freely on the second-order factor. The variance of the second-order factor was constrained to one. Both loadings for job incumbent-rated and spouse-rated relationship tension on the second-order factor were significant ($p < .01$) and large in magnitude (i.e., .68 and .74, respectively). We included the five control variables in this model, all of which predicted both spouse job satisfaction and performance. All control variables were allowed to covary. Further, we allowed the residual variances of similar relationship tension items to covary across spouses, as the unexplained variation in our relationship tension measures within a couple is likely related owing to the nonindependent nature of spouses within couples. For example, the residual variance of the first item of our relationship tension measure rated by the job incumbent was allowed to covary with the residual variance of the same item rated by the spouse. The hypothesized model fit the data well ($\chi^2 = 580.73$, $df = 276$, CFI = .94, TLI = .93, RMSEA = .06, BIC = 16,628.05). All hypothesized paths were significant ($p < .01$).

After testing the hypothesized model, we also tested three alternative models to ensure the hypothesized model provided the best representation of the data. Table 2 provides the model fit for the measurement, hypothesized, and alternative models. In the first alternative model, in addition to the hypothesized paths, we included a path from the job incumbent's WFC to the spouse's FWC. This relationship has been found in prior research (Ferguson, Carlson, Hunter, & Whitten, 2012). In our second alternative model, we included the hypothesized paths and a direct path from MD use for work during family time to spouse job satisfaction to test for full versus partial mediation. Similarly, in our third alternative model, we included the hypothesized paths and the direct effect from MD use for work during family time to spouse job performance. The hypothesized and all alternative models demonstrated strong fit to the data. When compared with the hypothesized model, alternative Models 1 and 3 were significantly different from the hypothesized model according to a chi-square difference test. In addition, the hypothesized model had a lower BIC value than alternative Model 2, suggesting the hypothesized model is the more parsimonious model. Considering alternative Models 1 and 3, the other fit statistics remained virtually unchanged compared with the hypothesized model. Alternative Model 1 ($\chi^2 = 574.39$, $df = 275$, CFI = .94, TLI = .93, RMSEA = .06, BIC = 16,627.54) provided the best fit to the data of all the models, having essentially the same chi-square and BIC values as alternative Model 3. Additionally, prior research has evidenced the added path in alternative Model 1 (Ferguson et al., 2012). The added path approached significance and was of considerable magnitude ($b = .14$, $SE = .07$, $p < .05$). Further, the path added in alternative Model 3 is not empirically supported in prior literature, and the path was small in magnitude ($b = .06$, $SE = .03$, $p < .05$). This provides evidence that the best representation of the relationship between MD use for work during family time and spouse job satisfaction and performance is a mediated model as hypothesized but also including a path from job incumbent WFC to spouse FWC as found in alternative Model 1 and Figure 3.

Hypothesis Testing

The results from alternative Model 1 for the hypothesis testing are shown in Figure 3. Of the 10 regression paths from the control variables to the dependent variables, nine were nonsignificant. The only significant path was between spouse MD use for work during family time and spouse job satisfaction ($b = .10$, $SE = .05$, $p < .05$). All of the hypothesized paths remained significant after including the control variables. As such, the control variables are omitted from Figure 2 for the sake of parsimony. Further, although the results presented include the controls, we also ran the model without control variables and found similar effects. We present the indirect effects and bias-corrected CIs in Table 3.

We found a positive relationship between MD use for work during family time and job incumbent WFC ($b = .20$, $SE = .05$, $p < .01$). Thus, Hypothesis 1 was supported. Hypothesis 2 predicted that MD use for work during family time positively relates to relationship tension, mediated by job incumbent WFC. We found support for this prediction as well. As noted previously, MD use for work during family time was positively related to job incumbent WFC. We also found job incumbent WFC to be positively related to relationship tension ($b = .52$, $SE = .13$, $p < .01$).

Table 2
Structural Equation Model Testing Results of Hypothesized and Alternative Models

Model	χ^2	*df*	CFI	TLI	RMSEA	BIC	$\Delta\chi^2$	Δdf
Measurement model	349.86	168	.96	.96	.06	16,605.76	—	—
Hypothesized model	580.73	276	.94	.93	.06	16,628.05	—	—
Alternative Model 1	574.39	275	.94	.93	.06	16,627.54	6.34*	1
Added Job incumbent WFC → spouse FWC path								
Alternative Model 2	580.65	275	.94	.93	.06	16,633.80	0.08	1
Added MD use for work during family time → job satisfaction path								
Alternative Model 3	574.71	275	.94	.93	.06	16,627.86	6.20*	1
Added MD use for work during family time → job performance path								

Note. $N = 344$. All $\Delta\chi^2$ tests were conducted in comparison with our hypothesized model. CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation; BIC = Bayesian information criterion; WFC = work-to-family conflict; FWC = family-to-work conflict; MD = mobile device.
* $p < .05$.

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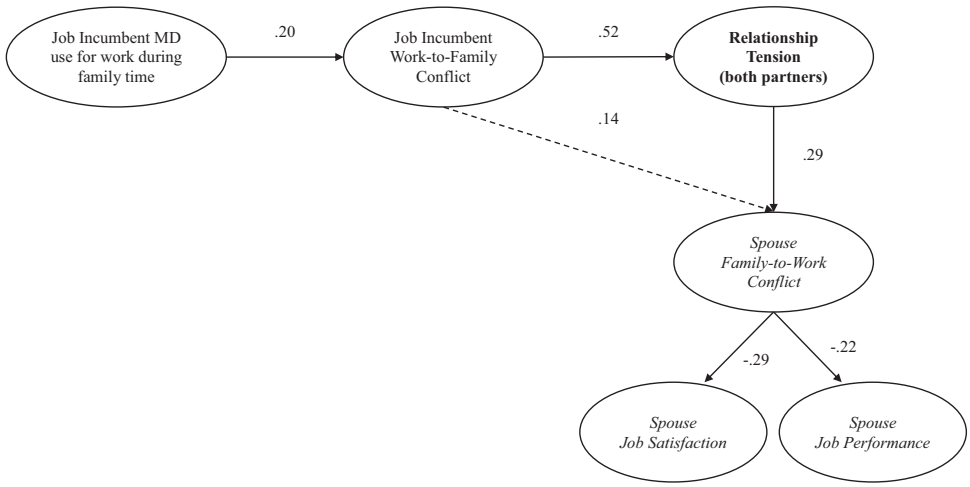

Figure 3. Structural equation model results for the final model—alternative Model 1. The values presented are unstandardized path estimates followed by the standard error in parentheses. All paths shown are significant at $p < .01$, with the exception of the dashed line, which is significant at $p < .10$. Job incumbent responses are in standard case, spouse responses are in italics, and responses from both spouses are in bold.

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Further, we found the indirect effect to be significant (indirect effect = .102, 95% CIs [.044, .186]). Together, these findings provide support for Hypothesis 2.

Hypothesis 3 proposed a positive mediated effect from MD use for work during family time to spouse FWC through job incumbent WFC and relationship tension. The relationship between relationship tension and spouse FWC was significant ($b = .29$, $SE = .06$, $p < .001$). Moreover, the indirect effect was significant (indirect effect = .029, 95% CIs [.013, .061]), providing evidence in support of Hypothesis 3.

Hypothesis 4a and Hypothesis 4b propose a mediated relationship between MD use for work during family time and spouse job satisfaction and spouse job performance through job incumbent WFC, relationship tension, and spouse FWC. We found support for Hypothesis 4a. The indirect effect from MD use for work during family time to spouse job satisfaction was negative and significant (indirect effect = −.008, $p < .05$), and the CI did not contain zero (95% CIs [−.022, −.003]). We also found support for Hypothesis 4b. The indirect effect from MD use for work during family time to spouse job performance was also negative (indirect effect = −.006, $p < .05$; 95% CIs [−.015, −.002]).

Finally, we tested the indirect effects in alternative Model 1 that were not hypothesized. Specifically, we tested the indirect effect of MD use for work during family time on both job satisfaction and performance through job incumbent WFC and spouse FWC, omitting relationship tension. The indirect effects are also shown in Table 3. Specifically, the indirect from MD use for work during family time to spouse job satisfaction was negative, and the CI did not contain zero (indirect effect = −.008, 95% CIs [−.021, −.001]). In addition, we found a negative indirect effect from MD use for work during family time to spouse job performance (indirect effect = −.005, 95% CIs [−.016, −.001]). Although the CIs did not include zero, neither indirect effect was found to be significant ($p > .05$). The results provide further evidence that alternative Model 1 is the best representation of the data. In addition, the combined indirect effects both through and

Table 3
Specific Indirect Effects of Mobile Device (MD) Use for Work During Family Time on Outcome Variables

Hypothesis and path	Indirect effect	95% CIs
Hypothesis 2		
MD use for work during family time → job incumbent WFC → RT	.102	[.044, .186]
Hypothesis 3		
MD use for work during family time → job incumbent WFC → RT → spouse FWC	.029	[.013, .061]
Hypothesis 4a		
MD use for work during family time → job incumbent WFC → RT → spouse FWC → spouse job satisfaction	−.008	[−.022, −.003]
Hypothesis 4b		
MD use for work during family time → job incumbent WFC → RT → spouse FWC → spouse job performance	−.006	[−.015, −.002]
Alternative Model 1		
MD use for work during family time → job incumbent WFC → spouse FWC → spouse job satisfaction	−.008	[−.021, −.001]
MD use for work during family time → job incumbent WFC → spouse FWC → spouse job performance	−.005	[−.016, −.001]

Note. $N = 344$. Estimates obtained from alternative Model 1. Unstandardized indirect effects are reported with 95% bias-corrected confidence intervals (CIs). All CIs are based on 10,000 empirical bootstrap samples. Indirect effects are significant when the CI does not include zero. WFC = work-to-family conflict; RT = relationship tension; FWC = family-to-work conflict.

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around relationship tension support the finding of MD use for work during family time for the job incumbent on both work outcomes for the spouse (satisfaction and performance).

Discussion

This research examined the spillover of a job incumbent's work to his or her family life, the crossover of a job incumbent's family life to his or her spouse's family life, and the spillover of the spouse's family life to the spouse's work life. Specifically, we examined the role that MD use for work during family time played on both a job incumbent and the spouse. We found that MD use for work during family time related to a job incumbent's experience of WFC and the relationship tension experienced by the couple. Further, relationship tension is the mechanism through which MD use for work during family time crossed over to the spouse to contribute to feelings of FWC and, subsequently, spilled over and had a negative impact on the spouse's work life in terms of lower job satisfaction and lower job performance.

This research provided support of the model of work–family crossover that was proposed and tested by Bakker et al. (2008). Whereas the original research only considered the exhaustion that was experienced at home, the present research provided incremental evidence by considering the spillover of family life to the work domain of the spouse in terms of attitudes (job satisfaction) and behaviors (job performance). Further, the present research was more specific in articulating a source of work demand as MD use for work during family time, thus contributing more to our understanding of how this process occurs. Further, our research integrated both the W-HR model and FST to provide a theoretical understanding of the process through which the experiences of those in a dyadic relationship can affect one another and why it is critical to consider both the job incumbent and the spouse when looking at the consumption of resources for work in the family domain.

We move beyond previous research that focused on the spillover across work and family contexts and crossover between partners to include the next step of the spillover from the partner's family domain to the work domain (Lazarova, Westman, & Shaffer, 2010; Westman, Etzion, & Chen, 2009). More specifically, our findings suggest MD use for work during family time drains an employee's resources, leading to WFC, which has an impact on the family system through increased relationship tension at the couple level, and then the family system spills over to undermine spousal work outcomes. Accordingly, we develop and test a model advancing the complex interplay that occurs between partners in a relationship as well as across their respective domains. These findings have important theoretical implications in that they suggest that resources shape experiences within the family system, particularly within the couple, which then have implications for the spouse in his or her work domain. More broadly, the research suggests that the integration of the W-HR model and FST offers a unique framework for explaining how an individual's work domain can shape the experiences of his or her spouse in the work domain through shared experiences and responses in the family domain. Further, this highlights the role of work–family conflict, as distinct from work–family balance (Brough et al., 2014), in that it captures the competing role demands that are produced by the engagement in MD use for work during family time.

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Strengths, Limitations, and Future Research

This research has a number of strengths. First, we built on the foundations of both FST (Bowen, 1971) and the W-HR model (Ten Brummelhuis & Bakker, 2012) to help us better understand the impact of MD use for work during family time on both a job incumbent and the spouse. Although we know that the use of mobile technologies for work (and nonwork) purposes continues to grow (Diaz et al., 2012), it is critical to understand the impact of MD use for work during family time on the work–family interface. This research provides a grounded theoretical approach to the mediating mechanisms that play a role in this crossover process. Second, using a matched set of job incumbents and their spouses, we are able to see two individuals' responses to one event and as such explore the crossover effects. Previous research limited investigation of MD use for work during family time to a job incumbent's work domain, whereas the present research expands those explorations by considering the crossover to the spouse's work as well. Related, another strength is that the present research expands the limited existing work related to how what happens in the family domain may cross over to affect one spouse's experiences, attitudes, and behaviors in the work domain. The investigation of the crossover from work to family is expansive (Bakker, Westman, & van Emmerik, 2009), yet the study of crossover effects from family to work is in its infancy and of equal importance (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005; Ten Brummelhuis, Haar, & Roche, 2014). Thus, this study provides insight into what kinds of experiences or behaviors may cross over from the family domain to the work domain of another family member, in this case, a spouse.

As with all research, there are limitations. This research was focused on the spillover/crossover/spillover aspects of MD use for work during family time. Although the role of MDs in blurring the boundaries between work and nonwork is an important and timely phenomenon given the nature of today's workplace, future research could simultaneously consider other specific work demands beyond technology interruptions to assess whether they follow a similar path. Our study only examined MD use for work during family time, but some research suggested that mobile technology use is greater for personal purposes during work time (Wajcman, Rose, Brown, & Bittman, 2010). Accordingly, future research would benefit from examining the effect of this technology use while in the work domain. That is, how does using technology for family purposes while at work play a role in behaviors at work and cross over to the spouse or cross over to a coworker? Further, while previous studies examined work–family conflict stemming from mobile technology use (Boswell & Olson-Buchanan, 2007), research has yet to consider the work–family enrichment that may occur from MD use for work during family time and how that might cross over to the spouse's work life. How might MD use for work during family time allow for the effective transfer of positive affect or capital from the work domain into the family domain and vice versa? Future research would benefit from the simultaneous consideration of both positive and negative impacts of work technology.

Finally, the present research used a cross-sectional approach to data collection. Thus, although causal connections cannot be tested, the order of the mediated relationships is founded in theory, suggesting that this process is an established order of relating events to behaviors.

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These links are also supported by prior empirical work (Bakker et al., 2009). Nonetheless, future research should attempt to replicate these findings using longitudinal data (Drummond et al., 2017), which would allow for a stronger test of this study's findings and more fully capture the complex interplay between work and family experiences and reactions.

Practical Implications

This research has important implications for managers and their organizations. First, growing evidence underlines the reciprocal effects between the work and family domains (Bakker et al., 2009). Although an organization that expects its employees to engage in MD use beyond the boundaries of the work domain may not care if that employee's spouse experiences poor job satisfaction and performance, they would be wise to appreciate that marital tension or distress results in work loss or low employee productivity (Forthofer, Markman, Cox, Stanley, & Kessler, 1996). Thus, although our research explored the crossover of MD use for work during family time to the spouse's work domain, the mediating variable of tension in the marital relationship likely also has harmful implications for a job incumbent's own workplace behavior. Second, the present research emphasizes the ripple effect that may affect the couple's relationship and the spouse's work life as a result of MD use for work during family time. Thus, as organizations demand, or even simply facilitate, employee engagement in MD use beyond traditional work time, the associated depletion of resources affects members of the employee's family, and so, the fallout can come back to undermine the organization. Both of these specific implications point to a larger and far-reaching implication—that organizations need to be cognizant of how their expectations and treatment of employees may affect employee spouses and families, which may then ultimately result in effects that cross back over into the originating organization and come at great cost to all involved.

In conclusion, using an MD for work during family time can contribute to the experience of WFC and relationship tension between a job incumbent and the spouse. Further, that relationship tension and loss of resources experienced by a job incumbent can cross over to the spouse in a manner that contributes to the perception of FWC, which spills over to play a role in his or her work life in terms of both job satisfaction and job performance. Thus, the ripple effect of being tethered to work, while clear to a job incumbent (Ferguson et al., 2016), must also be considered in the role it plays in the spouse's work life.

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Received January 9, 2017
Revision received August 31, 2017
Accepted September 7, 2017 ■

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