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Doctoral thesis submitted to  
the Faculty of Behavioural and Cultural Studies  
Heidelberg University  
in partial fulfillment of the requirements of the degree of  
Doctor of Philosophy (Dr. phil.)  
in Psychology

Title of thesis

**Consequences of Work–Family Conflict**

presented by

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year of submission

2014

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Advisor: Prof. Dr. Karlheinz Sonntag and Prof. Dr. Norbert K. Semmer

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## ACKNOWLEDGMENTS

Several individuals contributed to this dissertation by giving me the inspiration, motivation, and support I needed. I am grateful to:

... Karlheinz Sonntag for your mentorship, your confidence, and the freedom to develop my research interests. Your outstanding support contributed to the quality of this dissertation.

... Norbert K. Semmer for your commitment as second reader and Henning Plessner and Hans-Werner Wahl as part of my dissertation committee.

... Alexandra Michel for your constructive feedback.

... my colleagues Anna Peters, Miriam Rexroth, and Sarah Turgut (to name but a few) for providing an inspiring and pleasant working atmosphere.

... Bundesministerium für Bildung und Forschung for funding the project “Work-Life-Balance: Wege zur nachhaltigen Verankerung von Work-Life-Balance in der Kultur von Unternehmen” in which I collected the data for this dissertation.

... the whole “WLB-Team” including several colleagues and research assistants from the University of Heidelberg and collaborating organizations. Without your help, the project could not have been successful.

... the participants in my studies.

... several scholars who inspired me with compelling talks, intriguing workshops, and fascinating research.

... Zhen Zhang for the opportunity to learn from your publication and data-modeling skills.

... Laurenz L. Meier and Min Ty for a learning and fun-intensive working experience.

... my parents for unconditionally supporting and believing in me.

... my partner Susanne for giving me more than words can say and our little son Constantin for being the sunshine of our lives. This dissertation is dedicated to you.

Heidelberg, February 2014

## PUBLICATION-BASED DISSERTATION

This dissertation is based on three articles (see Appendix A):

### **Study 1:**

Nohe, C., Meier, L. L., Sonntag, K., & Michel, A. (second round of revisions). The chicken or the egg? A meta-analysis of panel studies of the relationship between work–family conflict and strain. *Journal of Applied Psychology*.

### **Study 2:**

Nohe, C. & Sonntag, K. (under review). Work–family conflict, social support, and turnover intentions: A longitudinal study. *Journal of Vocational Behavior*.

### **Study 3:**

Nohe, C., Michel, A., & Sonntag, K. (2013). Family–work conflict and job performance: A diary study of boundary conditions and mechanisms. *Journal of Organizational Behavior*. Published online, doi: 10.1002/job.1878

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## SUMMARY

Most employees are challenged to combine work and family roles. Although both roles can provide self-esteem, self-fulfillment, and happiness, they can also interfere with each other making it more difficult to fulfill work and family demands. *Work-family conflict* is the construct that captures interference between work and family roles. High work-family conflict has been associated with potential consequences such as low health, high turnover intentions, and low job performance. My main aim in this dissertation is to extend research on work-family conflict and potential consequences. To this end, I conducted three empirical studies.

Study 1 examined the relationship between work-family conflict and strain, an umbrella term for constructs such as exhaustion, depression, and somatic symptoms. Specifically, my coauthors and I tried to work toward resolving two debates. The first debate is about the direction of relationships between work-family conflict and strain. We examined whether work-family conflict predicts strain, whether strain predicts work-family conflict, or whether work-family conflict and strain reciprocally predict each other. The second debate is about the pattern of relationships between work-family conflict and domain-specific outcomes. The currently dominant cross-domain perspective suggests that family-to-work conflict (FWC) is mainly related to work-related strain. The less-popular matching perspective, however, suggests that work-to-family conflict (WFC) is mainly related to work-related strain. To address those two debates, we applied meta-analytic path analysis to 33 panel studies (total  $N = 13,029$ ) that had repeatedly measured work-family conflict and strain. For the direction of relationship, results showed reciprocal relationships for both forms of work-family conflict and strain. More specifically, WFC predicted strain ( $\beta = .08$ ) and strain predicted WFC ( $\beta = .08$ ). Similarly, FWC predicted strain ( $\beta = .03$ ) and strain predicted FWC ( $\beta = .05$ ). These findings held for both men and women and for different time lags between the two measurement waves. For the debate on matching versus cross-domain relationships,

results showed that WFC had a stronger relationship with work-specific strain than did FWC, supporting the matching hypothesis.

Study 2 focused on work–family conflict and turnover intentions. More specifically, it compared two theoretical perspectives that make competing predictions about the relationships between work–family conflict and domain-specific outcomes. The cross-domain perspective predicts that FWC should be more important than WFC in predicting increases in turnover intentions. The matching perspective, however, predicts that WFC should be more important than FWC in predicting increased turnover intentions. We expanded the debate about matching versus cross-domain relationships by testing whether work-family specific social support should stem from the same domain as the conflict as the matching principle would indicate or from the other domain as the cross-domain perspective would indicate. Additionally, we hypothesized that changes in WFC and FWC predict changes in turnover intentions and tested reciprocal relationships between WFC/FWC and turnover intentions. With a time-lag of five months, 665 employees from a large company filled out surveys at two time points. Results revealed that (increases in) WFC predicted increased turnover intentions, whereas (increases in) FWC did not. Work-family specific support from the leader buffered the relationship between WFC and increased turnover intentions, but work-family specific support from family and friends did not. Furthermore, results revealed reverse relationships such that turnover intentions predicted increased WFC and FWC. Taken together, the study results supported the matching principle rather than the cross-domain perspective. The reverse relationships found between work–family conflict and turnover intentions challenge the common view that work–family conflict antecedes turnover intentions unidirectionally.

Study 3 examined the cross-domain relationship between work–family conflict and job performance. Overall, Study 3 was intended to better understand work–family conflict as a dynamic construct that changes over short periods, such as from day-to-day. Specifically, we

used a within-person daily research paradigm to examine the relationship between daily FWC and daily job performance. On the basis of theory on dynamic behavior, we hypothesized that daily FWC impairs daily job performance through the mechanism of daily concentration. Additionally, we predicted that psychological detachment from work during time off (i.e., mentally switching off) buffers the negative relationship between daily FWC and daily job performance. Over one workweek, 95 employees from a large German company completed two surveys each day. Multilevel modeling results showed that daily FWC was negatively associated with daily job performance and that daily concentration mediated this relationship. Furthermore, general psychological detachment, but not daily psychological detachment, buffered the negative relationship between daily FWC and daily job performance. The findings of Study 3 advance our understanding of dynamic short-term processes at the intersection of work and family by demonstrating that short-term changes in FWC go along with fluctuations in job performance.

This dissertation offers several practical implications. For example, Study 2 shows that work-family specific leader support buffers the relationship between high WFC and high turnover intentions. Study 3 shows that psychological detachment from work during time off buffers the relationship between high FWC and low job performance. Thus, organizations should foster leader support and encourage their employees to psychologically detach from work during time off to buffer the relationship between work-family conflict and relevant business outcomes.

In sum, this dissertation contributes to research on work-family conflict and its potential consequences by addressing ongoing debates and gaps in the literature.

## 1. INTRODUCTION

*I missed a lot of quality time with my little daughter. I had the feeling that I could not spend enough time with my kid. In the future, I want to be more involved in my family.*

*[Ich habe viele schöne Momente mit meiner Tochter verpasst. Oft hatte ich das Gefühl, zu wenig Zeit mit der Kleinen zu haben. Künftig möchte ich mehr von meiner Familie haben.]*

Dr. Kristina Schröder, from 2009 to 2013 German minister for family affairs, about her reasons for resigning from office. She was the first German minister who became a mother during her period of office (October 11<sup>th</sup> 2013, derived from [www.spiegel.de](http://www.spiegel.de)).

*Best reasons for working at Audi: Children are part of the Audi family. [Beste Gründe für das Arbeiten bei Audi: Kinder gehören bei Audi zur Familie.]*

Audi AG, online ad (October 11<sup>th</sup> 2013 on [www.dict.cc](http://www.dict.cc))

*Journal of Organizational Behavior* Special Issue Call for papers: Achieving Work-Family Balance.

Brough, P., & Kalliath, T. (2009). Work-family balance: Theoretical and empirical advancements. *Journal of Organizational Behavior*, 30(5), 581-585.

Those opening examples highlight three aspects of work and family life. The first example illustrates that when people try to combine work and family, the two live domains can interfere with each other. As a result, people may experience stress or ultimately quit their jobs. Dr. Kristina Schröder, the former German minister for family affairs, found that her work prevented her from spending enough time with her daughter, and chose to resign. The

second example shows that some organizations are trying to help their employees combine work and family. Audi advertises their jobs as being family friendly, especially to attract qualified (female) applicants, and also recognizing that family friendly policies such as flexible work arrangements and on-site childcare can be ways to maintain healthy and productive work forces. The third example shows that researchers are increasing their professional interest in work–family issues. In addition to the special issue call from a leading journal in the example, many journal articles and books on the subject have been published over the last three decades.

Dr. Schröder’s experience with the interference between work and family (Example 1) is captured by the construct of *work–family conflict*, defined as “a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect” (Greenhaus & Beutell, 1985, p. 77). Work–family conflict can occur in two directions: work can interfere with family (work-to-family conflict; WFC) and family can interfere with work (family-to-work conflict; FWC; Frone, Yardley, & Markel, 1997). Work–family conflict is the best-developed and probably most-studied topic in the work–family literature (Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Demerouti, Corts, & Boz, 2013). One prominent line of research examined the relationship between work–family conflict and potential outcome variables. This line of research showed that high work–family conflict is associated with undesirable outcomes, such as lower health, higher turnover intentions, and lower job performance (Amstad, Meier, Fasel, Elfering, & Semmer, 2011).

Although those prior studies have enriched our understanding of work–family conflict and its potential consequences, important questions remain unanswered. For example, does work–family conflict predict potential outcomes unidirectionally? Or are there reverse and reciprocal relationships? Is the dominant view that WFC mainly predicts family-related outcomes and FWC mainly predicts work-related outcomes (i.e., cross-domain perspective) empirically justified? Or, as the matching hypothesis postulates (Amstad et al., 2011), does

WFC mainly predict work-related outcomes and FWC mainly predict family-related outcomes? Furthermore, how do short-term changes (e.g., from day-to-day) or long-term changes (e.g., over half a year) in work–family conflict relate to potential consequences? Finally, which resources can help buffer the relationship between work–family conflict and important business and health outcomes? My goal in this dissertation is to contribute to research on work–family conflict and its potential consequences. To this end, I conducted three studies to answer those questions.

In Chapter 2, I describe recent developments that highlight the importance of work–family issues for organizations, their members, and society. In Chapter 3, I outline mechanisms that link work and family lives and introduce the construct of work–family conflict which is the focus of this dissertation. In Chapter 4, I review findings on work–family conflict and potential consequences and provide an overview of common theoretical frameworks. In Chapter 5, I delineate some important unresolved issues in the work–family literature and explain the present dissertation’s contributions to theory and practice. In Chapters 6 to 8, I present three studies examining the relationship of work–family conflict to health, turnover intentions, and job performance. In Chapter 9, I discuss the general findings of this dissertation, highlight their implications for theory and practice, address strengths and limitations, and suggest directions for future research.

## **2. WORK–FAMILY ISSUES: WHY SHOULD WE CARE?**

Recent developments have made work–family issues a key challenge for employees, families, organizations, and societies. No single trend has brought work and family issues to the fore; rather, several developments have changed how people manage their work and family roles. In this chapter, I outline some key developments that affect most Western countries, although I focus on Germany, the country for which this dissertation presents findings.

### **The Decline of the Traditional Breadwinner–Homemaker Household**

One key change in how people organize their work and family lives is the decline of the traditional pattern that predominated throughout the twentieth century: the breadwinner–homemaker household in which the father worked outside the home for wages and the mother cared for the children and performed domestic tasks in the home. Today, dual-income and single-parent families outnumber traditional one-earner, two-parent households (Rübenach & Keller, 2011). In Germany, only 31% of couples with underage children represent traditional breadwinner-homemaker households. Instead, 52% are dual-income families. Additionally, 11% of couples report that both parents do not work and 6% report a working mother and a caretaking father. In most dual-income families, the father works full-time and the mother works part-time (71%) or both parents hold full-time jobs (24%). In 2% of dual-income families, the mother works full-time and the father part-time, and in 3%, both parents work part-time (Rübenach & Keller, 2011). Besides a considerable number of dual-income families, Germany is witnessing a decrease in married parents. Specifically, between 1996 and 2012, single-parents increased from 14% to 20%, and non-married couples with children increased from 5% to 9%, whereas married couples decreased from 81% to 71% (Statistisches Bundesamt, 2013a).

Closely linked to the altered family landscape is the influx of women into the paid labor force. From 1992 to 2012, female participation in the European labor force increased from 50% to 60%. Recent statistics for Germany show that the female labor force participation rate increased from 58% in 1992 to 72% in 2012 (Eurostat, 2013a).

The social transition from the traditional breadwinner–homemaker family to dual-income families reflects a general movement toward greater gender equality. Results of a long-running national probability study comprising more than 3,000 people reveal that over the last three decades Germans became increasingly egalitarian regarding gender roles; that is, the traditional view that women should be concerned with family and men with work has largely been replaced by attitudes favoring equal roles (Göbel, Habich, & Krause, 2011). The

social movement toward greater gender equality is also reflected in the altered role of fathers, who now share the role of breadwinners with their partners and play more important roles in parenting and caregiving. A study of the German Federal Ministry for Family Affairs, the Elderly, Women, and Youth reported that 71% of fathers identified themselves as parenting caregiver, whereas only 29% identified with the breadwinner role (Fthenakis & Minsel, 2001; Oberndorfer & Rost, 2005). As a result of the decline of the traditional breadwinner–homemaker household, both men and women are likely to face considerable work and family obligations, simultaneously making work–family conflict a phenomenon likely to be experienced by many in the German workforce.

### **Demographic Change**

Since 2003, the German population has been shrinking (if not indicated otherwise, data about demographic change are from the German Federal Bureau of Statistics, Statistisches Bundesamt, 2009). Recent population forecasts estimate a decrease from 80.5 million people in 2012 to about 70 million people in 2060. Besides shrinking, the German population is aging. From 2008 to 2045 the median age is estimated to increase from 43 to 52 years. Furthermore, from 2008 to 2060, young people (0 to 20 years) will decrease by about one third, from 16 million to 11 million. In contrast, the number of old people (80 years and older) is projected to more than double, from about 4 million to 9 million.

The shrinking and “graying” of the population will strongly affect the German workforce (i.e., people aged from 20 to 65). Specifically, the workforce will shrink from 50 million in 2008 to 42 million in 2030 and will drop to 36 million people in 2060. That is, the percentage of persons between 20 and 65 years-old is estimated to fall from 61% in 2008 to 50% in 2060. This specific development is typically assumed to indicate a future shortage of skilled labor (BiBB, 2013). Thus, when competing for highly qualified employees, organizations may gain competitive advantages by providing jobs that help to combine work and family lives.

Additionally, the group of older workers will increase: In 2008, 31% of employees were between 50 and 65 years-old, and this particular group is expected to grow to 40% within ten years. With a shift toward an older work force, maintaining employees' health and productivity will continue to be an important factor for policy and management decision makers. Additionally, older workers are most likely to have eldercare responsibilities. In 2011, 2.5 million people needed eldercare, and this number is estimated to increase to 4.5 million in 2050 (Statistisches Bundesamt, 2013c). Given the increase of people needing eldercare and the trend to delay childbearing (Pötzsch, 2012), being "sandwiched" between the care of aging parents and children is likely to be a phenomenon affecting many employees. Consequently, they are likely to experience role conflicts between their work and caretaking responsibilities.

### **Work Hours**

The number of hours that people spend at work is assumed to be one of the key factors influencing work–family relationships (Jacobs & Gerson, 2004). Although from 1991 to 2012 the number of work hours remained at a constant level of about 42 hours per week for full-time employees and even slightly decreased for part-time employees from 20 to 18 hours, there seems to be a gap between two groups of the German labor force (Statistisches Bundesamt, 2013b). On one hand, many employees work very long hours. Specifically, in 2011, 13% of all full-time employees indicated working more than 48 hours per week (Statistisches Bundesamt, 2013b). Professions especially affected by long hours are, for example, the self-employed (57% of all self-employed) managers (39% of all managers), and academics (21% of all academics). Long work hours limit the time available for family or for oneself, and have been shown to positively correlate with high work-to-family conflict (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011).

On the other hand, an increasing amount of employees are working fewer hours per week than they want to. From 1992 to 2011, part-time employees indicating that they work

part-time because they cannot find full-time jobs increased from 5% to 16% (Statistisches Bundesamt, 2013b). Unintentionally holding a part-time job is typically related to lower income and may in some cases be associated with existential concerns. Consequently, those employees may not make enough to support a family. A closely related development is that organizations no longer offer lifetime security, resulting in more “atypical forms of employment” in Germany (German: “*atypische Beschäftigungsverhältnisse*”). These forms of employment comprise part-time employment with less than 20 hours per week, fixed-term contracts, and contract work. Specifically, such atypical forms of employment increased from 13% in 1991 to 22% in 2012 (Statistisches Bundesamt, 2013c) corresponding to an increase of 3.5 million cases (Statistisches Bundesamt, 2012). Over the same period, regular employment dropped from 79% to 67% (Statistisches Bundesamt, 2013c), corresponding to a drop of 3.8 million cases (Statistisches Bundesamt, 2012). Atypical forms of employment are associated with little job security and increased uncertainty that can make long-term life planning more difficult.

Another issue affecting work–family relationships is the increasing number of people who work late in the evening or on weekends. From 1992 to 2012, the number of people working regularly between 18 and 23 o’clock (6 pm and 11 pm) increased from 15% to 27%. Similarly, from 1992 to 2011, people who regularly worked Saturdays or Sundays increased from 20% to 27% and 10% to 15%, respectively (Statistisches Bundesamt, 2013b). Working at unfavorable times has been shown to relate to more work–family conflict (Demerouti, Guerts, Bakker, & Euwema, 2004).

### **Technical Developments**

Recent technical developments have significantly changed how work and family are intertwined. For example, the Internet and the use of laptops have enabled employees to complete some work tasks anywhere, anytime. Over the past ten years, the percentage of private households in Germany who have home Internet access has increased from 46% to

85% (Eurostat, 2013b). As a result, work locations have become more varied. A nationally representative survey among Americans in 2010 showed that the number of employees who teleworked at least one day per month increased from 16 million in 2001 to 25 million in 2010, with employees' homes as the most common alternative worksite locations (WorldatWork, 2011). Additionally, the use of mobile communication devices such as smartphones has changed how work and family are related. Consequently, employees can face increased work demands in terms of availability and flexibility; on the other hand, they can stay connected with their family members across time and location. As a result, the boundaries between work and family have become more permeable, increasing the likelihood that the two domains influence each other (Allen, Cho, & Meier, 2014).

In sum, far-reaching developments strongly affect how people manage their work and family life. Some developments, such as laptops and smartphones, make the boundaries between work and family more permeable. Others, such as dual-income couples and being “sandwiched,” generate increased demands from several life domains. Thus, combining work and family can be a challenge often generating incompatibilities between the two domains. Given the complexity of the outlined developments, combining work and family roles is an important topic that affects organizations, their members, and society.

### **3. MECHANISMS LINKING WORK AND FAMILY**

Recognizing those social developments, researchers are trying to increase understanding of the work–family interplay. Although scholars have studied work–family issues intensively only over the past three decades, the theoretical foundations were already laid in the 1960s. In this chapter, I briefly describe three mechanisms linking work and family: segmentation, compensation, and spillover. Then I describe work–family conflict and its underlying theoretical framework, the focus of my dissertation.

#### **Segmentation, Compensation, and Spillover**

Segmentation, compensation, and spillover are used to theoretically explain observed relationships between work and family constructs, such as the relationship between job and marital satisfaction (Allen, 2012). The segmentation hypothesis suggests that work and family are unrelated domains (Edwards & Rothbard, 2000). For example, job satisfaction and marital satisfaction are unrelated. Compensation indicates tendencies to counterbalance dissatisfaction in one domain by seeking satisfaction in another domain, generating a reverse relationship between work and family variables. The compensation perspective predicts that job satisfaction and family satisfaction are negatively related. Spillover refers to a process in which experiences in the work (family) role influence experiences in the family (work) role, generating similarities between the two (Edwards & Rothbard, 2000). According to the spillover perspective, job satisfaction and family satisfaction would be positively related.

A related line of theory generated one of the most prominent constructs in the work–family literature by focusing on negative effects of holding multiple roles, called *work–family conflict*.

### **Work–Family Conflict**

Work–family conflict and its underlying theoretical framework have been the dominant perspective used to study and understand the psychological consequences of actively participating in both work and family roles (Demerouti et al., 2013). Work–family conflict refers to how extensively work and family roles interfere with one another. Greenhaus and Beutell’s (1985, p. 77) seminal article offered a popular definition: “a type of inter-role conflict that occurs as a result of incompatible role pressures from the work and family domains”. For instance, imagine employees whose supervisors urge them to work overtime while family members pressure them to come home. Three major types of work–family conflict have been specified: time-based conflict, such as missing a family activity because of work-related obligations; strain-based conflict, such as irritability at home because of work-related stress; and behavior-based conflict, such as treating one’s partner like a

subordinate (Greenhaus & Beutell, 1985). This conceptualization is primarily based on role theory and the scarcity of resources hypothesis, which proposes that demands of one role deplete personal resources such as time and physical or mental energy leaving insufficient resources to allocate to other roles (Edwards & Rothbard, 2000; Goode, 1960; Marks, 1977).

An important milestone in the conceptualization of the work–family conflict construct was the distinction between work-to-family and family-to-work conflict. Originally, work–family conflict was conceptualized as a one-dimensional, direction-unspecific construct that simultaneously captured both the influence of work on family and family on work (e.g., Holahan & Gilbert, 1979). Later, work–family conflict was specified as a direction-specific construct that focused on the influence of work on family (Kopelman, Greenhaus, & Connolly, 1983), paving the way for further developments resulting in two direction-specific constructs that explicitly distinguished between two directions of work–family conflict (Frone, Russell, & Cooper, 1992; Gutek, Searle, & Klepa, 1991). This shift in the conceptualization of work–family conflict resulted in a new “generation” of work–family conflict research (Bellavia & Frone, 2005). Today, it is widely agreed that the relationship between work and family is direction-specific and bidirectional: work can interfere with family (work-to-family conflict) and family can interfere with work (family-to-work conflict). Evidence suggests that work-to-family and family-to-work conflict are reciprocally related but are distinct constructs (Mesmer-Magnus & Viswesvaran, 2005).

Commonly used scales reflect the direction-specific conceptualization of work–family conflict. For example, building on Greenhaus and Beutell’s (1985) three subtypes of work–family conflict, Carlson, Kacmar, and Williams’s (2000) scale distinguishes between time-based, strain-based, and behavior-based conflict for each work-to-family and family-to-work conflict, resulting in six dimensions. While researchers have rarely used all six dimensions from Carlson et al.’s (2000) scale, measures that more generally separate work-to-family and

family-to-work conflict are the ones most often used in the literature (e.g., Netemeyer, Boles, & McMurrian, 1996).

#### 4. CONSEQUENCES OF WORK–FAMILY CONFLICT

Over the last three decades, research has attempted to explain both antecedents and consequences of work–family conflict. In this chapter, I provide an overview of empirical findings and commonly used theories and models that explain relationships between work–family conflict and potential outcome variables.

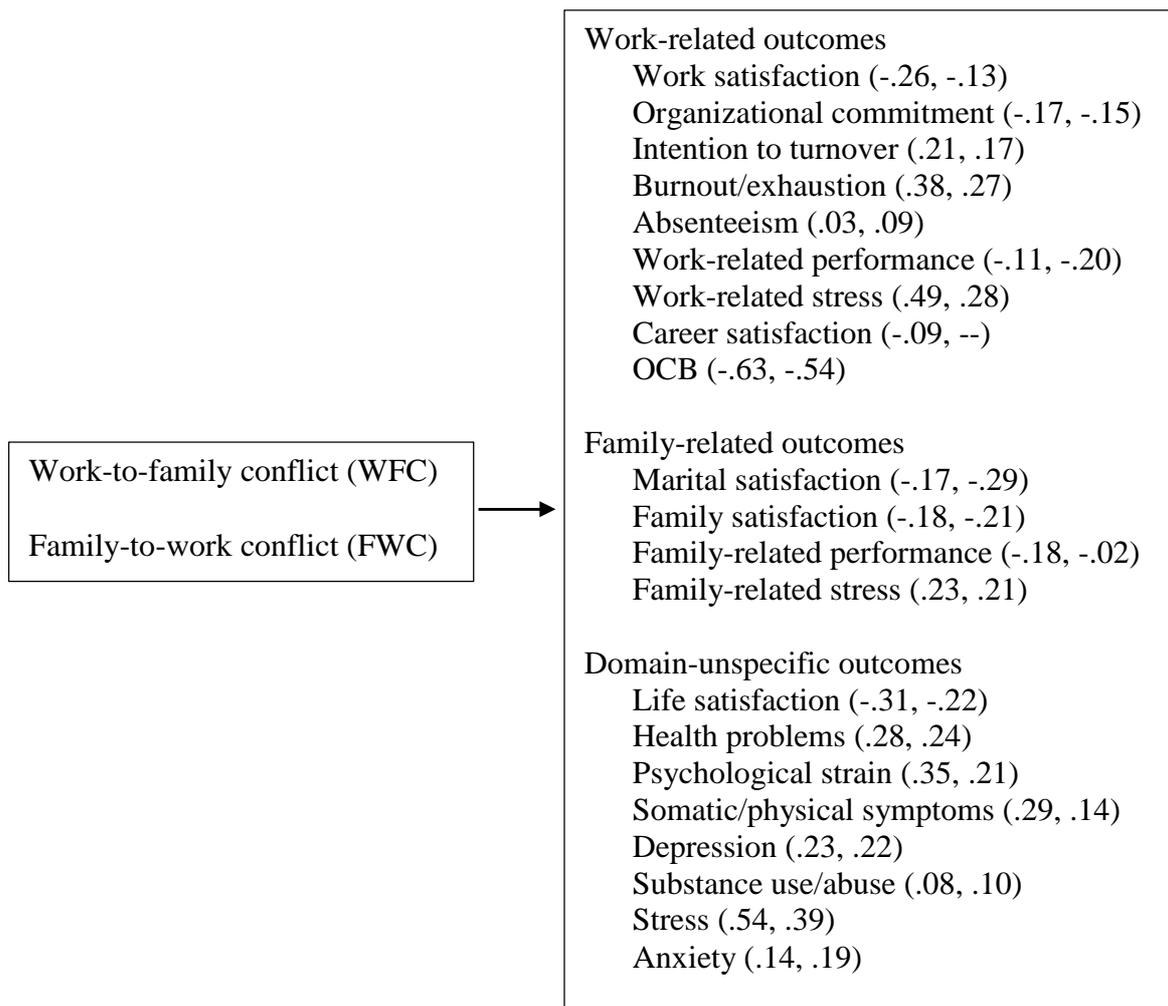
##### **Empirical Findings**

Although I did not focus on potential *antecedents* of work–family conflict for my dissertation, I briefly outline key findings. Antecedents of high work–family conflict can be categorized into work-domain variables (e.g., high job demands, high job involvement, low work support, and low schedule flexibility), family-domain variables (e.g., high family stress, many children, and low family support), and individual or demographic variables (e.g., non-active coping styles, low time management skills, high neuroticism, and low conscientiousness) (Allen et al., 2012; Byron, 2005). As explained, WFC (FWC) originates in the work (family) role and should, therefore, be mainly related to antecedents from the work-domain (family-domain). Recent meta-analyses found general support for this assumption (Byron, 2005; Michel et al., 2011): Work-domain antecedents tended to show stronger correlations with WFC than with FWC. Similarly, family-domain antecedents tended to show stronger correlations with FWC than with WFC although the differences were not always significant. A related line of research examined the consequences of work–family conflict, which I outline next as the focus of my dissertation.

Many studies have examined the relationship between high work–family conflict and potential *consequences*, such as higher emotional exhaustion, higher turnover intentions, and lower job performance (for recent meta-analyses see Amstad et al., 2011; Michel, Mitchelson, Kotrba, LeBreton, & Baltes, 2009; Shockley & Singla, 2011). Typically, the potential

consequences of work–family conflict are categorized as work-related (e.g., job performance), family-related (e.g., marital satisfaction), and domain-unspecific variables (e.g., life satisfaction). Figure 1 summarizes the findings of a recent meta-analysis (Amstad et al., 2011) that included 427 effect sizes from 98 cross-sectional studies published between 1999 and 2006. The results show that high levels of work-to-family and family-to-work conflict were related to work-related outcomes (e.g., low job performance, high intention to turnover), family-related outcomes (e.g., low family satisfaction), and domain-unspecific outcomes (e.g., high psychological strain). Meta-analyzed correlations for WFC and potential outcomes ranged from .03 for absenteeism to -.63 for organizational citizenship behaviors (OCB). For FWC, meta-analyzed correlations ranged from -.02 for family-related performance to -.54 for OCB. In general, WFC tended to show stronger correlations with work-related variables than did FWC. For example, the correlation between WFC and work satisfaction was -.26 versus -.13 for FWC and work satisfaction.

From a health perspective, the outcomes of most interest are probably variables such as burnout/exhaustion, psychological strain, and somatic symptoms. For WFC (FWC), these correlations ranged from .38 (.27) for burnout/exhaustion to .29 (.14) for physical symptoms. Although it is difficult to define a relevant business outcome, employee health, turnover intentions, and job performance seem to be directly connected to business profits (Butler, Song, & Ilies, 2013). For turnover intentions and job performance, the correlations were .21 (.17) and -.11 (-.20) for WFC (FWC). Thus, important health and organizational outcomes are related to both forms of work–family conflict, making this topic a legitimate concern for organizations and society (Hammer & Zimmerman, 2011).



*Figure 1.* Consequences associated with work–family conflict according to a recent meta-analysis (Amstad et al., 2011). Numbers in brackets are weighted mean correlations for relationships of WFC (first number) and FWC (second number) with potential consequences, respectively. Number of effect and sample sizes for each correlation varies from 2 to 54 and from 452 to 25,114, respectively. OCB = organizational citizenship behaviors. Correlations  $\geq$  |.03| are significant at  $p < .05$ .

## Theories and Models

Various theoretical perspectives and models have been used to explain the relationship between work–family conflict and potential consequences. Prominent theories are the cross-domain perspective, the matching perspective, Hobfoll’s (1989, 2001) conservation of resources (COR) theory, and the effort-recovery (E-R) model (Meijman & Mulder, 1998).

*Cross-domain perspective.* Work-family researchers use the term cross-domain to describe relationships of WFC to family-related outcomes, and relationships of FWC to work-related outcomes (Amstad et al., 2011). The perspective suggests that WFC is primarily related to family variables such as family distress and marital satisfaction and is less related to work-related variables, while FWC is primarily related to work variables such as job distress and job satisfaction and less related to family-related variables.

Frone and colleagues (1992, 1997) postulated models that have dominated the work–family literature in their advocacy of the cross-domain perspective (Bellavia & Frone, 2005). According to these models, WFC and FWC are mediators between work and family domains. Specifically, job stressors and job involvement antecede WFC, while family stressors and family involvement antecede FWC. Thus, WFC is assumed to originate from the work domain and FWC is assumed to originate from the family domain. Recent meta-analyses generally supported the antecedent side of those models (Byron, 2005; Ford, Heinen, & Langkamer, 2007; Michel et al., 2011).

Regarding the consequences of WFC and FWC, Frone and colleagues (1992, 1997) assume cross-domain relationships: Although WFC originates in the work domain, it mainly affects family outcomes such as family distress. Although FWC originates in the family domain, it mainly affects work outcomes such as job distress. The rationale behind cross-domain relationships is that when one role (e.g., work) interferes with another role (e.g., family), individuals will encounter difficulty in fulfilling demands in the receiving role (e.g.,

family). The struggle to meet receiving role demands impairs well-being related to the life domain of the receiving role (Frone et al., 1992).

***Matching domain perspective.*** As an alternative perspective to the currently dominant cross-domain perspective, scholars have proposed a matching domain hypothesis (Amstad et al., 2011; Shockley & Singla, 2011). This perspective suggests that WFC and FWC primarily affect the domain where the conflict originates. That is, WFC predominantly affects work-related outcomes, while FWC predominantly affects family-related outcomes. This assumption is grounded in appraisal theories assuming that when self-relevant roles are threatened, people are likely to appraise the cause of the threat negatively (Lazarus, 1991; Shockley & Singla, 2011). For example, when a work role interferes with a family role, individuals will negatively appraise the work role as the source of the conflict. Negative appraisals are likely to include negative affective tones that could cause strain in the domain that is the source of the conflict (Amstad et al., 2011).

***Conservation of resources theory.*** Researchers have used the conservation of resources theory (Hobfoll, 1989, 2001) to explain why WFC is related to potential consequences such as strain and turnover intentions (Grandey & Cropanzano, 1999). The theory proposes that individuals are motivated to gain or maintain resources, including “objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions or energies” (Hobfoll, 1989, p. 516). Furthermore, the theory proposes that individuals experience stress when facing actual or possible loss of resources. As a result of actual or potential loss, individuals strive to protect resources by seeking to gain new or alternative resources. When individuals initially lose resources, they become more vulnerable to future losses because they must invest other resources to replenish those that are depleted or protect those that are threatened. That is, restoring one resource can deplete another, making individuals susceptible to “loss spirals” (Hobfoll, 1989, p. 519). According to this perspective,

work–family conflict leads to stress because resources are lost in the process of juggling work and family roles (Grandey & Cropanzano, 1999). To protect or replace resources, individuals must undertake coping behaviors such as leaving the work role. If no coping behaviors are taken, resources may become increasingly depleted, resulting in exhaustion.

***Effort-Recovery model:*** Researchers have used the Effort-Recovery (E-R) model (Meijman & Mulder, 1998) to better understand the relationship between work–family conflict and other variables (e.g., Geurts, Kompier, Roxburgh, & Houtman, 2003). The E-R model suggests that effort exerted at work can cause negative load reactions such as sleep problems and fatigue. Negative load reactions are reversible through the process of recovery that occurs when an individual’s functional systems challenged during work go untaxed. However, when continuously exposed to those demands, the individual cannot recover and the psychobiological systems cannot return to baseline levels. As a result, load reactions accumulate and may cause longer-term negative effects such as health problems and impaired well-being. Through the lens of the E-R model, work–family conflict causes strain by reducing opportunities for recovery in the family domain.

## **5. THE PRESENT DISSERTATION**

### **Contribution to the Literature**

Although prior work has enriched our understanding of work–family conflict and its potential consequences, important gaps and controversies in the work-family literature remain unresolved. In the following, I point out four of these issues and explain how this dissertation works toward resolving them.

***Direction of relationship.*** As I have explained, many work–family models assume that work–family conflict antecedes various outcomes such as strain and turnover intentions (e.g., Allen, Herst, Bruck, & Sutton, 2000; Frone et al., 1992). These models explicitly assume a unidirectional relationship in which work–family conflict predicts outcome variables. Although these assumptions are derived from theory, most studies on work–family

conflict and potential outcomes rely on cross-sectional data, which strongly limits conclusions about the direction of the relationships. A review of work–family articles published between 1980 and 2003 in industrial and organizational psychology journals reported that 89% of the 225 reviewed studies used cross-sectional designs (Casper et al., 2007). Cross-sectional studies cannot test the direction of relationships, however, and cannot reveal whether variables typically assumed to be consequences of work–family conflict may also lead to more work–family conflict. Thus, the direction of the relationship between work–family conflict and potential outcomes has rarely been tested empirically.

Panel studies are needed to gain insights into the temporal order of two constructs. The few panel studies that have tested reverse and reciprocal relationships between work–family conflict and potential consequences most often used strain-related variables as the outcome of interest (Peeters, ten Brummelhuis, & van Steenbergen, 2013). For example, they examined reciprocal relationships between work–family conflict and exhaustion (Demerouti, Bakker, & Bulters, 2004), depressive complaints (van Hooff et al., 2005), and somatic symptoms (Kinnunen, Geurts, & Mauno, 2004). As research proposing and testing reverse and reciprocal relationships has begun to accumulate, alternative perspectives are emerging that challenge the traditional views of unidirectional effects of work–family conflict on strain. Consequently, an enriching debate has emerged as to whether work–family conflict predicts strain, whether strain predicts work–family conflict, or whether both predict each other reciprocally (Demerouti et al., 2004; Hall, Dollard, Tuckey, Winefield, & Thompson, 2010). To advance our understanding of the relationship between work–family conflict and strain, it seems imperative to examine which perspective is empirically justified. To this end, meta-analyzing panel studies that repeatedly assess work–family conflict and strain seem promising for gaining insights into the temporal order between work–family conflict and strain and resolving the debate about the direction of relationships.

Panel studies examining reverse and reciprocal relationships for work–family conflict and business outcomes such as job performance and turnover intentions are scant at best (Peeters et al., 2013; Steinmetz, Frese, & Schmidt, 2008). Studies regarding job performance may be lacking because no theories or models suggest reverse or reciprocal relationships. The lack of studies regarding turnover intentions is surprising, however, considering that reverse relationships were suggested about 15 years ago. Specifically, Kelloway, Gottlieb, and Barham (1999) suggested an attribution or judgment process that causes individuals high on turnover intentions to scapegoat their social work environment, increasing their perceptions of work–family conflict. Thus, by examining the direction of relationship between work–family conflict and turnover intentions, we could gain a better understanding of the relationship between work–family conflict and a business relevant variable.

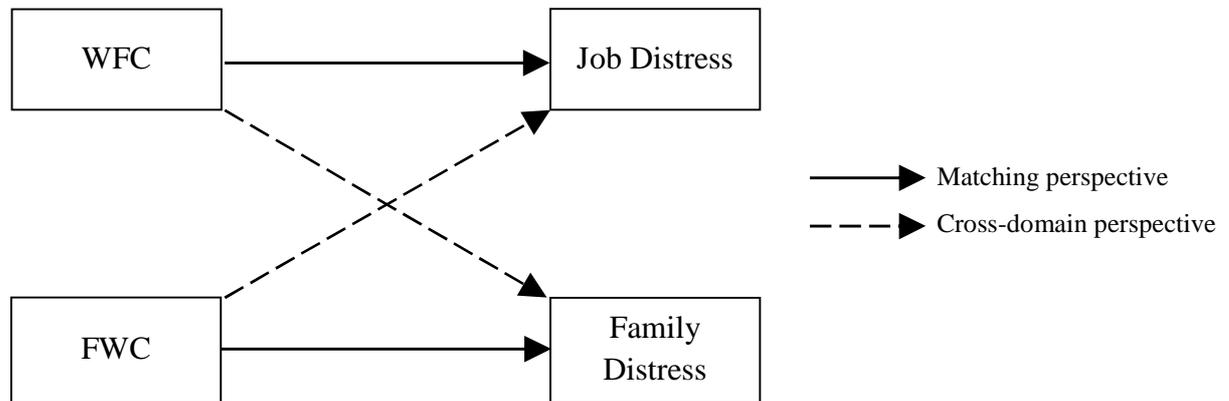
This dissertation contributes to a better understanding of the direction of relationships between work–family conflict and potential outcomes. Specifically, I use Study 1 to resolve the debate about the direction of effect between work–family conflict and strain. My coauthors and I apply meta-analytic path analyses to panel studies to examine whether work–family conflict predicts strain, whether strain predicts work–family conflict, or whether both have reciprocal relationships. Additionally, Study 2 is a further test of reverse and reciprocal relationships for turnover intentions to contribute insights into the direction of relationship between work–family conflict and potential outcomes. Specifically, my coauthor and I use longitudinal data with two assessments (five months time lag) to test whether work–family conflict predicts turnover intentions, whether turnover intentions predict work–family conflict, or whether there are reciprocal relationships between the two constructs. In doing so, studies 1 and 2 test whether the currently dominant view assuming that work–family conflict predicts potential outcomes (i.e., strain and turnover intentions) unidirectionally or the less-popular perspective assuming reverse or reciprocal relationships are empirically justified.

*Cross-domain versus matching perspective.* Debate is ongoing about the pattern of relationships of WFC and FWC with domain-specific consequences such as job and marital satisfaction. At the core of the debate is whether cross-domain or matching relationships are primary (Shockley & Singla, 2011). According to the currently dominant cross-domain perspective, WFC primarily predicts family-related outcomes and FWC primarily predicts work-related outcomes. An alternative perspective is the matching hypothesis (Amstad et al., 2011; Shockley & Singla, 2011) suggesting that WFC mainly affects work-related outcomes and FWC mainly affects family-related outcomes. As a result, controversy has emerged about primary effects of WFC and FWC on domain-specific consequences. Figure 2 illustrates the competing perspectives for the relationships of WFC and FWC with domain-specific distress.

Although models on cross-domain relationships (Frone et al., 1992; Frone et al., 1997) have dominated the literature (Bellavia & Frone, 2005), recent meta-analyses on cross-sectional studies support the matching hypothesis. Job (marital) satisfaction has been more strongly associated with WFC (FWC) than with FWC (WFC) (Shockley and Singla (2011). Similarly, burnout has been found more strongly associated with WFC than with FWC (Amstad, et al. (2011). Because the debate on cross-domain versus matching relationships is at a relatively early stage, few studies have addressed this issue. Another limitation is that the few existing studies mainly relied on cross-sectional data, which cannot test reverse and reciprocal relationships.

The debate about cross-domain versus matching relationships is also highly relevant for practice (Peeters et al., 2013). Organizations seeking to reduce turnover or improve job performance need to know how they can influence these factors. Does work-to-family conflict mainly affect family-related variables as the cross-domain perspective postulates? If so, organizational interventions should focus on variables other than work-to-family conflict to influence turnover intentions and job performance. Or does work-to-family conflict mainly affect work-related variables as the matching perspective postulates? If so, organizational

interventions should target work-to-family conflict. Thus, to derive valid and evidence-based interventions for practice, it is important to understand the relative merits of the two perspectives.



*Figure 2.* The figure illustrates the matching (solid lines) versus cross-domain perspective (dotted lines) for the relationships of WFC and FWC to domain-specific distress. WFC = work-to-family conflict, FWC = family-to-work conflict.

The present dissertation contributes toward a better understanding of the debate about matching versus cross-domain relationships. Studies 1 and 2 compare the two perspectives for work-related outcomes. Specifically, applying meta-analytic path analyses to panel studies, Study 1 examines whether WFC or FWC is more strongly related to work-related strain. According to the matching perspective, WFC should be more strongly related to work-related strain. However, according to the cross-domain perspective, FWC should be more strongly related to work-related strain. Additionally, Study 2 examines whether WFC or FWC is more strongly related to turnover intentions. According to the cross-domain perspective, FWC should be more important in predicting turnover intentions. According to the matching perspective, however, WFC should be more important in predicting turnover intentions. Additionally, Study 2 extends the debate on matching versus cross-domain relationships by going beyond direct relationships between work–family conflict and other variables: it

addresses the buffering role of work and family social support. Specifically, Study 2 examines whether work-family specific social support should stem from the same domain as the conflict (i.e., matching perspective) or from the other domain (i.e., cross-domain perspective) to buffer the relationships of WFC and FWC with turnover intentions.

*Static versus dynamic.* Scientific progress is often the result of scientific revolutions that replace one paradigm with another (Kuhn, 1970). Although the I/O psychology or work–family research fields are probably not undergoing a scientific revolution, they are undergoing a paradigm shift (Judge & Ilies, 2004). Over the last three decades, work–family researchers have accepted that all individuals have stable, static levels of work–family conflict, and between-person differences are the only source of variance. As I have explained, many researchers have examined predictors and outcomes of these stable, trait-like between-person differences in work–family conflict. To illustrate this approach, we use the relationship between FWC and job performance. Studies addressing this relationship from a between-person perspective (e.g., Witt & Carlson, 2006) assume that people who generally experience high levels of FWC show generally lower levels of job performance compared with people who experience lower levels of FWC.

More recently, however, researchers have acknowledged work–family conflict as a dynamic construct that changes within persons over short periods, such as from day-to-day (Maertz & Boyar, 2011). As Butler et al. (2013, p. 133) stated, “We need not conduct an empirical study to know that individuals’ work and family experiences are considerably dynamic. Family life can intrude on work without notice, and a difficult event at work can later strain relationships at home”. Static between-person approaches and common data collection methods such as cross-sectional surveys cannot provide insights into these dynamic complexities. To understand short-term dynamic relationships between work and family, researchers can use a data collection method most often called *diary method*, or also called experience sampling method (ESM) or ecological momentary assessment (EMA) (Bolger,

Davis, & Rafaeli, 2003; Ohly, Sonnentag, Niessen, & Zapf, 2010). In diary studies, participants repeatedly assess their behavior and experiences within their natural life settings by repeatedly filling out short questionnaires over defined periods; for example, they might answer daily questionnaires throughout a Monday to Friday workweek. Besides providing insights into short-term dynamic relationships between work and family roles, diary studies can overcome some of the methodological limitations of cross-sectional survey research. For instance, diary methods can reduce retrospective bias, measurement error, and biased self-serving attributions (for a more detailed discussion of the methodological advantages of diary studies see Bolger et al., 2003; Maertz & Boyar, 2011).

Because this stream of research is at a relatively early stage, researchers have conducted only few diary studies on work–family conflict. A review of work–family articles published between 1980 and 2003 revealed that only 1% of the 225 reviewed studies used diary designs (Casper et al., 2007). A recent review of within-person work–family diary studies concluded that studies examining managerial outcomes are scant at best: “there is not a single experience sampling study examining the link between work–family experiences and job performance” (Butler, et al. (2013) p. 144). This is surprising, given that job performance is arguably the outcome of most interest to managerial concerns. Addressing whether, why, and when daily work–family conflict is associated with daily job performance holds the potential of an improved understanding of job performance and may show pathways to facilitate it.

Not only have researchers rarely examined short-term changes such as day-to-day fluctuations in work–family conflict; they have also seldom addressed longer-term changes such as fluctuations occurring over six months. Longer-term changes in work–family conflict, however, potentially predict outcomes over and above static baseline work–family conflict levels. To illustrate the importance of longer-term changes, I adapt an example from Chen, Ployhart, Thomas, Anderson, and Bliese (2011) in which two employees both rate 3 on a 5-

point scale measuring WFC levels. The static approach would suggest that both employees are equally likely to leave or stay in the organization. However, what if one employee's WFC level decreased from 4 to 3 and the other's increased from 2 to 3? Would their WFC changes uniquely influence turnover intentions above and beyond static WFC levels? Examining the dynamics of WFC and FWC changes can provide better tests of theory and offer stronger theoretical and practical implications (Mitchell & James, 2001).

The present dissertation contributes to a better understanding of work–family conflict as a dynamic construct that changes over time. Specifically, Study 2 sheds light on longer-term changes of WFC and FWC and shows how they relate to changes in turnover intentions. Additionally, Study 3 examines how short-term within-person changes in daily FWC relate to within-person changes in daily job performance.

***How can organizations buffer detrimental consequences of work–family conflict?***

Work–family conflict is very common in contemporary jobs and may reflect a phenomenon that cannot be completely avoided. From a practical viewpoint, it is particularly important to gather insights into factors that may buffer detrimental consequences of work–family conflict. Crucial are insights into factors that organizations can influence; for example, through training or organizational guidelines. In that regard, this dissertation may offer practical implications. Specifically, in Study 2, I test work-family specific support from leaders and family members as buffering the relationship between work–family conflict and turnover intentions. In Study 3, I test psychological detachment from work during time off (i.e., mentally switching off) as buffering the relationship between FWC and job performance. If the results of this dissertation can show that those factors can buffer the mentioned relationships, this research can encourage organizations to foster work-family specific support from leaders and family members as well as psychological detachment from work, for example through training and guidelines.

**Dissertation Outline**

This dissertation is based on three studies my coauthors and I conducted to examine the relationship of work–family conflict to health, turnover intentions, and job performance. Chapters 6 to 8 delineate those studies. (For the full papers, see Appendix A.)

Study 1 (Chapter 6) addressed the relationship between work–family conflict and strain-related variables, such as exhaustion. Although evidence consistently supports positive correlations between work–family conflict and strain, the direction of effect is still unclear. Does work–family conflict predict strain? Or does strain predict work–family conflict? Or do work–family conflict and strain predict each other reciprocally? Most previous studies and meta-analyses (e.g., Amstad et al., 2011) cannot explain the direction of effect because of their cross-sectional designs. Additionally, debate is ongoing about the pattern of relationships of WFC/FWC with domain-specific consequences. The cross-domain perspective has dominated the literature, explaining that conflict originating in one domain mainly impacts the other domain (e.g., WFC mainly impacts family-related outcomes). More recently, scholars have proposed an alternative perspective, the matching hypothesis, assuming that WFC/FWC mainly impact the domain where the conflict originated (e.g., WFC mainly impacts work-related outcomes). As a result, an enriching controversy has emerged about the primary effect of WFC and FWC on domain-specific consequences. Study 1 aims to work toward resolving those controversies. Specifically, my coauthors and I use meta-analytic path analyses on 33 studies that repeatedly measured WFC or FWC and strain to test the direction of effects between WFC/FWC and strain. Additionally, Study 1 sheds some light on the relative merits of the cross-domain versus the matching perspective for the relationships of WFC and FWC with work-related strain.

Study 2 (Chapter 7) examines the relationship between work–family conflict and turnover intentions. Specifically, we compared two alternative perspectives on the interplay between work–family conflict, social support, and turnover intentions. According to the cross-domain perspective, FWC should be more important than WFC in predicting increased

turnover intentions. According to the matching perspective, however, WFC should be more important than FWC in predicting increased turnover intentions. Additionally, Study 2 expands the debate about matching versus cross-domain relationships by testing whether work-family specific social support should stem from the same domain as the conflict, as the matching principle would predict, or whether work-family specific social support should come from the other domain, as the cross-domain perspective would predict, to buffer the relationship between work–family conflict and turnover intentions. Specifically, we test work-family specific support from the leader and family/friends as buffers. In contrast to previous cross-sectional studies, our longitudinal design allows us to test reverse relationships. Moreover, Study 2 sheds some light on work–family conflict as a dynamic construct that changes over time and tests whether changes in WFC and FWC predict changes in turnover intentions over and above baseline scores of WFC and FWC. To those ends, we used a longitudinal study design (five-month time lag) with 665 employees.

Study 3 (Chapter 8) examines the relationship between FWC and job performance. We used a daily diary research paradigm to gain a within-person perspective into short-term fluctuations of FWC and job performance. Building on dynamic behavior theory (Beal, Weiss, Barros, & MacDermid, 2005), we hypothesized that daily concentration is a mechanism through which daily FWC impairs daily job performance. Drawing on effort and recovery theory (Meijman & Mulder, 1998), we further predicted that psychological detachment from work during time off (i.e., mentally switching off) buffers the negative relationship between daily FWC and daily job performance.

In Chapter 9, I generally discuss the results of the three studies, acknowledge strengths and limitations, and suggest implications for research and practice.

## **STUDY 1: THE CHICKEN OR THE EGG? A META-ANALYSIS OF PANEL STUDIES OF THE RELATIONSHIP BETWEEN WORK–FAMILY CONFLICT AND STRAIN**

Over the last decades, many studies have examined the relationship between high work–family conflict and various potential outcome variables such as low job satisfaction, low job performance, and low organizational commitment (Amstad et al., 2011; Shockley & Singla, 2011). From a health perspective, one of the most important finding is the association between work–family conflict and strain. Strains are the psychological, behavioral, and physiological reactions to environmental demands, threats, and challenges (i.e., stressors) and include responses such as irritation, depression, and headache (Ganster & Rosen, 2013; Griffin & Clarke, 2011). Although empirical evidence consistently supports positive correlations between high work–family conflict and high strain (Amstad et al., 2011), certain controversies in the literature remain unresolved.

First, the direction of effect is still unclear. Does work–family conflict predict strain? Or vice versa? Or do work–family conflict and strain predict each other reciprocally? Most previous studies and meta-analyses cannot provide insights into the direction of effects because of their cross-sectional designs. From a theoretical standpoint, the assumption that work–family conflict predicts strain is a core component of many work–family models (e.g., Allen et al., 2000; Frone et al., 1992). However, research proposing and testing reverse and reciprocal relationships is beginning to accumulate (e.g., Demerouti et al., 2004).

Second, debate is ongoing about the pattern of relationships of WFC/FWC with domain-specific consequences. The cross-domain perspective, explaining that conflict originating in one domain mainly causes problems in the other domain, has dominated the literature. More recently, however, scholars have proposed the matching hypothesis as an alternative perspective assuming that WFC/FWC mainly impacts the domain where the

conflict originated. As a result, an enriching controversy has emerged about the primary effect of WFC and FWC on domain-specific consequences.

In this study, our aim was to work toward resolving those controversies. Specifically, by applying meta-analytic path analyses on 33 studies that repeatedly measured WFC or FWC and strain, we tested the direction of effects between WFC/FWC and strain. Additionally, we compared the cross-domain and matching perspectives for the relationships of WFC and FWC with work-related strain.

For both researchers and practitioners, insights into the direction of effect and the pattern of relationships between work-family conflict and strain are important. As I have explained, emerging alternative perspectives are challenging the traditional views of unidirectional cross-domain effects of work-family conflict on strain. From a theoretical standpoint, it seems imperative to examine which perspective is empirically justified. These insights can inform future theories and models of work-family conflict and strain by providing an empirically justified picture of how work-family conflict and strain are related. From a practical standpoint, to design organizational interventions targeted at improving employees' work-life balance and health, practitioners must understand how these factors influence each other. For example, work-life balance interventions are typically assumed to improve employee health (Hammer, Kossek, Anger, Bodner, & Zimmerman, 2011). However, if strain can be shown to influence work-family conflict, organizations should be informed that initiatives to reduce strain can reduce work-family conflict.

### **The Relationship between Work-Family Conflict and Strain**

Frequently studied strains include emotional exhaustion and irritation (e.g., Maslach & Leiter, 2008), anxiety and depression (e.g., Hammer, Cullen, Neal, Sinclair, & Shafiro, 2005), general psychological distress (e.g., Kelloway et al., 1999), somatic complaints (e.g., Frese, 1985), and cardiovascular disease (e.g., Belkic, Landsbergis, Schnall, & Baker, 2004). In the work-family literature strains are often classified into three categories: work-related strain

(e.g., exhaustion), family-related strain (e.g., parental stress), and domain-unspecific strain (e.g., somatic complaints and depression; Allen et al., 2000; Amstad et al., 2011).

Positive concurrent correlations between work–family conflict and strain have been found consistently (Amstad et al., 2011). Although the most popular interpretation assumes that work–family conflict precedes strain, at least three alternative explanations may be offered. Case 1: Work-family conflict causes strain. This view assumes that work–family conflict is a potential stressor leading to various forms of strain. Arguments supporting this view are based on models such as the Effort-Recovery (E-R) model (Meijman & Mulder, 1998) (for examples see Demerouti et al., 2004; Hall et al., 2010) and the conservation of resources (COR) theory (Hobfoll, 1989) (for an example see Grandey & Cropanzano, 1999). For a more detailed explanation of these theories, see Chapter 4.

Case 2: Strain causes work–family conflict. Kelloway et al. (1999) suggested that strain causes work-family conflict through attribution processes: highly strained individuals use selective recall and attention; they search for “causes” of their increased negative thoughts and information and blame it on the difficulties of combining work and family roles. As a result of selective recall and attention, highly strained employees perceive more work-family conflict.

Case 3: Work–family conflict and strain cause each other. Arguments supporting this view typically refer to loss spirals described in Hobfoll’s conservation of resources theory (Demerouti et al., 2004; Hall et al., 2010; Hobfoll, 1989, 2001). According to this theory, individuals strive to obtain and protect valued resources, including objects, conditions, personal characteristics, and energies. When resources are initially lost, individuals become more vulnerable to future losses because resources are linked web-like to each other. As a result, loss spirals follow initial losses.

Case 4: Work–family conflict and strain are causally unrelated. In this case, the positive concurrent correlations between work–family conflict and strain could occur because

of research artifacts such as common source bias or because of third variables influencing both constructs. Although correlational data can hardly rule out case 4, our meta-analysis examines one of its possible implications: work–family conflict and strain do not predict each other over time. Additionally, if work–family conflict and strain can be shown to predict each other over time, a common factor model can be contrasted with the cross-lagged model to test whether common factors might explain the relationships (Finkel, 1995). We propose the following research question:

*Research Question 1: How are WFC/FWC and strain related over time?*

### **The Relationship between Work–Family Conflict and Strain: Cross-Domain versus Matching Hypothesis**

Debate is ongoing about whether WFC and FWC primary effects on strain lie within the domain where the conflict originates, as in the matching hypothesis, or within the other domain, as in cross-domain hypothesis. Frone and colleagues' (1992, 1997) influential models exemplify cross-domain relationships in assuming that WFC affects mainly the family domain, and FWC affects mainly the work domain. The rationale is that when one role (e.g., work) interferes with another role (e.g., family), individuals will have problems fulfilling demands in the receiving role (e.g., family). As a consequence of the struggle to meet receiving role demands, well-being related to the life domain of the receiving role suffers (Frone et al., 1992).

However, a matching hypothesis seems at least as plausible (Amstad et al., 2011; Shockley & Singla, 2011). According to this perspective, WFC predominantly affects work-related outcomes, while FWC predominantly affects family-related outcomes. This assumption is grounded in appraisal theories assuming that when self-relevant roles are threatened, people are likely to appraise the cause of the threat negatively (Lazarus, 1991; Shockley & Singla, 2011). For example, when one role interferes with another, individuals will appraise the role generating the conflict negatively. A negative affective tone will likely

accompany negative appraisals; when experienced frequently, the negative affective tone will cause strain in the domain generating the conflict (Amstad et al., 2011).

Although the Frone models (1992, 1997) on cross-domain relationships have dominated the literature (Bellavia & Frone, 2005), recent meta-analyses on cross-sectional studies provide support for the matching hypothesis. For example, job (marital) satisfaction has been found to be more strongly associated with WFC (FWC) than with FWC (WFC) (Shockley and Singla (2011).

To meta-analytically compare the cross-domain and the matching perspectives for the relationships of WFC and FWC with strain, one would ideally categorize strain into work-related and family-related types of strain. In the current meta-analysis, family-related strain could not be coded due to a lack of panel studies covering this type of strain. The part of the cross-domain perspective that focuses on work-related strain suggests that FWC has a stronger relationship with work-related strain than WFC. The part of the matching-perspective that focuses on work-related strain suggests that WFC has a stronger relationship with work-related strain than FWC. To compare the parts of each perspective that focuses on work-related strain, we propose the following research question:

*Research Question 2: Does WFC or FWC have a stronger relationship with work-related strain?*

## **Method**

We followed the procedures described by Hunter and Schmidt (2004). After computing the meta-analytical correlations, we performed meta-analytic path analyses (Cheung & Chan, 2005; Ricketta, 2008; Viswesvaran & Ones, 1995). For these computations, the matrix of the sample-size-weighted mean correlations served as input. The software Mplus 7.0 (Muthén & Muthén, 2012) with maximum likelihood estimation was used for the analyses.

When performing the literature search, several criteria were applied to determine study eligibility. Most notably, the study had a panel design and assessed work–family conflict and one or more strain-related variables at each of at least two measurement waves. We included strain measures of exhaustion, fatigue, psychological distress, depression, irritation, anxiety, parental stress, and physical symptoms. Additionally, the complete zero-order correlations matrix for work–family conflict and strain was available for at least two measurement waves. That is, the article had to report two synchronous correlations, two lagged correlations, and two stability correlations for work–family conflict and strain. If not all correlations were reported, we contacted the authors. If they did not provide correlation coefficients, we excluded the study. To identify studies meeting these criteria, we (a) conducted an electronic keyword search within the databases *PsycInfo*, *Web of Science*, and *PubMed*; (b) inspected the reference lists of previous meta-analyses, qualitative reviews, and several papers on cross-lagged panel analyses (most notably, Allen et al., 2000; Amstad et al., 2011; Eby et al., 2005); (c) inspected conference proceedings of the last five years for SIOP and AOM; (d) sent emails to the AOM and OHP list servers in which we encouraged researchers to send us unpublished studies. The literature search was conducted from February to October 2012 and updated in April 2013. The search yielded 30 relevant papers (17 published journal articles, 11 unpublished papers, and 2 conference papers) with 33 samples. Of these, 32 samples provided information on the longitudinal relationship between WFC and strain, and 20 samples provided information on the longitudinal relationship between FWC and strain (for tables showing the effect sizes for each study, see the full paper in Appendix A).

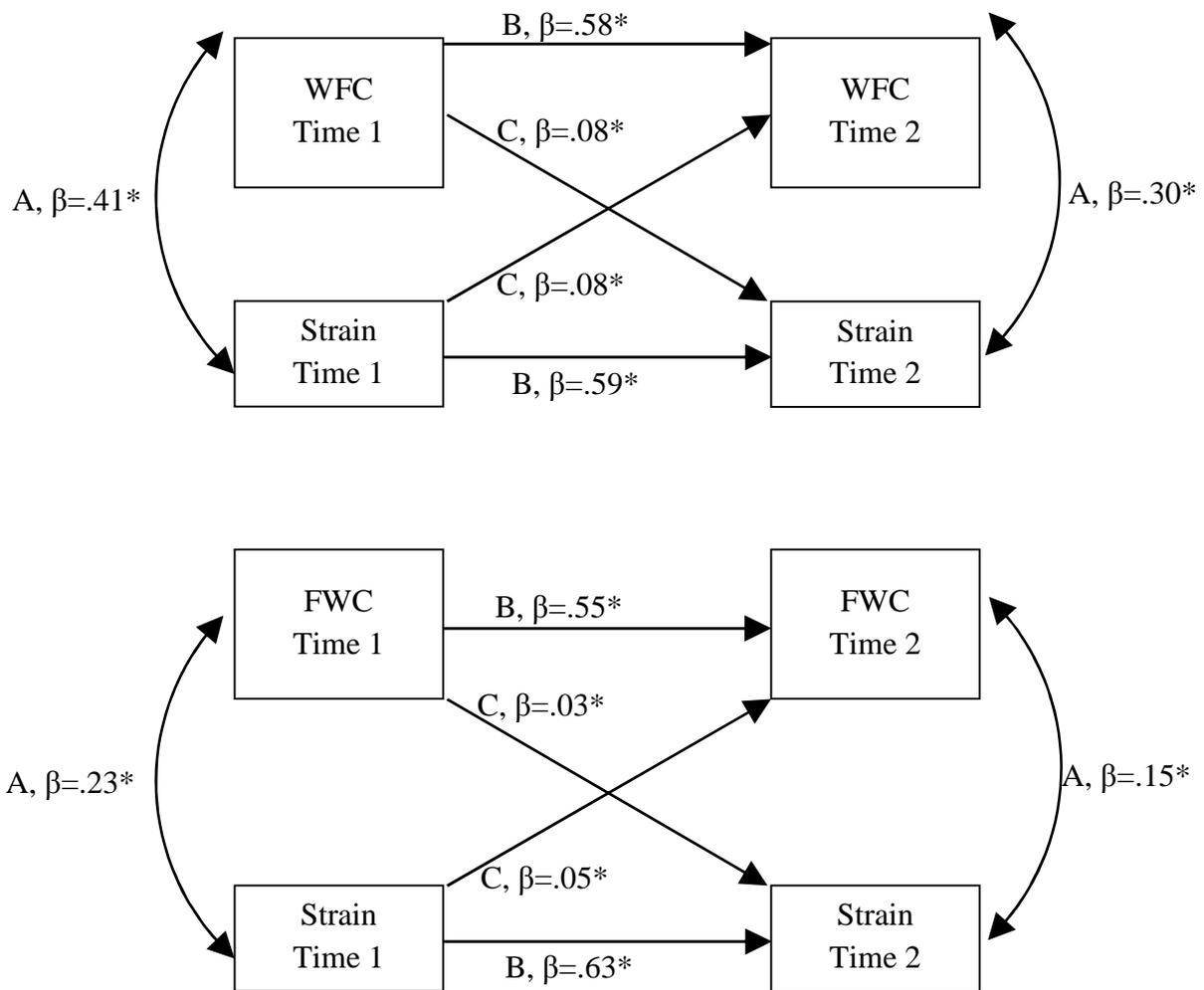
## Results

To examine the direction of effect between work–family conflict and strain (Research Question 1), we tested cross-lagged panel models for WFC and FWC separately using meta-analytical path analyses (see Figure 1). Most notably, results showed that WFC and strain predicted each other; that is WFC predicted strain ( $\beta = .08, p < .05; 95\% \text{ CI: } .07, .10$ ) and

strain predicted WFC ( $\beta = .08, p < .05$ ; 95% CI: .06, .09). Similarly, results revealed that FWC predicted strain ( $\beta = .03, p < .05$ ; 95% CI: .02, .05) and strain predicted FWC ( $\beta = .05, p < .05$ ; 95% CI: .03, .07). Thus, results suggested reciprocal relationship of WFC and FWC with strain, supporting the loss-spiral model.

In additional analyses, we found that the reciprocal relationships between work–family conflict and strain held for both men and women and for different time lags between the two measurement waves. Moreover, analyses revealed that common factors are unlikely to explain the cross-lagged relationships between work–family conflict and strain, strengthening the confidence in the results of our cross-lagged panel models (Finkel, 1995; Lang, Bliese, Lang, & Adler, 2011).

To compare the parts of the matching- and cross-domain perspectives that focus on work-related strain (Research Question 2), we tested in a combined model whether WFC or FWC has a stronger lagged relationship with work-related strain. In this combined model, WFC significantly predicted work-related strain ( $\beta = .09, p < .05$ ; 95% CI: .08, .11), whereas FWC did not predict work-related strain ( $\beta = -.01, n.s.$ ; 95% CI: -.02, .01). Thus, results supported the matching hypothesis rather than the cross-domain perspective.



*Figure 1.* The figure shows the meta-analytical results for the direction of effect between WFC/FWC and strain. The model comprises synchronous, stability, and cross-lagged effects. The two cross-lagged effects reflect the prospect effect of WFC/FWC at Time 1 on strain at Time 2, and the prospect effect of strain at Time 1 on WFC/FWC at Time 2. WFC = work-to-family conflict; FWC = family-to-work conflict; A = synchronous effect, B = stability effect, C = cross-lagged effect.  $*p < .05$

## Discussion

This study examined the direction of effect between work–family conflict and strain by applying meta-analytic path analyses to panel studies. The results provide support for reciprocal effects between both forms of work–family conflict and strain, thereby challenging the common assumption that work–family conflict antecedes strain unidirectionally. Additionally, WFC more strongly related to work-specific strain than did FWC, supporting the less-popular matching hypothesis rather than the popular cross-domain perspective.

These results have important implications for research. Most models in the work–family literature assume that work–family conflict influences strain (e.g., Frone et al., 1992; Frone et al., 1997) but do not acknowledge potential influences of strain on work–family conflict. However, our results reveal reciprocal relationships between both forms of work–family conflict and strain. To provide a more complete picture of how work–family conflict and strain are related, current and future models should be extended by taking reciprocal effects into account. The reciprocal relationships found in the present meta-analysis are consistent with COR theory (Hobfoll, 1989). Thus, Hobfoll’s COR theory seems to be a valuable lens that can be used to better understand the relationship between work–family conflict and strain.

Additionally, our results shed further light on the debate about matching versus cross-domain relationships. Specifically, our result that WFC more strongly relates to work-specific strain than does FWC supported the less-popular matching hypothesis rather than the currently dominant cross-domain view. This result aligns with recent meta-analyses on cross-sectional studies (Amstad et al., 2011; Shockley & Singla, 2011) that also found support for the matching hypothesis. A fruitful avenue for future research would be to further examine the relative merits of the two perspectives by addressing the circumstances under which matching versus cross-domain relationships are stronger.

Our meta-analysis has some limitations. First, we could not differentiate between time-, strain-, and behavior-based WFC/FWC (Greenhaus & Beutell, 1985) because of a lack of studies using these three forms of conflict. A lack of studies also prevented us from coding family-related strain. Consequently, we could not fully test the cross-domain and matching hypotheses; rather, we could only compare the parts of the perspectives that focus on work-related strain. Future studies should, therefore, address the longitudinal relationships of work–family conflict with family-related strain. Finally, the lagged effects found in this meta-analysis are rather small but are within the range of effects reported in other cross-lagged panel analyses (Ricketta, 2008). Nevertheless, future studies should examine whether the lagged relationships of work–family conflict with strain are stronger under certain conditions. Thus, we could gain more nuanced theoretical insights and make more practical recommendations.

## **STUDY 2: WORK–FAMILY CONFLICT, SOCIAL SUPPORT, AND TURNOVER INTENTIONS: A LONGITUDINAL STUDY**

Study 2 focuses on the relationship between work–family conflict and turnover intentions. Among the many potential consequences of work–family conflict (Amstad et al., 2011), management should be particularly interested in turnover intentions because they are one of the most powerful predictors of actual turnover (Griffeth, Hom, & Gaertner, 2000), incurring financial costs (Allen, Bryant, & Vardaman, 2010), increasing accident rates (Shaw, Gupta, & Delery, 2005), and decreasing customer service and quality (Hancock, Allen, Bosco, McDaniel, & Pierce, 2011).

Among work–family researchers, debate is ongoing about whether WFC and FWC primary effects on domain-specific outcomes lie within the domain where the conflict originates, as the matching hypothesis indicates, or within the other domain, as the cross-domain perspective indicates (Amstad et al., 2011; Shockley & Singla, 2011). Most studies on work–family conflict and turnover intentions are mute on the relative merits of each perspective because they do not simultaneously consider WFC and FWC (e.g., Carr, Boyar, & Gregory, 2008; Hom & Kinicki, 2001).

The aim of the present study is to contribute toward resolving the debate by testing a model of work–family conflict and turnover intentions. To compare the veracity of the matching hypothesis versus the cross-domain perspective for relationships between WFC, FWC, and turnover intentions, we simultaneously regressed turnover intentions on WFC and FWC. Thereby, we account for the shared variance between WFC and FWC and provide a more rigorous comparison of the matching- versus cross-domain perspective than prior research (e.g., Amstad et al., 2011). We tested our model with two waves of data. Compared with previous cross-sectional studies (e.g., Greenhaus, Parasuraman, & Collins, 2001; Kirchmeyer & Cohen, 1999), our longitudinal design provides more opportunities to test alternative interpretations such as reverse relationships. Additionally, we expand the debate

on matching versus cross-domain relationships by testing whether work-family specific social support stemming from the domain in which the conflict originates (i.e., matching principle) is more important than work-family specific social support stemming from the other domain (i.e., cross-domain principle) in alleviating the negative effects of WFC and FWC on turnover intentions. Previous research on matching versus cross-domain relationships mainly focused on direct relationships of work and family support with WFC and FWC (Byron, 2005). However, as Greenhaus and Beutell (1985) postulated, social support is not only directly related to work-family conflict; it can also buffer the relationship between work-family conflict and outcome variables. Regarding the buffering role of social support, we are unaware of studies testing the relative merits of cross-domain versus matching relationships. Gaining differentiated insights into moderators of the relationship between work-family conflict and turnover intentions is particularly important because work-family conflict is very common and may be unavoidable in contemporary jobs.

Our second aim is to shed light on work-family conflict and turnover intentions as dynamic constructs that change over time. Although work and family interactions are some of the most dynamic processes employees experience (Ode-Dusseau et al., 2013), most previous studies used a static approach that failed to capture the dynamic nature of work-family interactions and turnover processes (Casper et al., 2007). To illustrate the distinction between a static and a dynamic approach, we adapt an example from Chen, et al. (2011). Consider two employees with an identical rating of 3 on a 5-point scale measuring WFC. According to a static approach, the two employees are equally likely to quit or stay in the organization. However, what if one employee's WFC level decreased from 4 to 3 and the other employee's WFC level increased from 2 to 3? Would change in WFC uniquely influence turnover intentions above and beyond the influence of static levels of WFC? Examining the dynamics of WFC change and FWC change can provide better tests of theory and offer stronger theoretical and practical implications (Mitchell & James, 2001).

## **Work–Family Conflict and Turnover Intentions**

Employees experiencing extensive work–family conflict may try to reduce the conflict by quitting their jobs. Accordingly, meta-analyses on cross-sectional studies have generally supported positive associations of WFC and FWC with turnover intentions (Allen et al., 2000; Amstad et al., 2011). This study sheds new light on the relationships of WFC and FWC to turnover intentions by testing the relative merits of the cross-domain versus the matching hypothesis. The cross-domain perspective assumes that WFC mainly impairs family-related variables such as marital satisfaction, and FWC mainly impairs work-related variables such as job satisfaction. Theories of voluntary turnover point to low levels of job satisfaction as a key antecedent of turnover intentions (Holtom, Mitchell, Lee, & Eberly, 2008; Hom & Kinicki, 2001). Thus, according to the cross-domain perspective, FWC (vs. WFC) should be mainly related to turnover intentions because FWC more strongly reduces job satisfaction.

More recently, researchers have postulated the matching hypothesis as an alternative perspective (Amstad et al., 2011; Peeters et al., 2013; Shockley & Singla, 2011). According to this perspective, WFC mainly affects work-related outcomes such as job satisfaction, while FWC mainly affects family-related outcomes such as marital satisfaction. Given that job satisfaction is a key driver of voluntary turnover intentions, the matching perspective predicts that WFC (vs. FWC) should be mainly related to turnover intentions because WFC more strongly reduces job satisfaction. To compare the cross-domain and the matching perspectives for relationships between WFC, FWC, and turnover intentions, we state two competing hypotheses:

*Hypothesis 1: Following the cross-domain perspective, FWC is more important in predicting turnover intentions than WFC.*

*Hypothesis 2: Following the matching-hypothesis, WFC is more important in predicting turnover intentions than FWC.*

## **The Moderating Role of Social Support**

Different sources, such as leaders or family members, may provide social support (Carlson & Perrewé, 1999). Work–family researchers have recently distinguished between general and work–family-specific social support to capture employee perceptions that others “care about their ability to experience positive work–family relationships and demonstrate this care by providing helpful social interaction and resources” (Kossek, Pichler, Bodner, & Hammer, 2011, p. 292). For example, the leader could show understanding when family matters cause an employee to be late for work or could provide emotional support when an employee must work long hours. Social support from both leader and family members may be protective factors that prevent negative emotions and maladaptive coping strategies when work and family roles collide (Wang, Liu, Zhan, & Shi, 2010). High levels of social support should reduce employee turnover intentions when experiencing WFC or FWC.

Although social support from work and family may play important buffering roles in work–family conflict processes (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005), it remains unclear whether the source of social support should match the domain from which the conflict stems (matching principle) or belong to the other domain (cross-domain principle). To compare the relative merits of the matching versus the cross-domain principle, we state the following:

*Hypotheses 3a and 3b: Following the cross-domain perspective, (a) leader support moderates the relationship between FWC and turnover intentions; the positive relationship is weaker when leader support is high; and (b) support from family and friends moderate the relationship between WFC and turnover intentions: the positive relationship is weaker when support from family and friends is high.*

*Hypotheses 4a and 4b: Following the matching perspective, (a) leader support moderates the relationship between WFC and turnover intentions: the positive relationship is weaker when leader support is high; and (b) support from family and friends moderates the*

*relationship between FWC and turnover intentions: the positive relationship is weaker when support from family and friends is high.*

### **Change in Work–Family Conflict as Predictor of Turnover Intentions**

We propose that changes in WFC and FWC predict changes in turnover intentions. To be theoretically meaningful, changes in WFC and FWC should influence turnover intentions with absolute levels of WFC and FWC controlled. According to conservation of resources theory (Hobfoll, 1989), work–family conflict change, especially systematically increasing work–family conflict, should heighten stress because it indicates actual or potential loss of critical resources (Grandey & Cropanzano, 1999). For example, increased FWC may threaten an employee’s status at work. Similarly, increased WFC may harm family life. The resulting stress is likely to affect work intentions and choices, such as whether to quit or remain on the job. For instance, high job demands and stress have been found to predict turnover two years later (De Croon, Sluiter, Blonk, Broersen, & Frings-Dresen, 2004). Thus, we suggest:

*Hypotheses 5a and 5b: (a) WFC change and (b) FWC change predict change in turnover intentions over and above the baseline levels of WFC and FWC.*

### **Reverse Relationships between Work–Family Conflict and Turnover Intentions**

Models of work–family conflict assume that WFC and FWC antecede turnover intentions (Amstad et al., 2011; Frone et al., 1997). However, most empirical evidence about the relationship of WFC and FWC with turnover intentions has been based on cross-sectional designs, which strongly limits conclusions about the direction of the relationship. We argue that reverse relationships occur; that is, turnover intentions are likely to predict WFC and FWC.

Employees inclined to quit their jobs may experience more WFC because of a self-serving bias. To protect their self-esteem, they might attribute their turnover intentions to their work conditions. For example, they could scapegoat their work as having high work demands that interfere with their family life (Kelloway et al., 1999). Employees high in turnover

intentions might also be subject to selective attention, making them more sensitive to and more likely to experience increased WFC.

Additionally, turnover intentions may be related to higher FWC. In terms of Hobfoll's (1989) conservation of resources theory, employees who want to quit might place less value on their jobs as important resources. If they no longer desire to protect their work role, they allow the boundary between family and work to become more permeable. Consequently, family demands may more strongly spill over into the work role and interfere with work-related duties. We state the following:

*Hypotheses 6a and 6b: Turnover intentions predict (a) WFC and (b) FWC.*

## **Method**

### **Sample and Procedure**

We collected online survey data from a large German company at two time points with a time lag of 5 months. Of 4,843 employees, 2,148 returned questionnaires at Time 1, for a response rate of 44%. Of this sample, 665 employees completed the Time 2 survey, reflecting 31% of the employees who completed Time 1. This response rate was lower than in some other longitudinal studies, likely because we did not use an "opt in" strategy (i.e., employees first commit themselves to take part in the study and are thus more likely to respond) and did not pay participants for each response. The final sample consisted of 665 participants. Of those, 79% were male; 17% were 30-years-old or younger; 29% were between 31 and 40-years-old; 33% between 41 and 50-years-old; 21% between 51 and 60-years-old; 1% were 61-years-old or older; 38% held supervisory positions; 92% indicated working full time; 23% had tenure of 5 years or less; 32% had tenure between 6 and 15 years; 16% had tenure between 16 and 25 years; 28% had tenure of 26 years or more; 84% were living with a partner, and 50% were living with children.

### **Measures**

All measures were translated into German following Brislin's (1980) translation-back-translation procedure. If not otherwise indicated, items were answered on a five-point Likert scale ranging from 1 = *I do not agree at all* to 5 = *I completely agree*.

**WFC.** WFC was measured with four items from Netemeyer, et al. (1996). A sample item is "The demands of my work interfere with my home and family life." Cronbach's alpha was .80 at Time 1, and .82 at Time 2.

**FWC.** Parallel to the WFC scale, FWC was also measured with four items from Netemeyer, et al. (1996). A sample item is "The demands of my home and family life interfere with work-related activities." Cronbach's alpha was .81 at Time 1 and Time 2.

**Turnover intentions.** Turnover intentions were measured with three items from Kelloway, et al. (1999). A sample item is "I'm thinking about leaving this organization." Cronbach's alpha was .90 at Time 1, and .91 at Time 2.

**Leader support.** At Time 1, work-family specific leader support was measured with three items adapted from Haynes, Wall, Bolden, Stride, and Rick (1999). Items were modified to focus on leader support regarding work-family issues. The three items are (1) "To what extent can you count on your leader to back you up when you have difficulties combining work and family?"; (2) "To what extent can you count on your leader to listen to you when you face difficulties in combining work and family?"; and (3) "To what extent can you count on your leader to help you when you face difficulties combining work and family?" Items were answered on a five-point Likert scale ranging from 1 = *not at all* to 5 = *a great deal*. Cronbach's alpha was .86.

**Family/friends support.** Parallel to the leader support scale, work-family support from family and friends was measured with the same three items modified to focus on participants' family and friends. A sample item is "To what extent can you count on your family and friends to back you up when you have difficulties combining work and family?" Cronbach's alpha was .85.

**Control variables.** We controlled for participants' age (1 < 31 years; 2 = 31-40 years; 3 = 41-50 years; 4 = 51-60 years; 5 > 60 years), management position (0 = no supervisory position; 1 = lower management; 2 = middle and upper management), and organizational tenure (1 < 1 year; 2 = 1-5 years; 3 = 6-15 years; 4 = 16-25 years; 5 > 25 years). In addition, we controlled for gender (0 = male; 1 = female), living with a partner (0 = not married/no partner; 1 = married/living with a partner), living with children (0 = no; 1 = yes), and working full-/part-time (0 = part time; 1 = full time).

### **Analysis**

We used hierarchical regression analyses with z-standardized predictor variables to test our hypotheses following the procedures described by Aiken and West (1991). Changes in WFC and FWC (Hypotheses 6a and 6b) were measured as standardized residual scores (for a similar approach see Schaufeli, Bakker, & Van Rhenen, 2009). These change scores were obtained by regressing Time 2 scores of WFC and FWC on the corresponding Time 1 scores (Smith & Beaton, 2008). Positive residual scores indicate an increase and negative scores a decrease in WFC or FWC. Compared with difference scores, using residual scores as indicators of change has the advantage of not inflating error (Cronbach & Furby, 1970).

### **Results**

Before proceeding with hypothesis testing, we conducted a series of confirmatory factor analyses to examine the distinctiveness of WFC, FWC, leader support, family/friends support, and turnover intentions. We used Time 1 data to conduct these analyses. The hypothesized five-factor model ( $\chi^2(109) = 264.93, p < .001, CFI = .97, TLI = .96, RMSEA = .05$ ) fit the data significantly better than a single-factor model and all tested four-, three-, and two-factor models.

#### **Work–Family Conflict, Social Support, and Turnover Intentions**

First, we tested whether WFC or FWC is more important in predicting increases in turnover intentions (i.e., Hypotheses 1 and 2). Whereas WFC predicted increases in turnover

intentions ( $\beta = .08, p < .01$ ), FWC did not ( $\beta = .01, n.s.$ ). To evaluate the relative importance of WFC and FWC in predicting increases in turnover intentions, we computed  $R^2$ . Only WFC ( $\Delta R^2 = .01; p < .001$ ), but not FWC ( $\Delta R^2 = .00; n.s.$ ), contributed to a significant increase in explained variance over and above control variables, turnover intentions at Time 1, and FWC/WFC. These results are contrary to Hypothesis 1 and in line with Hypothesis 2. Thus, results lend support for the matching- rather than the cross-domain perspective.

Then we tested the moderation hypotheses (i.e., Hypotheses 3a–4b). Neither the interaction term between FWC and leader support (Hypothesis 3a) nor the interaction term between WFC and family/friends support (Hypothesis 3b) predicted turnover intentions. Thus, Hypotheses 3a and 3b could not be supported. However, the interaction term between WFC and leader support significantly predicted turnover intentions (Hypothesis 4a;  $\beta = -.05, p < .05$ ). Figure 1 illustrates that WFC is only positively related to increases in turnover intentions at low levels of leader support ( $\beta = .13, p < .001$ ), but not at high levels ( $\beta = .03, n.s.$ ). That is, in line with Hypothesis 4a, leader support buffered the relationship between WFC and turnover intentions.

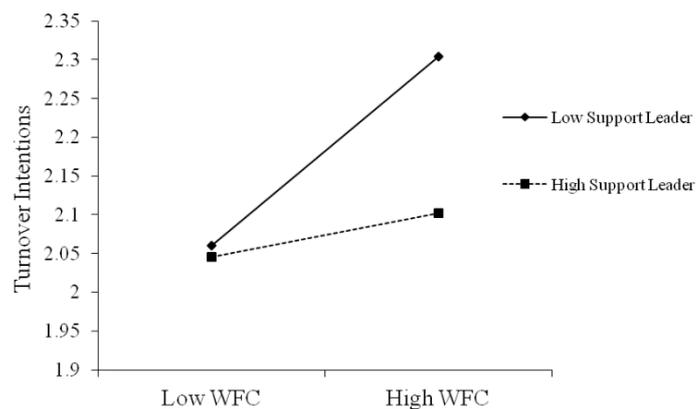
Although we could not find a direct relationship between FWC and changes in turnover intentions, the interaction term between FWC and family/friends support significantly predicted turnover intentions (Hypothesis 4b;  $\beta = -.05, p < .05$ ). Figure 2 tentatively suggests that the relationship between FWC and turnover intentions is positive for low levels of family/friends support and negative for high levels of family/friends support. However, analyses revealed that the simple slopes were non-significant. Thus, the relationship between FWC and turnover intentions is significantly different for high versus low levels of family/friends support (as indicated by a significant interaction term), but the relationship itself does not reach statistical significance. This pattern of results does not support Hypothesis 4b. Overall, however, results of the moderation analyses tend to support the matching- rather than the cross-domain perspective.

## Work–Family Conflict Change and Turnover Intentions

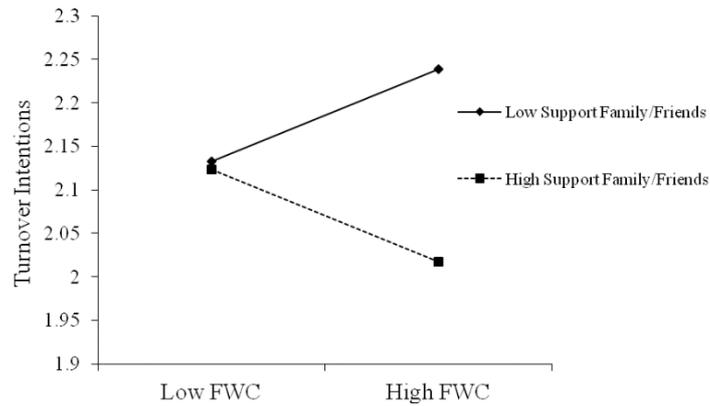
Hypotheses 5a and 5b proposed that changes in WFC and FWC predict turnover intentions over and above baseline scores of WFC and FWC. While WFC change ( $\beta = .09, p < .001$ ) significantly added to the prediction of turnover intentions at Time 2 (over and above control variables, turnover intentions at Time 1, and baseline scores of WFC and FWC), FWC change did not ( $\beta = .04, p = .11$ ). The positive relationship between WFC change and turnover intentions indicated that increases in WFC predicted increases in turnover intentions. Thus, results supported Hypothesis 5a but did not support Hypothesis 5b.

## Reverse Relationships between Work–Family Conflict and Turnover Intentions

Hypotheses 6a and 6b proposed that turnover intentions predict WFC and FWC. Results revealed that turnover intentions predicted WFC ( $\beta = .05, p < .05$ ) after controlling for control variables and WFC at Time1. Thus, the data supported Hypothesis 6a. In support of Hypothesis 6a, results showed that turnover intentions also predicted FWC ( $\beta = .05, p < .01$ ) after controlling for control variables and FWC at Time1.



*Figure 1.* Interaction effect between WFC and leader support on turnover intentions. WFC = work-to-family conflict.



*Figure 2.* Interaction effect between FWC and support from family members and friends on turnover intentions. FWC = family-to-work conflict.

## Discussion

This longitudinal study examined the relationship between work–family conflict and turnover intentions, with a special emphasis on matching versus cross-domain relationships. Results revealed that WFC, but not FWC, predicted an increase in turnover intentions five months later. Leader support buffered the relationship between WFC and increased turnover intentions, but support from family and friends did not. Additionally, the study found that increased WFC—but not increased FWC—predicted increased turnover intentions over and above static baseline scores of WFC and FWC. Taken together, these findings support the matching perspective rather than the cross-domain view. Finally, we tested whether reverse relationships occur between WFC, FWC, and turnover intentions and found that turnover intentions predicted increased WFC and FWC.

### Theoretical Implications

This study has important theoretical implications. First, we compared the cross-domain versus the matching perspective for the relationships of WFC and FWC with turnover intentions. The result that WFC predicted increased turnover intentions but FWC did not supports the matching perspective rather than the cross-domain view.

Second, we expanded the debate on matching versus cross-domain relationships by going beyond direct relationships and tested the relative merits of the two perspectives regarding the buffering role of work and family support. Our results revealed that work-family specific leader support—but not work-family specific family support—buffered the WFC–turnover intentions relationship. Thus, a major contribution of our study derives from our finding that social support is most effective in buffering the relationship of WFC to turnover intentions when the support stems from the same domain as the conflict. Again, this pattern of results supports the matching perspective.

Third, we contributed to a better understanding of work–family conflict as a dynamic construct by examining the relationship of WFC change and FWC change to turnover intentions. We found that WFC change—but not FWC change—uniquely explained changes in turnover intentions over and above baseline scores of WFC and FWC. Again, these findings lend support for the matching perspective. Additionally, these findings extend extant models of the work–family interface. While current models (e.g., Frone et al., 1997) failed to consider the dynamics of work–family conflict, our results demonstrate that changes in WFC play a unique and important role in contributing to employees’ inclination to stay at their jobs or leave their organization.

Finally, because of the longitudinal design of our study, we could test reverse relationships and examine whether turnover intentions predicted increased WFC and FWC. In contrast to a prior study (Kelloway et al., 1999), we used a larger sample and found, in support of reverse relationships, that turnover intentions predicted increased WFC and FWC. Thus, these results challenge the common assumption that WFC and FWC antecede turnover intentions unidirectionally. Future models of work–family conflict should acknowledge that not only WFC and FWC are potential antecedents of turnover intentions but that turnover intentions can also be a potential antecedent of WFC and FWC.

### **Practical Implications**

Perhaps the most obvious practical implication is that organizations may reduce employees' turnover intentions by reducing their WFC. Organizations may want to offer formal work–family policies such as flexible work schedules and on-site childcare that assist employees in juggling work and family demands (Ryan & Kossek, 2008; Sutton & Noe, 2005). A second implication is that organizations could alleviate the relationship between work–family conflict and turnover intentions by fostering social support. In this regard, our findings offer differential suggestions. Specifically, to alleviate the relationship between WFC and turnover intentions, organizations should foster work-family specific leader support. For example, organizations should encourage leaders (e.g., through official guidelines) to provide emotional and instrumental support when their employees experience WFC. Leaders could also discuss work–family issues with their employees and inform them of supportive organizational policies.

### **Limitations and Future Research**

Our study has several limitations that suggest fruitful avenues for future research. First, because all our measures are based on self-reports, common method bias may have inflated the observed relationships. Because we used two measurement waves and because of the pattern of interactions we found, we believe that common method bias is not a major concern in this study. Second, we found rather small relationships, but they were within the range of effects reported in other studies controlling for baseline scores (e.g., Riketta, 2008). Finally, it would be worthwhile to examine the relationship of WFC change and FWC change to other outcome variables such as job attitudes including job satisfaction and organizational commitment, or work behaviors including organizational citizenship behaviors and counterproductive work behaviors. Thus, future research is needed to further examine the nomological network of WFC change and FWC change.

### **STUDY 3: FAMILY–WORK CONFLICT AND JOB PERFORMANCE: A DIARY STUDY OF BOUNDARY CONDITIONS AND MECHANISMS**

Job performance refers to employees' behaviors at work that support organizational goals (Motowildo, Borman, & Schmit, 1997). Although most previous studies addressed job performance as a static, trait-like construct (Barrick & Mount, 1991), more recently, researchers acknowledge that job performance may substantially and meaningfully fluctuate within individuals for short periods, perhaps day-to-day (Beal et al., 2005). Some of the performance fluctuations may arise because employees' family responsibilities interfere with their work, a situation typically called *family-to-work conflict* (FWC; Greenhaus & Beutell, 1985). Addressing whether, why, and when daily FWC is associated with daily job performance holds the potential of improving our understanding of job performance and may show ways to facilitate it.

Linking FWC to theory on dynamic behavior (Beal et al., 2005), in this study my coauthors and I examine whether daily FWC is associated with daily job performance. Additionally, by addressing daily concentration as a mediator and psychological detachment from work during time off (i.e., mentally switching off) as a moderator, we examine mechanisms and boundary conditions of the within-person relationship between daily FWC and daily job performance.

This study makes three important contributions to the literature. First, it adds to studies on the FWC–performance linkage. Whereas previous studies addressed this relationship from a static between-person perspective (e.g., Demerouti, Taris, & Bakker, 2007; Witt & Carlson, 2006), we take a dynamic within-person approach to examine short-term relationships. Although within- and between-person studies often lead to congruent results, they relate to different research questions (Cervone, 2005; Dalal, Lam, Weiss, Welch, & Hulin, 2009). At the between-person level, the question is whether people who generally experience high (vs. low) levels of FWC show lower levels of job performance. At the within-person level, the

question is whether a person's performance fluctuations systematically co-vary with his or her FWC fluctuations.

Second, Beal et al.'s (2005) model suggests that within-person fluctuations of job performance are in synchrony with employees' concentration at work. By examining daily concentration at work as a potential mediator of the relationship between daily FWC and daily job performance, we address a mechanism derived from theoretical models on dynamic performance.

Third, by examining psychological detachment from work during time off for its moderating effect on the association between FWC and job performance, we advance the understanding of boundary conditions for this association (Witt & Carlson, 2006) and offer practical implications. If psychological detachment from work can be shown to buffer the relationship between daily FWC and daily job performance, employees should be encouraged to develop strategies for detaching themselves from work during their time off (Kreiner, Hollensbe, & Sheep, 2009; Sonnentag, Binnewies, & Mojza, 2010).

### **Dynamic Job Performance**

As an indicator of job performance, we use task performance, defined as behaviors "that are recognized by the formal reward systems and are part of the requirements as described in job descriptions" (Williams & Anderson, 1991, p. 606). Beal et al.'s (2005) model provides a theoretical basis for examining short-term within-person changes in job performance. According to the model, short-term performance depends on resource allocation. The term *resource* primarily refers to mental reserves, such as cognitive and self-regulatory resources. When individuals allocate sufficient mental resources to their tasks, they can deliver their maximum performance. In contrast, off-task attentional demands can pull their mental resources from the task. Consequently, they cannot allocate all available resources to the task and their performance is likely to suffer at that time.

The model further proposes that resource allocation depends on resource levels: high mental resource levels enable individuals to allocate more resources to the task. Thus, for successful dynamic performance, they must not be distracted by off-task attentional demands, and they must have high levels of resources available.

### **Family-to-Work Conflict, Concentration, and Job Performance**

We argue that daily FWC is negatively related to daily job performance because it keeps employees from fully concentrating on their work tasks. In terms of Beal et al.'s (2005) model, daily FWC may impair daily concentration because the off-task attentional family demands associated with daily FWC consume limited cognitive (e.g., Kahneman, 1973; Pashler, 1994) and self-regulatory mental resources (Muraven & Baumeister, 2000). Imagine, for instance, an employee who answers phone calls from home or ruminates over family problems while at work. These distracting stimuli consume cognitive resources that cannot be directed simultaneously toward the work task. Additionally, daily FWC can disrupt employees from achieving their focal goals and disorganize or at least fragment their ongoing work activities. As a result, they must exert self-control in adjusting and monitoring their goal-directed behavior. In sum, we argue that daily FWC consumes cognitive and self-regulatory resources, leading to lower levels of concentration at work.

However, concentrating on the task is crucial for successful daily job performance; individuals perform their best when they allocate their maximum resources to the task (Beal et al., 2005). By focusing attention and concentration on task-relevant information, employees ensure they are using all their resources as efficiently as possible (Beal et al., 2005; Demerouti et al., 2007). Taken together, we argue that the off-task attentional demands associated with daily FWC pull attention from the task. As a result, performance suffers. We therefore predict:

*Hypothesis 1: Daily FWC is negatively related to daily job performance.*

*Hypothesis 2: Concentration mediates the negative relationship between daily FWC and daily job performance.*

### **Moderation Effects of Psychological Detachment from Work**

Psychological detachment from work during time-off refers to “the individual’s sense of being away from the work situation” (Etzion, Eden, & Lapidot, 1998, p. 579). This implies that one is neither physically working nor mentally preoccupied with job-related issues during after-work hours (Sonnentag et al., 2010). Psychological detachment from work is considered an important part of the recovery process (Meijman & Mulder, 1998; Sonnentag & Fritz, 2007), a recuperation process that alleviates negative effects of demands and reduces short-term strain (Craig & Cooper, 1992).

We argue that high (vs. low) levels of daily psychological detachment from work during time off buffer the negative relationship between daily FWC and daily job performance. Employees who detach mentally from work during time off can replenish resources, for example, by spending time on reenergizing activities (Sonnentag et al., 2010). The restoration of mental resources through daily psychological detachment from work should help employees compensate for the mental resources consumed by daily FWC, thereby avoiding reduced performance. When maximum mental resources are available, employees should be able to efficiently react to daily FWC and minimize negative performance implications. For example, if an employee who has high mental resources is interrupted at work by a phone call from a family member, the employee should be able to quickly switch focus back to the work task (Monsell, 2003). We suggest the following:

*Hypothesis 3: Daily psychological detachment from work during time off moderates the relationship between daily FWC and daily job performance, such that the negative relationship is weaker for those who experience high (vs. low) levels of daily psychological detachment from work.*

### **Method**

## Sample and Procedure

To examine the hypotheses, we used a within-person daily research design with two daily assessments (at the start and end of the workday) over one workweek. Participants were employees recruited from an internationally operating German company. On our behalf, the head of an HR unit emailed all 230 unit members encouraging voluntary participation. Data were collected online using electronic surveys. At the beginning of work, participants reported their level of psychological detachment from work during the previous evening. Surveys at the end of the workday assessed FWC, concentration, and job performance.

The final sample consisted of 95 employees reporting 390 days (i.e., on average 4.1 days per employee) reflecting 55% of participants who completed the baseline survey. Of the final sample, 59% were female, 41% male. Fifteen percent were 30 years-old or younger; 27% were between 31 and 40 years-old; 36% between 41 and 50 years-old; 17% between 51 and 60 years-old; 5% were 61 years-old or older. Fifty-seven percent held supervisory positions, and 86% indicated they worked full time. Ninety-eight percent had completed secondary education (64% held college or university degrees; 34% had completed an apprenticeship). Eighty-five percent were married or in relationships, and 46% had children.

## Measures

Items were answered on a five-point Likert scale ranging from 1 = *I do not agree at all* to 5 = *I completely agree*. Given that participants completed two surveys each day over five consecutive workdays, it was important to keep the scales as short as possible. Therefore, we used reduced sets of items from validated scales for FWC, concentration, and job performance, and focused on items that were most likely to vary daily.

**Daily family-to-work conflict.** Daily FWC was measured with three adjusted items from Netemeyer, Boles, and McMurrian's (1996) scale (e.g., "Today, the demands of my family interfered with work-related activities"). The average internal consistency was .82.

**Daily concentration.** Daily concentration was measured with three items adjusted to refer to the current day (e.g., “Today, I had total concentration”; Demerouti et al., 2007; Jackson & Marsh, 1996). The average internal consistency was .75.

**Daily task performance.** Daily task performance was assessed with four items from Williams and Anderson (1991) adjusted to refer to the current day (e.g., “Today, I adequately completed assigned duties”). The average internal consistency was .84.

**Daily psychological detachment from work.** Daily psychological detachment from work was measured with a four-item scale developed by Sonnentag and Fritz (2007) adjusted to refer to the previous evening (e.g., “Yesterday evening, I forgot about work”). The average internal consistency was .86.

**Control variables at the day level.** At the day level, we controlled for daily work hours and daily role conflict (e.g., “Today, I received incompatible requests from two or more people”; Rizzo, House, & Lirtzman, 1970) because they potentially influence job performance (Gilboa, Shirom, Fried, & Cooper, 2008; Ng & Feldman, 2008). At the person level, we controlled for age, gender, marital status, children, part-time employment, and management level.

## **Analysis**

We used multilevel path modeling to accommodate the multilevel nature of our study and the non-independence of our data (i.e., multiple observations were nested within persons). The analyses were conducted using Mplus 6.0 (Muthén & Muthén, 2012) with maximum-likelihood (ML) estimation. Following Hofmann and Gavin (1998), we centered all daily predictor variables around each participant’s mean value.

## **Confirmatory Factor Analysis**

Before proceeding with hypothesis testing, we conducted a series of multilevel confirmatory factor analyses to examine the distinctiveness of the three within-individual constructs that were measured at the same time (i.e., daily FWC, daily concentration, and

daily job performance). The hypothesized three-factor model ( $\chi^2(32) = 71.62, p < .001, CFI = .93, TLI = .90, RMSEA = .06$ ) fit the data significantly better than all alternative two-factor models and a single factor model. Hence, results indicate that our measures capture distinct constructs.

## Results

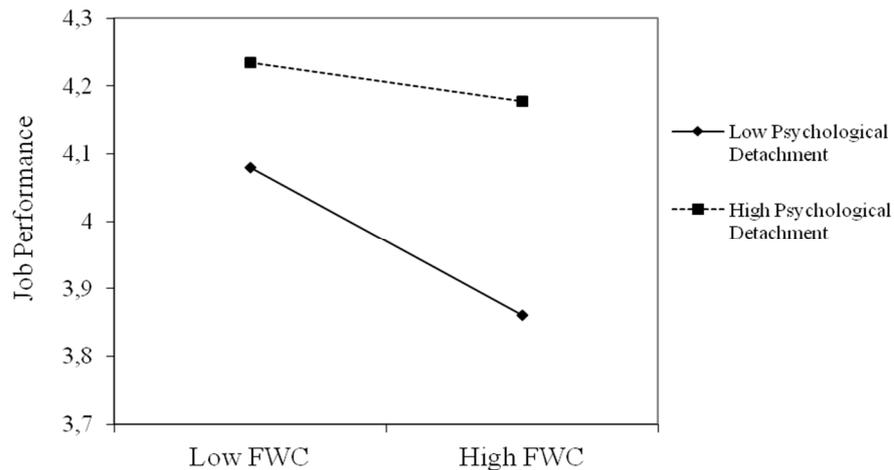
We hypothesized that daily FWC is negatively associated with daily job performance (Hypothesis 1). The results showed that daily FWC was negatively related to daily job performance ( $b = -.21, p < .001$ ). Thus, Hypothesis 1 was supported.

In Hypothesis 2, we proposed that concentration mediates the negative association between daily FWC and daily job performance. Results of a mediation model revealed a negative association between daily FWC and daily concentration (Path a;  $b = -.31, p < .001$ ), and a positive association between daily concentration and daily job performance (Path b;  $b = .16, p < .001$ ). Results showed a significant indirect effect (coefficient =  $-.05, SE = .015, z = -3.34, p < .01, 95\% CI = -.08, -.02$ ), supporting daily concentration as mediator in the relationship between daily FWC and daily job performance. Thus, Hypothesis 2 was supported.

In Hypothesis 3, we proposed that daily psychological detachment from work buffers the negative association between daily FWC and daily job performance. However, the data did not support Hypothesis 3.

In additional analyses, we followed previous studies (e.g., Moreno-Jiménez et al., 2009) and used general, person-level psychological detachment as moderator. Perhaps it is not the daily experience of psychological detachment that alleviates the negative performance implications of daily FWC, but rather the general between-person level of psychological detachment from work. We aggregated daily scores of psychological detachment to the person level. The cross-level interaction term between daily FWC and person-level detachment significantly predicted daily job performance ( $b = -.10, p < .05$ ). Daily FWC was only

negatively related to daily job performance at low levels of psychological detachment ( $b = -.29, p < .001$ ), but not at high levels ( $b = -.10, n.s.$ ; see Figure 1). That is, person-level psychological detachment buffered the negative association between daily FWC and daily job performance.



*Figure 1.* Moderating effect of person-level psychological detachment from work on the within-person association between FWC and job performance. FWC = family-to-work conflict.

## Discussion

In this study, we examined the within-person association between daily FWC and daily job performance. Results revealed that daily FWC was negatively associated with daily job performance, and that daily concentration mediated the association. Additionally, the general level of psychological detachment from work during time off buffered the daily FWC–performance relationship.

## Theoretical Implications

Our findings have several important theoretical implications. First, our finding that daily FWC and daily job performance are negatively associated extends previous studies (e.g.,

Witt & Carlson, 2006) by demonstrating that this relationship also holds at the within-person level. That is, on any day when individuals face more FWC than average, their job performance will suffer. This study contributes to theory by integrating daily FWC into theory on dynamic behavior (Beal et al., 2005). Thereby, this study advances our understanding of FWC as a phenomenon that fluctuates within persons over short periods. We can use the lens of Beal et al.'s (2005) model to interpret the finding that impaired concentration is one underlying mechanism between daily FWC and daily job performance. The model explains that off-task attentional demands impair job performance by drawing attention and resources from tasks.

Third, our results demonstrate that person-level psychological detachment from work can alleviate the negative relationship between daily FWC and daily job performance. Thereby, the present results contribute not only new insights into moderators of the link between FWC and job performance, but also demonstrate that recovery experiences can buffer the relationship.

### **Practical Implications**

This study has several practical implications for organizations. First, the findings show that daily FWC and daily job performance are negatively associated, which underscores the need to reduce employees' daily FWC. For example, supervisors could discuss work–family issues with their employees and inform them about supportive organizational policies, such as flexible work schedules and on-site childcare. Employees may also benefit from intervention programs targeted at improving specific skills for handling family and work demands, such as time-management skills.

Second, our findings suggest that employees should detach from work during time off. Rituals of separation when crossing the work–non-work boundary are a possible technique for successful detachment (Ashforth, Kreiner, & Fugate, 2000). For example, employees could use the commute between work and other life domains as a transition period allowing them to

mentally disengage from their work roles. Additionally, organizations could train employees in psychological detachment techniques (Hahn, Binnewies, Sonnentag, & Mojza, 2011).

### **Limitations and Future Research**

Arguably, the greatest limitation in our study is that the performance measure is based on self-reports, which may have introduced self-presentational bias. Many diary studies published in top-tier journals are similarly limited (e.g., Dalal et al., 2009; Rodell & Judge, 2009). Although it would be ideal to obtain daily external ratings or daily objective performance criteria, “self-ratings may be more valid with EMA [ecological momentary assessment] than with other methods” (Beal et al., 2005, p. 1064, brackets added). A recent meta-analysis on work stressors and job performance can partly alleviate the concern that a self-presentational bias affected the relationship between daily FWC and job performance: as the authors explained: “the results between the different role stressors and self-rated performance ... were for the most part similar or in the same direction to the results, which were based on supervisory ratings or objective performance data...[thus] researchers and practitioners may obtain some useful information from self-report data on stress and performance” (Gilboa et al., 2008, p. 257). Second, common method bias may have inflated the observed relationships. We tried to minimize this concern by following several recommendations from Podsakoff, MacKenzie, Lee, and Podsakoff, (2003), such as ensuring that responses were anonymous and collecting data at two daily measurement points.

This study suggests fruitful avenues for future research. Although we deliver important insights into intra-individual dynamics of FWC, more research is needed to advance the understanding of FWC as a phenomenon that fluctuates within persons (Casper et al., 2007; Sonntag, Frieling, & Stegmaier, 2012). For example, we focused only on psychological detachment from work. Future research is needed to address whether other recovery strategies, such as relaxation or mastery experiences (Sonnentag & Fritz, 2007), may also buffer the FWC–performance relationship.

In sum, our study provides compelling evidence of a negative relationship between daily FWC and daily job performance. At the same time, it points to non-work experiences—psychological detachment from work during time off—as a way to alleviate the negative relationship. We hope that these insights contribute to a better understanding of the interplay between work and non-work.

## GENERAL DISCUSSION

The main aim of this dissertation was to contribute to research on work-family conflict and its potential consequences. Together with my coauthors, I conducted three studies examining the relationship of work-family conflict to health, turnover intentions, and job performance. These studies used meta-analytic path analysis, longitudinal research designs, and within-person daily diary paradigms. In this chapter, I integrate the findings from the three studies and outline their implications for theory. Then I address strengths and limitations. Finally, I discuss practical implications and conclude with directions for future research.

### **Integration of Results and Theoretical Implications**

Study 1 examined the relationship between work-family conflict and strain. With my coauthors, I applied meta-analytic path analysis to 33 panel studies to work toward resolving two ongoing debates in the work-family literature. First, we examined whether work-family conflict predicts strain, whether strain predicts work-family conflict, or whether work-family conflict and strain predict each other reciprocally. Second, we examined whether the pattern of relationships between both forms of work-family conflict and work-specific strain supported the currently dominant cross-domain perspective or the less-popular matching hypothesis. Regarding the direction of relationships, results revealed reciprocal effects. Specifically, WFC and FWC predicted strain and strain predicted WFC and FCW. These findings held for both men and women and for different time lags between the two measurement waves. Regarding matching versus cross-domain relationships, results showed that WFC had a stronger relationship with work-specific strain than did FWC, supporting the matching hypothesis rather than the cross-domain perspective. Overall, Study 1 challenges the traditional view of unidirectional cross-domain effects of work-family conflict on strain. Future theories addressing work-family conflict and strain should acknowledge reciprocal effects and more strongly focus on matching relationships. The reciprocal relationships found

in this meta-analysis are consistent with COR theory's (Hobfoll, 1989) notion of loss spirals, demonstrating that COR theory can validly predict relationships between work–family conflict and strain. For practitioners, the results found in Study 1 suggest that employee strain can be reduced by providing policies such as flexible work arrangements and on-site childcare that reduce work–family conflict. Similarly, work-family conflict can be reduced by providing interventions (e.g., trainings) that reduce employee strain.

Study 2 extended Study 1 by examining cross versus matching relationships for turnover intentions and by addressing social support as a potential buffer. Further extending Study 1, Study 2 examined reverse relationships for work–family conflict and turnover intentions. Additionally, Study 2 examined whether changes in work–family conflict uniquely influenced changes in turnover intentions over and above baseline levels of work–family conflict. We used a longitudinal study with a five-month time lag between the two measurement waves. Results showed that WFC predicted increased turnover intentions, whereas FWC did not. Work-family specific support from the leader buffered the relationship between WFC and increased turnover intentions, but work-family specific support from family and friends did not. Additionally, WFC changes predicted increased turnover intentions above and beyond baseline levels, whereas FWC did not. Thus, results of Study 2 supported the matching principle rather than the cross-domain perspective for the interplay between work–family conflict, social support, and turnover intentions. Additionally, results revealed reverse relationships: turnover intentions predicted increased WFC and FWC. For theory development, these results suggest that future theories and models should acknowledge reverse relationships between work–family conflict and turnover intentions. For organizations, most notably, results of Study 2 provide suggestions for reducing turnover intentions: Organizations should reduce WFC rather than FWC, and encourage managers to provide support when their employees experience WFC for example through allowing more flexible work hours or providing information on supportive organizational policies.

Extending Studies 1 and 2, Study 3 not only examined direct and moderating relationships between work–family conflict and potential outcomes, but also tested an underlying mechanism. Specifically, drawing on theory that explicitly addresses dynamic behavior (Beal et al., 2005), in Study 3 we examined the short-term, within-person relationship between daily FWC and daily job performance. Moreover, we addressed psychological detachment from work during time off as moderator and daily concentration at work as mediator of the relationship between daily FWC and daily job performance. To test our assumptions, we used a diary study assessing data twice daily over five workdays. Results revealed that daily FWC was negatively associated with daily job performance and that daily concentration mediated this relationship. Moreover, high levels of psychological detachment buffered the negative relationship between daily FWC and daily job performance. Thus, Study 3 suggests that daily FWC harms daily concentration and daily job performance. At the same time, Study 3 points to non-work experiences—psychological detachment from work during time off—as a way to alleviate FWC’s negative performance implications. By integrating daily FWC into Beal et al.’s (2005) theory on dynamic behavior, Study 3 theoretically advances our understanding of FWC as a phenomenon that fluctuates within persons over short periods. Additionally, in contrast to Studies 1 and 2 that found support for matching-relationships, Study 3 showed a cross-domain relationship between daily FWC and daily job performance. For organizations, findings of Study 3 suggest that organizations would benefit by reducing employees’ daily FWC, such as by instituting flexible work schedules, and by training employees in techniques for psychologically detaching from work during time off.

Although COR theory (Hobfoll, 1989) is not a genuine theory of work–family relationships, scholars have proposed that it may be an appropriate framework for work–family researchers (Grandey & Cropanzano, 1999). Indeed, it seems nicely suited to integrate the findings of this dissertation. Taken together, the three studies show that work–family

conflict relates to relevant business outcomes. Specifically, the findings of this dissertation reveal that high work–family conflict is related to low health (Study 1), high turnover intentions (Study 2), and low job performance (Study 3). According to Hobfoll’s (1989) COR theory, work–family conflict is associated with detrimental consequences because resources are lost in the process of juggling work and family roles (Grandey & Cropanzano, 1999). Consequently, employees may experience strain that impairs their health and increases their turnover intentions. More proximal experiences of work–family conflict, such as daily FWC, may consume limited cognitive and self-regulatory resources. As a result, employees cannot allocate their maximum resources to the work task, and their performance suffers (Beal et al., 2005). In addition, Studies 1 and 2 found reciprocal relationships of work–family conflict with strain and turnover intentions. Those findings are in line with Hobfoll’s notion of loss spirals. As I have explained, COR theory proposes that individuals strive to obtain and protect valued resources. When resources are initially lost, individuals become more vulnerable to future losses because replenishing and protecting resources requires investing other resources. That is, restoring one resource can deplete another resource. As a result, loss spirals can follow initial losses. Also in line with Hobfoll’s COR theory are the findings that work–family specific support from the leader (Study 2) and psychological detachment from work during time off (Study 3) buffered the relationships of work–family conflict with turnover intentions and job performance, respectively. In terms of COR theory, support from the leader and psychological detachment from work can be viewed as valued resources or as means to restore lost or gain new ones. Thus, COR theory seems to be a valuable framework for better understanding the relationship between work–family conflict and other variables.

In Chapter 4, I outlined gaps and unresolved debates in the work–family literature. In the following section, I will explain how the findings of the three studies contribute toward resolving these issues. First, the findings of this dissertation contribute to a better understanding of the *direction of relationships* between work–family conflict and potential

consequences. Studies 1 and 2 tested reciprocal relationships. Specifically, Study 1 found that work–family conflict and strain were reciprocally related such that both constructs predicted each other. Study 2 suggested that WFC predicted turnover intentions, and that turnover intentions predicted WFC and FWC. These findings challenge the traditional view that work–family conflict antecedes strain and turnover intentions unidirectionally (e.g., Amstad et al., 2011). The reciprocal relationships found in this dissertation also address one of the less studied tenets of COR theory: When resources are initially lost, individuals become more vulnerable to future losses and loss spirals may eventually follow. These findings underscore the need for future theories to acknowledge reverse and reciprocal relationships between work–family conflict and potential outcomes.

Second, this dissertation illuminates the debate about *matching versus cross-domain relationships*. Studies 1 and 2 tested the relative merits of the two perspectives regarding work-related outcomes. Specifically, Study 1 examined whether WFC or FWC was more strongly related to work-specific strain. The results that WFC was more strongly related than FWC to work-specific strain supported the less-popular matching perspective. In addition, Study 2 examined whether WFC or FWC is more important in predicting turnover intentions. In support of the matching perspective, the results revealed that WFC is more important than FWC in predicting turnover intentions. Although a previous meta-analysis covering cross-sectional studies also supported the matching perspective for relationships of work–family conflict to work-specific strain and turnover intentions (Amstad et al., 2011), this previous meta-analysis did not simultaneously regress the outcomes of interest on WFC and FWC. Thus, the prior meta-analysis did not control for the shared variance of WFC and FWC. In contrast, Studies 1 and 2 accounted for the shared variance of WFC and FWC.

As mentioned, the cross-domain perspective currently dominates the literature. However, more recently, empirical evidence supporting the matching perspective has been accumulating (e.g., Shockley & Singla, 2011). The results of this dissertation contribute to

this emerging body of research by providing a comparison of the two perspectives regarding work-related strain and turnover intentions.

Moreover, Study 2 expanded the debate on matching versus cross-domain relationships by testing whether work-family specific social support should come from the domain in which the conflict originates (matching principle) rather than from the other domain (cross-domain principle) for alleviating the negative effects of WFC/FWC on turnover intentions. Results revealed that only leader support buffered the relationship between WFC and turnover intentions; that is, the support stemmed from the same domain as WFC. Support by family/friends, however, failed to buffer the relationship, providing support for the matching hypotheses rather than the cross-domain perspective.

Third, this dissertation contributes to a better understanding of *work-family conflict as a dynamic construct that changes over time*. Using a longitudinal design with a time lag of five months between the two measurement waves, Study 2 addressed longer-term changes of WFC and FWC as predictors of changes in turnover intentions. Notably, results of Study 2 showed that changes in WFC predicted changes in turnover intentions over and above baseline scores of WFC. This finding underscores that it is worthwhile acknowledging changes in work-family conflict although extant models have failed to consider such dynamics (e.g., Frone et al., 1997). Thus, future theories should explicitly acknowledge the role of mid- or long-term changes in work-family conflict and its effect on potential outcomes.

Study 3 provides further insights into FWC as a dynamic construct. Using a daily diary research paradigm over five work days, Study 3 addressed short-term within-person changes of daily FWC and their relationship to changes in daily concentration and daily job performance. Study 3 advances our understanding of FWC as a phenomenon that fluctuates within persons over short periods by integrating daily FWC into Beal et al.'s (2005) theory on dynamic behavior. According to this model, FWC can be viewed as off-task attentional

demands that consume limited cognitive resources. Consequently, employees cannot allocate all their resources to their work task, resulting in lower job performance at that time. The findings revealed that within-person changes in daily FWC are in synchrony with within-person changes in daily concentration and daily job performance. These findings highlight that short-term changes in FWC are related to meaningful business outcomes, and contribute to a better understanding of dynamic short-term processes at the intersection of work and family.

### **Strengths and Limitations**

*Longitudinal designs.* Among the strengths of this dissertation is that all three studies used longitudinal designs. Study 1 applied meta-analytic path analyses to panel studies to examine the relationship between work–family conflict and strain. Study 2 used two measurement waves to examine the relationship between work–family conflict and turnover intentions. Study 3 used a diary design with repeated assessments over five workdays to examine the relationship between FWC and job performance.

Longitudinal designs have several advantages over cross-sectional designs. First, they can provide insights into the direction of a relationship. Specifically, Study 1 tested the direction of relationship for work–family conflict and strain, and Study 2 tested the direction of relationship for work–family conflict and turnover intentions. Given that scholars hold different views on the direction of those relationships, testing the different views contributes to theory development by demonstrating which view is empirically justified. Second, by controlling for baseline levels of the criterion, longitudinal designs can rule out that constant third variables, such as personality and gender, artificially cause the relationship between predictor and criterion (Finkel, 1995; James, 1980). As Studies 1 and 2 controlled for baseline levels of the criterion, we can be confident that constant third variables are not responsible for the relationships between work–family conflict and the outcomes of interest—strain and turnover intentions. Similarly, Study 3 used a within-person diary design with group-mean

centered data, which also rules out that constant third variables cause the within-person relationships. Thus, the problem of constant third variables is unlikely to be a concern in any of the three studies.

Despite the strengths of longitudinal studies, we cannot draw causal conclusions from non-experimental designs. Thus, to establish causality between work–family conflict and potential outcomes, future research could use experiments. For instance, experimental studies could examine whether conflicts between work and family roles cause immediate distress reactions such as negative affect. Greenhaus and Powell (2003) developed vignettes that could be used to experimentally manipulate the degree of conflict between work and family roles. The vignettes require study participants to choose between participating in a weekend project meeting and attending a surprise birthday party for a parent. To manipulate the degree of experienced conflict between work and family roles, pressures from role senders (e.g., project leader and spouse) to participate in each activity can be varied (i.e., high vs. low). Experimenters could use measures of immediate distress reactions such as the positive and negative affect scale (Watson, Clark, & Tellegen, 1988) and physiological indicators such as heart rate variability. Although low in external validity, such studies could establish causality between work–family conflict and certain strain-related variables.

***Method bias.*** All data used in the present dissertation were based on self-reports. Measuring two or more constructs with the same method may bias the observed relationships, typically called *common method bias* or *common source variance* (Podsakoff et al., 2003). Specifically, method bias can inflate, deflate or have no effects on the observed relationship between constructs (Podsakoff, MacKenzie, & Podsakoff, 2012). In Studies 2 and 3, we tried to minimize common method bias by following recommendations from Podsakoff and colleagues (2003, 2012): the survey instructions assured participants that their answers were anonymous, that there were no right or wrong answers, and that they should respond as honestly as possible. We described how the information from the survey will be used, and

emphasized that we needed participants' opinion to derive meaningful interventions for improving their work–life balance. Such assurances should motivate participants to provide accurate answers, and should minimize artifacts such as social desirability or low motivation (Podsakoff et al., 2012). Additionally, we collected data at multiple times. Specifically, in Studies 1 and 2, we temporally separated the measurement of the predictor and criterion. In Study 3, we temporally separated the measurement of the moderator and the other variables. Further alleviating the concern of common method bias is that all studies focused on change in the criterion variables rather than on absolute levels. Person-specific artifacts that cause common method bias, such as consistency motive and social desirability, should not change over time and, thus, should affect only absolute levels of the criterion, but not changes. Besides procedural remedies, we used statistical remedies to test whether common method bias is a concern. Specifically, in Studies 2 and 3, factor-analytical results further minimized the concern of common method bias. (We could not run factor analyses in Study 1 because we had meta-analytic data rather than raw data.) Thus, the problem of biased relationships from common method variance is unlikely to be a major concern.

In addition to self-reports, future studies could use other measures such as supervisor ratings or objective data. This suggestion may be particularly relevant for the self-reported performance measure in Study 3. However, it might be difficult to obtain valid daily performance ratings from supervisors because they probably lack sufficient insights into employees' performance on such a fine-grained daily basis. It may be impossible to collect objective performance criteria for every sample because such information may simply not exist. Thus, relying on objective criteria may limit research to using specific samples that allow collecting such data, such as sampling call-center employees (e.g., Miner & Glomb, 2010). Although it is difficult to obtain other measures than self-reports in diary studies, we encourage future studies to do so.

### **Practical Implications**

Several practical implications can be derived from the present findings. Results show that high work–family conflict is related to high strain, high turnover intentions, and low job performance. Thus, organizations and their employees should act to reduce work–family conflict. One recommendation is the adoption of formal work–family policies that help employees juggle family and work demands (Butts, Casper, & Yang, 2012). For example, organizations could offer flexible work schedules, telecommuting, part-time return-to-work options, job-protected parental leave, and on-site childcare. However, just because work–family policies are offered, employees may not take advantage of them. Rather, organizations should foster a family friendly culture in which managers support work–family balance, employees do not suffer negative career consequences when they use work–family policies, and organizations have well-known family-compatible time expectancies (Thompson, Beauvais, & Lyness, 1999). Supervisors can be key leverage points for fostering work–family cultures (Michaelis, Nohe, & Sonntag, 2012; Sonntag, Becker, Nohe, & Spellenberg, 2012). Supervisors could be trained to understand their role in providing work–family support and alleviating employees’ work–family conflict. For example, supervisors could discuss work–family issues with employees, and inform them about supportive organizational policies. Organizations could add such training to leadership development programs. Indeed, Study 2 shows that work–family specific support from the supervisor buffered the positive relationship between high WFC and high turnover intentions. Thus, fostering leader support through training can be viewed as an evidence-based intervention.

Besides offering formal work–family policies to reduce work–family conflict, interventions could target individual employees. Specifically, employees may benefit from intervention programs focused on improving specific skills for handling work and family demands, such as time-management skills and the use of selection, optimization, and compensation behaviors (Baltes & Heydens-Gahir, 2003). Study 3 revealed an individual skill essential for buffering the negative relationship between FWC and job performance—

psychological detachment from work during time off. Thus, employees should detach from work during time-off. Rituals of separation when crossing the border between work and family or the use of absorbing activities during time off may help employees to psychologically detach from work (Ashforth et al., 2000; Hahn, Binnewies, & Haun, 2012). Employees can also be trained in psychological detachment techniques (Hahn et al., 2011). Again, such trainings could be a part of development programs giving employees important resources for countering work–family conflict.

### **Directions for Future Research**

The findings in this dissertation suggest several directions for future research. First, future studies should more closely examine the mechanisms underlying the relationships between work–family conflict and potential outcomes. Although Study 3 identified impaired concentration as a mechanism linking daily FWC and daily job performance, little is known about why work–family conflict is related to other outcomes. Regarding variables that mediate the relationship between work–family conflict and health-related outcomes, COR theory (Hobfoll, 1989) suggests that resources are lost in the process of juggling work and family roles (Grandey & Cropanzano, 1999). According to COR, these resources include “objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions or energies” (Hobfoll, 1989, p. 516). However, we know very little about the nature and type of resources that employees lose when trying to juggle work and family roles. Thus, future research could further develop COR’s application to the work–family interface by examining which specific resource loss explains the relationship between work–family conflict and health-related outcomes.

Besides resources, compensatory effort is another potential mediator of the relationship between work–family conflict and health-related outcomes. People experiencing WFC or FWC may try to compensate, that is invest more effort than usual to meet the role

demands (Hockey, 1997). Sustained compensatory effort is likely to drain individuals' energy which should lead them to feel worn out and exhausted in the long run (Demerouti, Nachreiner, Bakker, & Schaufeli, 2001). Insights into such underlying mechanisms are important to more fully understand the relationship between work–family conflict and outcomes and can provide insights into how to prevent work-family conflict's detrimental impact.

Second, another question related to longitudinal research is whether the relationship between two variables depends on the time lag between the two measurement waves (Selig, Preacher, & Little, 2012). For example, how much time must pass for work–family conflict to generate change in an outcome variable? Does the effect of work–family conflict on another variable become smaller over long periods of time? We know very little about the time-dependence of relationships for work–family conflict and outcome variables. Thus, future research could use longitudinal designs with multiple measurement waves (e.g., Meier & Spector, 2013) or use the lag as moderator approach (Selig et al., 2012) to examine the time-dependency of work–family conflict and its potential consequences.

Third, another promising topic that deserves the attention of future research is the accumulation of work–family conflict (see Semmer, McGrath, & Beehr, 2005). The accumulation of work–family conflict can occur either in form of experiencing high WFC *and* high FWC at the same time or in form of experiencing chronically high levels of work–family conflict over time. In case of high WFC and high FWC at the same time, most prior studies that included WFC and FWC tested each of them as single predictor. However, whether the accumulated experience of high WFC and high FWC exerts unique influence on outcome variables that goes above and beyond the influence of WFC and FWC has not been addressed. High levels of WFC and FWC at the same time may reflect an amount of stressors that exceeds an individuals' coping capacities. Consequently, severe consequences can be expected. The second aspect—the accumulation of work–family conflict over time—has not

been addressed in the literature either. Work–family conflict might need to accumulate over time until it leads to severe health problems, because individuals may initially have resources to compensate for work–family conflict, such as spending more effort than usual. However, after a certain period of time, the resources become depleted and the detrimental consequences of work–family conflict become manifest. Using longitudinal designs with multiple measurement waves, future studies could assess the effects of chronic work–family conflict.

Fourth, future research could further examine the relative merits of the cross-domain versus the matching perspective. Results of Studies 1 and 2 support the matching perspective for work-specific strain and turnover intentions, respectively. However, for work–family conflict and job performance, a recent meta-analysis found support for the cross-domain rather than the matching perspective: FWC had a stronger association with job performance than with family-related performance and WFC had a stronger association with family-related performance than with job performance (Amstad et al., 2011). Also in line with the cross-domain perspective, Study 3 found within-person relationships between daily FWC and daily task performance. However, neither the recent meta-analysis nor Study 3 simultaneously regressed task performance on WFC and FWC. Thus, future studies could simultaneously consider WFC and FWC as predictors of task performance, thereby contributing to a better understanding of the relative merits of the two perspectives. Additionally, future studies could address other important performance-related variables. Contextual performance, such as organizational citizenship behavior and personal initiative, would be especially interesting, because they are important for organizational productivity but cannot be controlled by supervisors (Podsakoff, Blume, Whiting, & Podsakoff, 2009).

Finally, future research could further examine whether resources should stem from the same domain as the conflict (matching perspective) or from the other domain (cross-domain perspective) to buffer the relationship between work–family conflict and potential

consequences. In Study 2, we showed that work–family support is most effective in buffering the WFC–turnover intentions relationship when it comes from the same domain as the conflict (i.e., work). Future studies could address personal resources such as self-esteem and examine whether organizational-based self-esteem or family-based self-esteem buffers the relationship between work–family conflict and domain-specific outcome variables. Besides theoretical development, we could gain practical insights that can help to intervene before severe consequences may surface.

## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allen, D. G., Bryant, P. C., & Vardaman, J. M. (2010). Retaining talent: Replacing misconceptions with evidence-based strategies. *The Academy of Management Perspectives, 24*(2), 48-64.
- Allen, T. D. (2012). The work-family interface. In S. W. J. Kozlowski (Ed.), *The Oxford Handbook of Organizational Psychology* (Vol. 2, pp. 1163-1198). New York: Oxford University Press.
- Allen, T. D., Cho, E., & Meier, L. L. (2014). Work-family boundary dynamics. *Annual Review of Organizational Psychology and Organizational Behavior, 1*(1).
- Allen, T. D., Herst, D. E. L., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278-308.
- Allen, T. D., Johnson, R. C., Saboe, K. N., Cho, E., Dumani, S., & Evans, S. (2012). Dispositional variables and work-family conflict: A meta-analysis. *Journal of Vocational Behavior, 80*, 17-26.
- Amstad, F. T., Meier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A meta-analysis of work-family conflict and various outcomes with a special emphasis on cross-domain versus matching-domain relations. *Journal of Occupational Health Psychology, 16*(2), 151-169.
- Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *Academy of Management Review, 25*(3), 472-491.
- Baltes, B. B., & Heydens-Gahir, H. A. (2003). Reduction of work-family conflict through the use of selection, optimization, and compensation behaviors. *Journal of Applied Psychology, 88*(6), 1005-1018.

- Barrick, M. R., & Mount, M. K. (1991). The big five personality dimensions and job performance: A meta analysis. *Personnel Psychology*, 44(1), 1-26.
- Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology*, 90(6), 1054-1068.
- Belkic, K., Landsbergis, P. A., Schnall, P. L., & Baker, D. (2004). Is job strain a major source of cardiovascular disease risk? *Scandinavian Journal of Work, Environment & Health*, 30(2), 85-128.
- Bellavia, G. M., & Frone, M. R. (2005). Work-family conflict. In J. Barling, E. K. Kelloway & M. R. Frone (Eds.), *Handbook of work stress* (pp. 113-147). CA: Sage Publications, Inc.
- BiBB. (2013). Fragen zum Fachkräftemangel in Deutschland [FAQ shortage of skilled labor in Germany]. from <http://www.bibb.de/de/56363.htm>
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579-616.
- Brough, P., & Kalliath, T. (2009). Work-family balance: Theoretical and empirical advancements. *Journal of Organizational Behavior*, 30(5), 581-585.
- Butler, A., Song, Z., & Ilies, R. (2013). Experience sampling methods for work-family research: A review and research agenda. In J. G. Grzywacz & E. Demerouti (Eds.), *New frontiers in work and family research in organizational behavior* (pp. 133-149). London: Psychology Press and Routledge.
- Butts, M. M., Casper, W. J., & Yang, T. S. (2012). How important are work-family support policies? A meta-analytic investigation of their effects on employee outcomes. *Journal of Applied Psychology*.
- Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*, 67(2), 169-198.

- Carlson, D. S., Kacmar, K. M., & Williams, L. J. (2000). Construction and initial validation of a multidimensional measure of work-family conflict. *Journal of Vocational Behavior, 56*(2), 249-276.
- Carlson, D. S., & Perrewé, P. L. (1999). The role of social support in the stressor-strain relationship: An examination of work-family conflict. *Journal of Management, 25*(4), 513-540.
- Carr, J. C., Boyar, S. L., & Gregory, B. T. (2008). The Moderating Effect of Work-Family Centrality on Work-Family Conflict, Organizational Attitudes, and Turnover Behavior. *Journal of Management, 34*(2), 244-262.
- Casper, W. J., Eby, L. T., Bordeaux, C., Lockwood, A., & Lambert, D. (2007). A review of research methods in IO/OB work-family research. *Journal of Applied Psychology, 92*(1), 28-43.
- Cervone, D. (2005). Personality Architecture: Within-Person Structures and Processes. *Annual Review of Psychology, 56*, 423-452.
- Chen, G., Ployhart, R. E., Thomas, H. C., Anderson, N., & Bliese, P. D. (2011). The power of momentum: A new model of dynamic relationships between job satisfaction change and turnover intentions. *Academy of Management Journal, 54*(1), 159-181.
- Cheung, M. W. L., & Chan, W. (2005). Meta-analytic structural equation modeling: A two-stage approach. *Psychological Methods, 10*(1), 40-64.
- Craig, A., & Cooper, R. E. (1992). Symptoms of acute and chronic fatigue. In A. P. Schmith & D. M. Jones (Eds.), *Handbook of human performance* (Vol. 3, pp. 289-339). London, England: Academic Press.
- Cronbach, L. J., & Furby, L. (1970). How we should measure "change": Or should we? *Psychological bulletin, 74*(1), 68-80.
- Dalal, R. S., Lam, H., Weiss, H. M., Welch, E. R., & Hulin, C. L. (2009). A within-person approach to work behavior and performance: Concurrent and lagged citizenship,

- counterproductivity associations, and dynamic relationships with affect and overall job performance. *Academy of Management Journal*, 52(5), 1051-1066.
- De Croon, E. M., Sluiter, J. K., Blonk, R. W., Broersen, J. P., & Frings-Dresen, M. H. (2004). Stressful work, psychological job strain, and turnover: A 2-year prospective cohort study of truck drivers. *Journal of Applied Psychology*, 89(3), 442-454.
- Demerouti, E., Bakker, A. B., & Bulters, A. J. (2004). The loss spiral of work pressure, work-home interference and exhaustion: Reciprocal relations in a three-wave study. *Journal of Vocational Behavior*, 64(1), 131-149.
- Demerouti, E., Corts, I. M., & Boz, M. (2013). A closer look at key concepts of the work-nonwork interface In J. G. Grzywacz & E. Demerouti (Eds.), *New frontiers in work and family research* (pp. 34-53). Sussex: Psychology Press.
- Demerouti, E., Guerts, S. A. E., Bakker, A. B., & Euwema, M. (2004). The impact of shiftwork on work-home conflict, job attitudes and health. *Ergonomics*, 47(9), 987-1002.
- Demerouti, E., Nachreiner, F., Bakker, A. B., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.
- Demerouti, E., Taris, T. W., & Bakker, A. B. (2007). Need for recovery, home-work interference and performance: Is lack of concentration the link? *Journal of Vocational Behavior*, 71(2), 204-220.
- Eby, L. T., Casper, W. J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005). Work and family research in IO/OB: Content analysis and review of the literature (1980-2002). *Journal of Vocational Behavior*, 66(1), 124-197.
- Edwards, J. R., & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *Academy of Management Review*, 25(1), 178-199.

- Etzion, D., Eden, D., & Lapidot, Y. (1998). Relief from job stressors and burnout: Reserve service as a respite. *Journal of Applied Psychology*, 83(4), 577-585.
- Eurostat. (2013a). Erwerbstätigenquote, nach Geschlecht. Retrieved October 10th, 2013, from <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=de&pcode=tsdec420&tableSelection=3&footnotes=yes&labeling=labels&plugin=1>
- Eurostat. (2013b). Level of Internet access - households. Retrieved October 10th, 2013, from <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tin00134&plugin=1>
- Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage.
- Ford, M. T., Heinen, B. A., & Langkamer, K. L. (2007). Work and family satisfaction and conflict: A meta-analysis of cross-domain relations. *Journal of Applied Psychology*, 92(1), 57-80.
- Frese, M. (1985). Stress at work and psychosomatic complaints: A causal interpretation. *Journal of Applied Psychology*, 70(2), 314-328.
- Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology*, 77(1), 65-78.
- Frone, M. R., Yardley, J. K., & Markel, K. S. (1997). Developing and testing an integrative model of the work-family interface. *Journal of Vocational Behavior*, 50(2), 145-167.
- Fthenakis, W. E., & Minsel, B. (2001). *Die Rolle des Vaters in der Familie*. Editor: Bundesministerium für Familie, Senioren, Frauen und Jugend. Köln: Kohlhammer
- Ganster, D. C., & Rosen, C. C. (2013). Work Stress and Employee Health: A Multidisciplinary Review. *Journal of Management*.

- Geurts, S. A. E., Kompier, M. A. J., Roxburgh, S., & Houtman, I. L. D. (2003). Does work-home interference mediate the relationship between workload and well-being? *Journal of Vocational Behavior*, *63*(3), 532-559.
- Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, *61*(2), 227-271.
- Göbel, J., Habich, R., & Krause, P. (2011). Subjektives Wohlbefinden und Wertorientierungen. In G. Dallinger, R. Koenig, I. Willand & R. Habich (Eds.), *Datenreport 2011: Ein Sozialbericht für die Bundesrepublik Deutschland* (pp. 377-398). Wiesbaden: Statistisches Bundesamt.
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review*, *25*(4), 483-496.
- Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work-family conflict and strain. *Journal of Vocational Behavior*, *54*(2), 350-370.
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, *10*(1), 76-88.
- Greenhaus, J. H., Parasuraman, S., & Collins, K. M. (2001). Career involvement and family involvement as moderators of relationships between work-family conflict and withdrawal from a profession. *Journal of Occupational Health Psychology*, *6*(2), 91-100.
- Greenhaus, J. H., & Powell, G. N. (2003). When work and family collide: Deciding between competing role demands. *Organizational Behavior and Human Decision Processes*, *90*(2), 291-303.
- Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management*, *26*(3), 463-488.

- Griffin, M. A., & Clarke, S. (2011). Stress and well-being at work. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (Vol. 3, pp. 359-397). Washington, DC: American Psychological Association.
- Gutek, B. A., Searle, S., & Klepa, L. (1991). Rational versus gender role explanations for work-family conflict. *Journal of Applied Psychology, 76*(4), 560-568.
- Hahn, V., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning How To Recover From Job Stress: Effects of a Recovery Training Program on Recovery, Recovery-Related Self-Efficacy, and Well-Being. *Journal of Occupational Health Psychology, 16*(2), 202-216.
- Hahn, V. C., Binnewies, C., & Haun, S. (2012). The role of partners for employees' recovery during the weekend. *Journal of Vocational Behavior, 80*(2), 288-298.
- Hall, G. B., Dollard, M. F., Tuckey, M. R., Winefield, A. H., & Thompson, B. M. (2010). Job demands, work-family conflict, and emotional exhaustion in police officers: A longitudinal test of competing theories. *Journal of Occupational and Organizational Psychology, 83*(1), 237-250.
- Hammer, L. B., Cullen, J. C., Neal, M. B., Sinclair, R. R., & Shafiro, M. V. (2005). The longitudinal effects of work-family conflict and positive spillover on depressive symptoms among dual-earner couples. *Journal of Occupational Health Psychology, 10*(2), 138-154.
- Hammer, L. B., Kossek, E. E., Anger, W. K., Bodner, T., & Zimmerman, K. L. (2011). Clarifying work-family intervention processes: The roles of work-family conflict and family-supportive supervisor behaviors. *Journal of Applied Psychology, 96*(1), 134-150.
- Hammer, L. B., & Zimmerman, K. L. (2011). Quality of work life. In S. Zedeck (Ed.), *American psychological association handbook of industrial and organizational*

- psychology* (Vol. 3, pp. 399-431). Washington, DC: American Psychological Association.
- Hancock, J. I., Allen, D. G., Bosco, F. A., McDaniel, K. R., & Pierce, C. A. (2011). Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management*.
- Haynes, C. E., Wall, T. D., Bolden, R. I., Stride, C., & Rick, J. E. (1999). Measures of perceived work characteristics for health services research: Test of a measurement model and normative data. *British Journal of Health Psychology*, 4(3), 257-275.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513-524.
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested-self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50(3), 337-421.
- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological psychology*, 45(1), 73-93.
- Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management*, 24(5), 623-641.
- Holahan, C. K., & Gilbert, L. A. (1979). Interrole conflict for working women: Careers versus jobs. *Journal of Applied Psychology*, 64(1), 86-90.
- Holtom, B. C., Mitchell, T. R., Lee, T. W., & Eberly, M. B. (2008). Turnover and retention research: A glance at the past, a closer review of the present, and a venture into the future. *The Academy of Management Annals*, 2(1), 231-274.
- Hom, P. W., & Kinicki, A. J. (2001). Toward a greater understanding of how dissatisfaction drives employee turnover. *Academy of Management Journal*, 44(5), 975-987.

- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Thousand Oaks, CA: Sage.
- Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The Flow State Scale. *Journal of Sport and Exercise Psychology*, 18(1), 17-35.
- Jacobs, J. A., & Gerson, K. (2004). *The time divide: Work, family, and gender inequality*. Cambridge, MA: Harvard University Press.
- James, L. R. (1980). The unmeasured variables problem in path analysis. *Journal of Applied Psychology*, 65(4), 415-421.
- Judge, T. A., & Ilies, R. (2004). Affect and Job Satisfaction: A Study of Their Relationship at Work and at Home. *Journal of Applied Psychology*, 89(4), 661-673.
- Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, NJ: Prentice Hall.
- Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology*, 4(4), 337-346.
- Kinnunen, U., Geurts, S., & Mauno, S. (2004). Work-to-family conflict and its relationship with satisfaction and well-being: A one-year longitudinal study on gender differences. *Work & Stress*, 18(1), 1-22.
- Kirchmeyer, C., & Cohen, A. (1999). Different strategies for managing the work/non-work interface: A test for unique pathways to work outcomes. *Work & Stress*, 13(1), 59-73.
- Kopelman, R. E., Greenhaus, J. H., & Connolly, T. F. (1983). A model of work, family, and interrole conflict: A construct validation study. *Organizational Behavior and Human Performance*, 32(2), 198-215.
- Kossek, E. E., Pichler, S., Bodner, T., & Hammer, L. B. (2011). Workplace social support and work-family conflict: A meta-analysis clarifying the influence of general and work-

- family-specific supervisor and organization support. *Personnel Psychology*, 64(2), 289-313.
- Kreiner, G. E., Hollensbe, E. C., & Sheep, M. L. (2009). Balancing borders and bridges: Negotiating the work-home interface via boundary work tactics. *Academy of Management Journal*, 52, 704-730.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2 ed.). Chicago: University of Chicago press.
- Lang, J., Bliese, P. D., Lang, J. W. B., & Adler, A. B. (2011). Work gets unfair for the depressed: Cross-lagged relations between organizational justice perceptions and depressive symptoms. *Journal of Applied Psychology*, 96(3), 602-618.
- Lazarus, R. S. (1991). Psychological stress in the workplace. *Journal of Social Behavior and Personality*, 6(7), 1-13.
- Maertz, C. P., & Boyar, S. L. (2011). Work–family conflict, enrichment, and balance under “Levels” and “Episodes” approaches. *Journal of Management*, 37(1), 68-98.
- Marks, S. R. (1977). Multiple role and role strain: Some notes on human energy, time, and commitment. *American Sociological Review*, 42(6), 921-936.
- Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, 93(3), 498-512.
- Meier, L. L., & Spector, P. E. (2013). Reciprocal effects of work stressors and counterproductive work behavior: A five-wave longitudinal study. *Journal of Applied Psychology*, 98(3), 529-539.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry & C. J. de Wolff (Eds.), *Handbook of work and organizational, Vol. 2: Work psychology*. (2nd ed., pp. 5-33). Hove England: Psychology Press/Erlbaum (UK) Taylor & Francis.

- Mesmer-Magnus, J. R., & Viswesvaran, C. (2005). Convergence between measures of work-to-family and family-to-work conflict: A meta-analytic examination. *Journal of Vocational Behavior, 67*(2), 215-232.
- Michaelis, B., Nohe, C., & Sonntag, K. (2012). Führungskräfteentwicklung im 21. Jahrhundert—Wo stehen wir und wo müssen (oder wollen) wir hin? *Die Zukunft der Führung* (pp. 365-389): Springer.
- Michel, J. S., Kotrba, L. M., Mitchelson, J. K., Clark, M. A., & Baltes, B. B. (2011). Antecedents of work–family conflict: A meta-analytic review. *Journal of Organizational Behavior, 32*(5), 689-725.
- Michel, J. S., Mitchelson, J. K., Kotrba, L. M., LeBreton, J. M., & Baltes, B. B. (2009). A comparative test of work-family conflict models and critical examination of work-family linkages. *Journal of Vocational Behavior, 74*(2), 199-218.
- Miner, A. G., & Glomb, T. M. (2010). State mood, task performance, and behavior at work: A within-persons approach. *Organizational Behavior and Human Decision Processes, 112*(1), 43-57.
- Mitchell, T. R., & James, L. R. (2001). Building better theory: Time and the specification of when things happen. *The Academy of Management Review, 26*(4), 530-547.
- Monsell, S. (2003). Task switching. *Trends in cognitive sciences, 7*(3), 134-140.
- Moreno-Jiménez, B., Mayo, M., Sanz-Vergel, A. I., Geurts, S., Rodríguez-Muñoz, A., & Garrosa, E. (2009). Effects of work–family conflict on employees' well-being: The moderating role of recovery strategies. *Journal of Occupational Health Psychology, 14*(4), 427-440.
- Motowildo, S. J., Borman, W. C., & Schmit, M. J. (1997). A theory of individual differences in task and contextual performance. *Human Performance, 10*(2), 71.
- Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin, 126*(2), 247-259.

- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles: Muthén & Muthén.
- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology, 81*(4), 400-410.
- Ng, T. W. H., & Feldman, D. C. (2008). Long work hours: A social identity perspective on meta-analysis data. *Journal of Organizational Behavior, 29*(7), 853-880.
- Oberndorfer, R., & Rost, H. (2005). Neue Väter—Anspruch und Realität. *Zeitschrift für Familienforschung, 17*(1), 50-65.
- Odle-Dusseau, H. N., Herleman, H. A., Britt, T. W., Moore, D. D., Castro, C. A., & McGurk, D. (2013). Family-supportive work environments and psychological strain: A longitudinal test of two theories. *Journal of Occupational Health Psychology, 18*(1), 27-36.
- Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology, 9*(2), 79-93.
- Pashler, H. (1994). Dual-task interference in simple tasks: Data and theory. *Psychological Bulletin, 116*(2), 220-244.
- Peeters, M. C. W., ten Brummelhuis, L. L., & van Steenbergen, E. F. (2013). Consequences of combining work and family roles. In J. G. Grzywacz & E. Demerouti (Eds.), *New frontiers in work and family research* (pp. 93-109). Sussex: Psychology Press.
- Podsakoff, N. P., Blume, B. D., Whiting, S. W., & Podsakoff, P. M. (2009). Individual- and Organizational-Level Consequences of Organizational Citizenship Behaviors: A Meta-Analysis. *Journal of Applied Psychology, 94*, 122-141.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539-569.
- Pöttsch, O. (2012). *Geburten in Deutschland [Birth rate in Germany]*. Wiesbaden: Statistisches Bundesamt.
- Riketta, M. (2008). The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology, 93*(2), 472-481.
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly, 15*(2), 150-163.
- Rodell, J. B., & Judge, T. A. (2009). Can “good” stressors spark “bad” behaviors? The mediating role of emotions in links of challenge and hindrance stressors with citizenship and counterproductive behaviors. *Journal of Applied Psychology, 94*(6), 1438-1451.
- Rübenach, S. P., & Keller, M. (2011). *Vereinbarkeit von Familie und Beruf: Ergebnisse des Mikrozensus 2009*. Wiesbaden: Statistisches Bundesamt.
- Ryan, A. M., & Kossek, E. E. (2008). Work-life policy implementation: Breaking down or creating barriers to inclusiveness? *Human Resource Management, 47*(2), 295-310.
- Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement and sickness absenteeism. *Journal of Organizational Behavior, 30*(7), 893-917.
- Selig, J. P., Preacher, K. J., & Little, T. D. (2012). Modeling time-dependent association in longitudinal data: A lag as moderator approach. *Multivariate Behavioral Research, 47*(5), 697-716.

- Semmer, N. K., McGrath, J. E., & Beehr, T. A. (2005). Conceptual issues in research on stress and health. In C. L. Cooper (Ed.), *Handbook of stress medicine and health* (pp. 2-43). London: CRC Press.
- Shaw, J. D., Gupta, N., & Delery, J. E. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal*, 48(1), 50-68.
- Shockley, K. M., & Singla, N. (2011). Reconsidering work-family interactions and satisfaction: A meta-analysis. *Journal of Management*, 37(3), 861-886.
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology*, 95(5), 965-976.
- Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, 12(3), 204-221.
- Sonntag, K., Becker, P. R., Nohe, C., & Spellenberg, U. (2012). Die Führungskraft als Vorbild: Die Vereinbarkeit von Arbeits-und Privatleben ist eine Führungsaufgabe. *Zeitschrift Führung und Organisation*, 81(6), 372-378.
- Sonntag, K., Frieling, E., & Stegmaier, R. (2012). *Lehrbuch Arbeitspsychologie [Handbook of Industrial and Organizational Psychology]* (3 ed.). Bern: Huber.
- Statistisches Bundesamt (2009). *Bevölkerung Deutschlands bis 2060 [Germany's population till 2060]* Wiesbaden: Statistisches Bundesamt.
- Statistisches Bundesamt (2012) Licht und Schatten am Arbeitsmarkt. retrieved from [https://www.destatis.de/DE/Publikationen/STATmagazin/Arbeitsmarkt/2012\\_01/Arbeitsmarkt2012\\_01.html](https://www.destatis.de/DE/Publikationen/STATmagazin/Arbeitsmarkt/2012_01/Arbeitsmarkt2012_01.html)
- Statistisches Bundesamt (2013a). In Deutschland leben 8,1 Millionen Familien mit minderjährigen Kindern. Retrieved October 10th, 2013, from

<https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/HaushalteFamilien/AktuellFamilien.html>

Statistisches Bundesamt (2013b). Qualität der Arbeit [Quality of Work Life]. from [https://www.destatis.de/DE/ZahlenFakten/Indikatoren/QualitaetArbeit/QualitaetDerArbeit.html?cms\\_gtp=318944\\_slot%253D3&https=1](https://www.destatis.de/DE/ZahlenFakten/Indikatoren/QualitaetArbeit/QualitaetDerArbeit.html?cms_gtp=318944_slot%253D3&https=1)

Statistisches Bundesamt (2013c). *Statistisches Jahrbuch 2013: Deutschland und Internationales [Statistical yearbook 2013: German and international statistics]* Wiesbaden: Statistisches Bundesamt.

Steinmetz, H., Frese, M., & Schmidt, P. (2008). A longitudinal panel study on antecedents and outcomes of work-home interference. *Journal of Vocational Behavior*, 73(2), 231-241.

Sutton, K. L., & Noe, R. A. (2005). Family-friendly programs and work-life integration: More myth than magic? In E. E. Kossek & S. J. Lambert (Eds.), *Work and life integration: Organizational, cultural, and individual perspectives* (pp. 151-169). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.

Thompson, C. A., Beauvais, L. L., & Lyness, K. S. (1999). When work-family benefits are not enough: The influence of work-family culture on benefit utilization, organizational attachment, and work-family conflict. *Journal of Vocational Behavior*, 54(3), 392-415.

van Hooff, M. L. M., Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dikkers, J. S. E., Houtman, I. L. D., et al. (2005). Disentangling the causal relationships between work-home interference and employee health. *Scandinavian Journal of Work, Environment & Health*, 31(1), 15-29.

Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, 48(4), 865-885.

- Wang, M., Liu, S., Zhan, Y., & Shi, J. (2010). Daily work-family conflict and alcohol use: Testing the cross-level moderation effects of peer drinking norms and social support. *Journal of Applied Psychology, 95*(2), 377-386.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management, 17*(3), 601-617.
- Witt, L. A., & Carlson, D. S. (2006). The work-family interface and job performance: Moderating effects of conscientiousness and perceived organizational support. *Journal of Occupational Health Psychology, 11*(4), 343-357.
- WorldatWork. (2011). Telework 2011: A WorldatWork special report. Retrieved October 8th, 2013, from <http://www.worldatwork.org/waw/adimLink?id=53034>

## **Appendix A: Manuscripts**

**Study 1:**

Nohe, C., Meier, L. L., Sonntag, K., & Michel, A. (second round of revisions). The chicken or the egg? A meta-analysis of panel studies of the relationship between work–family conflict and strain. *Journal of Applied Psychology*.

The Chicken or the Egg?

A Meta-Analysis of Panel Studies of the Relationship Between Work-Family Conflict and Strain

## Abstract

Does work-family conflict predict strain, does strain predict work-family conflict, or are they reciprocally related? To answer these questions, we used meta-analytic path analyses on 33 studies that had repeatedly measured work interference with family (WIF) or family interference with work (FIW) and strain. Additionally, this study sheds light on whether relationships between WIF/FIW and work-specific strain support the popular cross-domain perspective or the less popular matching-perspective. Results showed reciprocal effects, i.e. that WIF predicted strain ( $\beta = .08$ ) and strain predicted WIF ( $\beta = .08$ ). Similarly, FIW and strain were reciprocally related, such that FIW predicted strain ( $\beta = .03$ ) and strain predicted FIW ( $\beta = .05$ ). These findings held for both men and women and for different time lags between the two measurement waves. WIF had a stronger effect on work-specific strain than did FIW, supporting the matching hypothesis rather than the cross-domain perspective.

*Keywords:* work-family conflict, strain, matching-perspective, meta-analysis, longitudinal

### The Chicken or the Egg?

#### A Meta-Analysis of Panel Studies of the Relationship Between Work-Family Conflict and Strain

Many employees face the challenge of combining work and family roles. This can result in work-family conflict, which has been defined as “a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible in some respect” (Greenhaus & Beutell, 1985, p. 77). Work-family conflict can occur in two directions: work can interfere with family (WIF) and family can interfere with work (FIW; Frone, Yardley, & Markel, 1997). WIF and FIW are reciprocally related but are distinct constructs (Mesmer-Magnus & Viswesvaran, 2005). Over the last three decades, a multitude of studies have examined the relationship between work-family conflict and strain (Allen, Herst, Bruck, & Sutton, 2000; Amstad, Meier, Fasel, Elfering, & Semmer, 2011). Strains are the psychological, behavioral, and physiological reactions to environmental demands, threats, and challenges (i.e., stressors) and include responses such as irritation, depression, and headache (Ganster & Rosen, 2013; Griffin & Clarke, 2011). Although empirical evidence consistently supports positive correlations between both forms of work-family conflict and strain, certain controversies in the literature remain unresolved.

First, the direction of effect between work-family conflict and strain is still unclear. Does work-family conflict predict strain? Or vice versa? Or are there reciprocal effects, such that work-family conflict and strain predict each other? Most previous studies and existing meta-analyses cannot provide insights into the direction of effect due to their cross-sectional designs. From a theoretical point of view, the assumption that work-family conflict predicts strain is a core component of many work-family models (e.g., Allen et al., 2000; Frone, Russell, & Cooper, 1992). However, research proposing and testing reverse and reciprocal relationships has only

begun to accumulate (e.g., Demerouti, Bakker, & Bulters, 2004). Thus, the debate about the direction of the relationship between work-family conflict and strain has not been settled.

Second, there is an ongoing debate about the pattern of relationships of work-family conflict with domain-specific consequences. The notion that conflict originating in one domain (e.g., WIF) is mainly causing problems in the other domain (e.g., family) has dominated the field (cross-domain perspective; Bellavia & Frone, 2005). More recently, scholars have proposed an alternative perspective, assuming that work-family conflict mainly has an impact on the domain where the conflict originates (e.g., WIF on work-related outcomes; matching-hypothesis; Amstad et al., 2011; Shockley & Singla, 2011). As a result, an enriching controversy has emerged about the primary effect of WIF and FIW on domain-specific consequences.

The aim of the current study was to work toward resolving these controversies. Specifically, this study provides a meta-analytic test of the direction of effects between both forms of work-family conflict and strain. In contrast to previous meta-analyses (Allen et al., 2000; Amstad et al., 2011), which included only cross-sectional studies, the current meta-analysis focused on panel studies of the relationship between work-family conflict and strain. Thus, the extent to which work-family conflict predicts strain could be disentangled from the extent to which strain predicts work-family conflict. Additionally, this study sheds some light on the relative merits of the cross-domain versus the matching perspective for the relationship of work-family conflict and work-related strain.

Insights into the direction of effect and the pattern of relationships between work-family conflict and strain are important for both research and practice. Given that alternative perspectives are emerging that challenge the traditional views of unidirectional cross-domain effects of work-family conflict on strain, it seems imperative to examine which perspective is empirically justified. Examining reciprocal effects also addresses one of the less studied tenets of

conservation of resources (COR) theory (Hobfoll, 1989), a framework frequently used to better understand work-family relationships: If work-family conflict and strain can be shown to have reciprocal relationships in our meta-analysis, this pattern of results would support COR's notion of loss spirals. Additionally, to design organizational interventions targeted at improving employees' work-life-balance and health, practitioners need to understand how these factors influence each other. For example, work-life balance interventions are typically assumed to improve employee health (Hammer, Kossek, Anger, Bodner, & Zimmerman, 2011). However, if strain can be shown to influence work-family conflict, organizations should be informed that their initiatives to foster employee health by reducing strain can help to reduce work-family conflict.

### **The Relationship Between Work-Family Conflict and Strain**

Work-family conflict generally refers to the extent to which work and family roles are mutually incompatible (Greenhaus & Beutell, 1985). The construct is primarily grounded in role theory and the scarcity of resources hypothesis, which proposes that demands of one role deplete personal resources, such as time and physical or mental energy, thereby leaving insufficient resources to allocate to activities in other roles (Edwards & Rothbard, 2000; Goode, 1960; Marks, 1977).

Strains can be at the psychological and physiological level. Frequently studied psychological strains comprise constructs such as emotional exhaustion and irritation (e.g., Maslach & Leiter, 2008), anxiety and depression (e.g., Hammer, Cullen, Neal, Sinclair, & Shafiro, 2005), and general psychological distress (e.g., Kelloway, Gottlieb, & Barham, 1999). Physiological strains include, for example, somatic complaints (e.g., Frese, 1985) and cardiovascular disease (e.g., Belkic, Landsbergis, Schnall, & Baker, 2004). In the work-family literature, strains are typically classified into three categories: work-related strain (e.g., burnout),

family-related strain (e.g., parental stress), and domain-unspecific strain (e.g., somatic complaints and depression; Allen et al., 2000; Amstad et al., 2011).

Previous studies have consistently found positive concurrent correlations of WIF and FIW with strain (Amstad et al., 2011). Although the most popular interpretation assumes both forms of work-family conflict to precede strain, there are at least three alternative explanations of these positive correlations.

Case 1: Work-family conflict causes strain. This view assumes work-family conflict to be a potential stressor that leads to various forms of strain. Arguments that support this view have been based on Meijman and Mulder's (1998) Effort-Recovery (E-R) model (for an example see Geurts, Kompier, Roxburgh, & Houtman, 2003). According to the E-R model, exerting effort at work can result in negative load reactions, such as sleep problems and fatigue. The model further proposes that these negative load reactions are reversible through the process of recovery that occurs when the functional systems challenged during work go untaxed. However, when the individual is continuously exposed to these demands, no recovery can occur and psychobiological systems do not return to a baseline level. As a result, load reactions accumulate and may lead to longer-term negative effects, such as impaired well-being. Through the lens of the E-R model, work-family conflict causes strain because it reduces opportunities for recovery in the family domain.

Besides the E-R model, Hobfoll's (1989) conservation of resources theory (COR) has been used to explain why work-family conflict causes strain (for an example see Grandey & Cropanzano, 1999). The theory proposes that individuals are motivated to gain or maintain resources, including "objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions or energies" (Hobfoll, 1989, p. 516). The theory further proposes that individuals

experience stress when they face actual or possible loss of such resources. As a result of actual or potential loss, individuals strive to protect resources by seeking to gain new or alternative resources. According to this perspective, work-family conflict leads to stress, because resources are lost in the process of juggling work and family roles (Grandey & Cropanzano, 1999). To protect or replace the threatened resources, coping behaviors (e.g., leaving the work role) are needed. If no coping behaviors are used, resources may become more and more depleted, resulting in exhaustion. In this meta-analysis, such a view would receive support if work-family conflict predicted strain.

Case 2: Strain causes work-family conflict. There are arguments suggesting that strain is likely to affect the perception and experience of work-family conflict. Kelloway et al. (1999) suggested that individuals with high strain undergo selective recall and attention, such that availability of negative thoughts and information is increased.<sup>1</sup> Thus, distress is likely to affect the perceived frequency and intensity of difficulties of combining work and family roles. Similarly, strain is also likely to have an impact on the evaluation of one's work condition. For example, high levels of distress and exhaustion are related to perceived high workload and low social support (e.g., De Jonge et al., 2001; Finne, Knardahl, & Lau, 2011; Ibrahim, Smith, & Muntaner, 2009). Stressful work conditions, in turn, may lead to more work-family conflict (e.g., Ford, Heinen, & Langkamer, 2007). Thus, strain is assumed to have a negative impact on work-family conflict that is transmitted by perceived work conditions. This view would receive support if strain predicted work-family conflict.

Case 3: Work-family conflict and strain cause each other. Arguments supporting this view typically refer to the notion of "loss spirals" as described in Hobfoll's (1989, p. 519) COR theory (for an example see Demerouti et al., 2004). As explained above, this theory proposes that individuals strive to obtain and protect valued resources. When resources are initially lost,

individuals become more vulnerable to future losses because replenishing and protecting resources requires the investment of other resources. That is, restoring one resource can deplete another resource. As a result, loss spirals can follow initial losses. This view would receive support if work-family conflict and strain predicted each other.

Case 4: Work-family conflict and strain are causally unrelated. In this case, the positive concurrent correlations between work-family conflict and strain could be due to research artifacts, such as common source bias, or third variables influencing both constructs. The problem of third variables occurs when an unmeasured variable is correlated with the presumed cause and predictive of the presumed effect (James, 1980). By controlling for baseline levels of a variable, cross-lagged designs rule out the possibility that constant background variables (e.g., personality, gender) influence estimates of cross-lagged effects (Lang, Bliese, Lang, & Adler, 2011; Zapf, Dormann, & Frese, 1996); however, the influence of a nonconstant third variable cannot be ruled out by cross-lagged designs (Finkel, 1995) and, thus, case 4 can hardly be ruled out with correlational data. Nevertheless, the present meta-analysis examines one possible implication of case 4: work-family conflict and strain do not predict each other over time. Additionally, if work-family conflict and strain can be shown to have lagged relationships, a common factor model can be specified and contrasted with the cross-lagged model to determine whether common factors might explain the lagged relationships (Finkel, 1995; Lang et al., 2011).

The current meta-analysis tested all four cases by estimating the unique effects of WIF and FIW on later strain (with baseline levels of strain controlled) and of strain on WIF and FIW (with baseline levels of WIF and FIW controlled, respectively). We propose the following research question:

*Research Question 1: How are WIF/FIW and strain related over time?*

**The Relation between WIF/FIW and Strain: Cross-Domain versus Matching-Hypothesis**

Work-family researchers use the term cross-domain to refer to relationships between WIF (FIW) and variables within the family (work) domain. For example, the relationships of WIF with parental stress and FIW with job stress are cross-domain relationships. The term matching-relationships refers to relationships between WIF (FIW) and variables within the work (family) domain (Amstad et al., 2011). For example, relationships of WIF with job stress and FIW with family stress are matching relationships. Although models on cross-domain relationships have generally dominated the literature (Bellavia & Frone, 2005), recent work has challenged this traditional view (e.g., Peeters, ten Brummelhuis, & van Steenbergen, 2013), leading to an ongoing debate about whether the primary effect of WIF and FIW on outcome variables lies within the domain where the conflict originates (matching-hypothesis) or within the other domain (cross-domain relationships).

Frone and colleagues' (1992, 1997) influential models exemplify the notion of cross-domain relationships. The rationale behind these cross-domain relationships is that when one role (e.g., work) interferes with another (e.g., family), individuals will have problems fulfilling demands in the receiving role (e.g., family). As a consequence of struggle in meeting receiving role demands, well-being related to the life domain of the receiving role suffers (Frone et al., 1992). According to these models, work-family conflict is a mediator between work and family domains. Specifically, the models assume that job stressors and job involvement antecede WIF and family stressors and family involvement antecede FIW. Of particular importance for the present study, Frone et al. (1992) further propose that WIF affects family distress and FIW is assumed to affect job distress. In contrast, effects of WIF on job distress and effects of FIW on family distress are not assumed.

Other researchers have, however, argued that a matching-hypothesis seems at least as plausible (Amstad et al., 2011; Shockley & Singla, 2011). According to this perspective, WIF

predominantly affects work-related outcomes, while FIW predominantly affects family-related outcomes. The notion behind this assumption is grounded in appraisal theories. Appraisal theories assume that when self-relevant roles are threatened, people are likely to appraise the cause of the threat negatively (Lazarus, 1991; Shockley & Singla, 2011). For example, when one role (e.g., work) interferes with another role (e.g., family), individuals will appraise the role (e.g., work) which the conflict stems from negatively. Negative appraisals are likely to go along with a negative affective tone, which, when experienced frequently, could result in strain in the domain from which the conflict originates (Amstad et al., 2011).

Although Frone and colleagues' (Frone et al., 1992; Frone et al., 1997) models on cross-domain relationships have dominated the literature (Bellavia & Frone, 2005), recent meta-analyses on cross-sectional studies provide support for the matching-hypothesis. For example, Shockley and Singla (2011) reported stronger associations of job (marital) satisfaction with WIF (FIW) than with FIW (WIF). Similarly, Amstad et al. (2011) found stronger associations of burnout with WIF than with FIW.

To meta-analytically test the cross-domain perspective versus the matching-hypothesis for the relationships of WIF and FIW with strain, one would ideally categorize strain into work-related and family-related types of strain. If the cross-domain perspective is accurate, WIF should be related to family-related strain, but not (or to a lesser degree) to work-related strain. Correspondingly, FIW should be related to work-related strain, but not (or to a lesser degree) to family-related strain. According to the matching-hypothesis, however, WIF should be mainly related to work-related strain, whereas FIW should be mainly related to family-related strain. In the current meta-analysis, family-related strain could not be coded due to a lack of panel studies covering this type of strain. Therefore, our subsequent tests focused on work-related strain and do not include family-related strain. Because of this limitation, we cannot provide a complete test of

the cross-domain or the matching perspective. However, we can provide a comparison of the two perspectives regarding relationships of WIF and FIW with work-related strain. The part of the cross-domain perspective that focuses on work-related strain suggests that FIW has a stronger relationship with work-related strain than WIF. The part of the matching-perspective that focuses on work-related strain suggests that WIF has a stronger relationship with work-related strain than FIW. To compare the parts of the two perspectives that focus on work-related strain, we propose the following research question:

*Research Question 2: Does WIF or FIW have a stronger relationship with work-related strain?*

## **Method**

### **Inclusion Criteria and Literature Search**

The following six criteria were applied to determine study eligibility. First, the study assessed work-family conflict in a direction-specific way. If the measure referred to a mixture of WIF and FIW or if the direction was not clear, the study was not included. Second, the study assessed at least one strain-related variable. We included strain-measures of exhaustion, fatigue, psychological distress, depression, irritation, anxiety, parental stress, and physical symptoms. Third, the study had a panel design. That is, work-family conflict and strain were measured at each of at least two measurement waves. Fourth, measures of work-family conflict and strain had the same person as referent. Fifth, the study did not explicitly focus on major events or changes that occurred between the measurement waves, such as the birth of a child. Finally, the complete zero-order correlations matrix for work-family conflict and strain was available for at least two measurement waves. That is, the article had to report two synchronous correlations, two lagged correlations, and two stability correlations for work-family conflict and strain. If not all

correlations were reported, we contacted the authors. If they did not provide correlation coefficients, the study was excluded.

We used different search procedures in identifying studies that met these criteria. First, we conducted an electronic keyword search within the databases *PsycInfo*, *Web of Science*, and *PubMed*. Keywords used included the typical terms used to label WIF and FIW, such as work-family conflict, family-work conflict, work-to-family conflict, family-to-work conflict, work-life conflict, life-work conflict, work-home interference, home-work interference, work interfering with family, and family interfering with work. To restrict the literature search to longitudinal studies, we combined these keywords with the additional terms (*longitudinal* OR *lagged* OR *panel*). Second, we inspected the reference lists of previous meta-analyses, qualitative reviews and several papers on cross-lagged panel analyses to identify more articles relevant to our study (most notably, Allen et al., 2000; Amstad et al., 2011; Eby et al., 2005). Fourth, conference proceedings of the last five years for SIOP and AOM were inspected for relevant studies. If potential studies were identified, we contacted the authors. If they did not provide the necessary information, the study could not be included. Finally, we sent emails to the AOM and OHP list servers in which we encouraged researchers to send us unpublished studies. The literature search was conducted from February to October 2012 and updated in April 2013.

The search yielded 30 relevant papers (17 published journal articles, 11 unpublished papers, and 2 conference papers). The articles of Hammer et al. (2005), Kinnunen, Feldt, Mauno, and Rantanen (2010), and Kinnunen, Geurts, and Mauno (2004) provided two relevant samples each. Thus our dataset comprised 33 samples. Of these, 32 samples provided information on the longitudinal relationship between WIF and strain, and 20 samples provided information on the longitudinal relationship between FIW and strain. Tables 1 and 2 show the effect sizes for each study, separated for WIF and FIW.

### **Coding**

We coded the following data: sample size, country of origin, participants' mean age, proportion of women in the sample, participants' mean tenure, measures used to assess WIF and FIW, measure used to assess strain, internal consistencies, effect sizes, and the time lag between the measurement waves. We did not code work-family conflict according to its time-based, strain-based, and behavior-based nature due to a lack of studies that used this distinction. To test the matching-hypothesis against the cross-domain perspective, we coded type of strain (i.e., work-specific strain) following the category system reported in Amstad et al. (2011).

All articles were coded by the first author of this meta-analysis who is a final-year Ph.D. student in the field of industrial and organizational psychology. To estimate interrater agreement, a random sample of 15 studies was coded by a student assistant holding a Bachelor's degree in psychology. To ensure a mutual understanding of the variables, one study was jointly coded. The interrater agreement was high ( $r \geq .91$ ) and all diverging ratings were discussed until consensus was reached.

### **Features of the Analyzed Studies**

The 33 studies included in the meta-analysis had an average sample size of 395, with a range of 66 to 2,235. At the time of the first assessment, participants' mean age was 39.7 years (range: 24.9 – 46.4;  $k = 27$ ) and their mean organizational tenure was 10.0 years (range: 4.0 – 20.4;  $k = 17$ ). Mean proportion of women was 46% (range: 0% – 100%). Mean time lag between the coded waves was 13.7 months, with a range from around 1 week to 72 months. Nine studies were conducted in Switzerland, six in Finland, five in the Netherlands, four in Germany, three in the USA, two in Canada, one each in Israel, New Zealand, and Norway, and one study used a sample from several different countries. For WIF, the most frequent measures used were Netemeyer, Boles, and McMurrian (1996); eight studies and the SWING (Geurts et al., 2005;

eight studies). For FIW, the most frequent measure used was Netemeyer et al. (1996); seven studies. Twenty-one studies assessed work-related strain.

### **Analysis**

We followed the procedures described by Hunter and Schmidt (2004). For the statistical analyses, we used an SPSS macro developed by Field and Gillett (2010). Correlations obtained from the studies were weighted for sample size and corrected for unreliability using artifact distribution. We report uncorrected, sample-size-weighted mean correlations ( $r$ ) and reliability-corrected, sample-size-weighted mean correlations ( $\rho$ ). Ninety-five percent confidence intervals (CI) and 80% credibility intervals (CrI) were calculated around each corrected population estimate  $\rho$ . The CI reflects the accuracy of a parameter estimate and can be used to examine the significance of an effect-size estimate. A CI that includes zero indicates that the estimate is nonsignificant. CrI indicate whether there are possible moderators of a relationship. While narrow CrI suggest that the relationship does not depend on moderators, wide CrI indicate the existence of possible moderators.

One requirement of a meta-analysis is independence of the correlations included (Wilson & Lipsey, 2001); that is, a sample must not contribute more than one correlation per construct. However, some samples (e.g., Innstrand, Langballe, Espnes, Falkum, & Gjerl, 2008; Leiter & Durup, 1996) contained correlations of WIF/FIW with two or more measures of strain. The issue of independent correlations is also relevant to studies with more than one type of WIF/FIW (here, two studies had time-based and strain-based WIF/FIW). To ensure independence, multiple correlations derived from the same sample were averaged using Fisher's  $z$ -scores.

We performed a set of meta-analytic path analyses (Cheung & Chan, 2005; Riketta, 2008; Viswesvaran & Ones, 1995). For these computations, the matrix of the sample-size-weighted mean correlations served as input. The software Mplus 7.0 (Muthén & Muthén, 2012) with

maximum likelihood estimation was used for these analyses. To compute the standard errors for the path coefficients, the sum (rather than, e.g., the average) of the studies' sample sizes was used. This practice increases the sensitivity of significance tests (Cheung & Chan, 2005).

To examine the direction of effect between work-family conflict and strain, we tested cross-lagged panel models for WIF and FIW separately. Specifically, WIF (or FIW) and strain at Time 2 were regressed on both WIF (or FIW) and strain at Time 1. We ran these analyses for WIF (or FIW) and all types of strain (called *overall analyses* in the following). To compare the cross-domain and matching-perspective, we tested a model comprising WIF, FIW, and work-related strain. Specifically, we simultaneously regressed (a) work-related strain at Time 2 on WIF and FIW at Time 1 and (b) WIF and FIW at Time 2 on work-related strain at Time 1. The standardized path coefficients obtained from these analyses indicated how well WIF (or FIW) and strain predicted each other, with baseline scores of the criterion variable controlled for. In all models, we included all lagged correlations between the variables (e.g., correlation between Time 1 WIF and Time 2 strain), all synchronous correlations (e.g., correlation between Time 1 WIF and Time 1 strain), and all stability correlations (e.g., correlation between Time 1 WIF and Time 2 WIF). Additionally, in all models, synchronous relationships between variables assessed at the same time were allowed to be freely estimated.

### Results

Tables 3 and 4 show the meta-analytical correlations, 80% CI, 95% CrI, and residual standard deviations. Results are shown separately for WIF and FIW. In the overall analysis, the mean cross-sectional correlations between WIF and all strain types were positive and statistically significant ( $r_s$  of .41 and .42,  $p < .05$ ). The magnitudes of these correlations fall within the range of correlations reported in previous meta-analyses (Allen et al., 2000; Amstad et al., 2011). Similarly, mean cross-sectional correlations between FIW and all strain types were positive and

statistically significant ( $r$ s of .23,  $p < .05$ ; in the overall analysis), and consistent with results reported in a recent meta-analysis (Amstad et al., 2011). The stabilities of WIF, FIW, and strain were high ( $r$ s  $> .55$ ,  $p < .05$ ; in the overall analysis).

### **Direction of Effect**

Tables 5 shows the results of the meta-analytic path analyses based on the correlations from Tables 3 and 4. To examine the direction of effect between WIF/FIW and strain (Research Question 1), we combined all strain types. Results showed that WIF and strain predicted each other, that is WIF predicted strain ( $\beta = .08$ ,  $p < .05$ ; 95% CI: .07, .10) and strain predicted WIF ( $\beta = .08$ ,  $p < .05$ ; 95% CI: .06, .09). To examine whether the coefficients for the cross-lagged effects differ, we constrained the cross-lagged paths to be equal and compared this constrained model with the unconstrained model. The unconstrained model does not provide chi-square model fit indices because it is fully-saturated. Therefore, we compared models using log-likelihood values. The difference in fit was nonsignificant ( $\Delta-2 \times \log\text{-likelihood} (1) = .04$ ,  $n.s.$ ). Consequently, we favored the more parsimonious constrained model and concluded that the cross-lagged paths did not differ. As for WIF and strain, the results of the overall analysis for FIW and strain suggested that there are reciprocal effects. FIW predicted strain ( $\beta = .03$ ,  $p < .05$ ; 95% CI: .02, .05) and strain predicted FIW ( $\beta = .05$ ,  $p < .05$ ; 95% CI: .03, .07). Model comparisons did not reveal differences between the unconstrained model and a model with cross-lagged paths that were constrained to be equal ( $\Delta-2 \times \log\text{-likelihood} (1) = 2.12$ ,  $n.s.$ ), indicating that the cross-lagged paths did not differ. To sum up, results of the overall analysis suggested a symmetric reciprocal relationship of WIF and FIW with strain, supporting the loss-spiral model.

We conducted several additional analyses. First, we tested whether the reciprocal relationships of WIF and FIW with strain depended on the distribution of gender in the sample. Specifically, we repeated the meta-analytic path analyses for studies that reported a higher

proportion of females than 85% (WIF:  $k = 6$ ,  $N = 2,117$ ; FIW:  $k = 3$ ,  $N = 624$ ) and for studies that reported a higher proportion of males than 85% (WIF:  $k = 9$ ,  $N = 3,079$ ; FIW:  $k = 4$ ,  $N = 1,405$ ). We found that all significant effects remained significant and concluded that the reciprocal relationships between WIF/FIW and strain held for both men and women.

Second, we tested whether the lagged relationships of WIF and FIW with strain depend on the length of the time lag between the measurement waves. We grouped the studies into three categories (i.e., time lags of 1–6 months, 7–12 months, and 13+ months) and repeated the meta-analytic path analyses for each category. The results of the analyses were virtually unaltered, and all significant effects remained significant.

Third, we tested whether the lagged effects differ between published and unpublished studies. We did not find differences between published and unpublished studies, except that for unpublished studies the lagged effect of FIW on strain was not significant ( $\beta = .02$ ,  $p = .11$ ; 95% CI:  $-.004$ ,  $.041$ ).

Finally, to examine whether common factors might explain the cross-lagged relationships between work-family conflict and strain, we compared the cross-lagged models with a common factor model (Finkel, 1995; Lang et al., 2011). The common factor does not need to be measured. Rather, it is specified as a higher-order factor of the measured variables. Specifically, we specified a common factor of the two measured variables at Time 1 and allowed this factor to correlate with a common factor of the two measured variables at Time 2. As the common factor model and the cross-lagged models are non-nested and the (fully-saturated) cross-lagged models do not provide chi-square model fit indices, we assessed model fit with the Bayesian information criterion (BIC). Absolute BIC values cannot be interpreted, but when comparing models, lower BIC values indicate better model fit. For WIF and strain, results indicated that the cross-lagged model (BIC = 130,552.72) had a better fit to the data than the common factor model (BIC =

134,390.75). Similarly, for FIW and strain, the cross-lagged model (BIC = 93,203.20) showed a better fit to the data than the common factor model (BIC = 96,135.25). Thus, the rejection of the common factor models strengthens confidence in the results of the cross-lagged models.

### **Matching-Hypothesis versus Cross-Domain Perspective**

To compare the parts of the matching- and cross-domain perspectives that focus on work-related strain, we tested whether WIF or FIW has a stronger lagged relationship with work-related strain (*Research Question 2*). According to the cross-domain perspective, FIW should have a stronger relationship with work-related strain than WIF. However, according to the matching-perspective, WIF should have a stronger relationship with work-related strain than FIW. Correlations among WIF, FIW, and work-related strain were included in the same meta-analytical path model. In addition to the correlations provided in Tables 3 and 4, we used the following four sample-size weighted correlations between WIF and FIW as input ( $k = 16$ ;  $N = 7,989$ ): WIF and FIW at Time 1: .31, WIF and FIW at Time 2: .31, WIF at Time 1 and FIW at Time 2: .21, and FIW at Time 1 and WIF at Time 2: .24.

In this combined model, WIF significantly predicted work-related strain ( $\beta = .09$ ,  $p < .05$ ; 95% CI: .08, .11), whereas FIW did not predict work-related strain ( $\beta = -.01$ , *n.s.*; 95% CI: -.02, .01). To test whether these two coefficients differed, we constrained them to be equal and compared this constrained model with the unconstrained model. Model comparisons revealed that the unconstrained model ( $\chi^2(2) = 30.47$ ,  $p < .001$ , CFI = 1.00, TLI = .99, RMSEA = .04) fitted the data better than the constrained model ( $\chi^2(3) = 85.84$ ,  $p < .001$ , CFI = .99, TLI = .98, RMSEA = .06), as indicated by a significant chi-square difference test ( $\Delta\chi^2(1) = 55.37$ ,  $p < .001$ ). Consequently, we favored the unconstrained model. These results suggested that the two paths from WIF and FIW to work-related strain differed from each other, i.e., WIF had a stronger

relationship with work-related strain than did FIW. Thus, results supported the matching-hypothesis (i.e., Hypothesis 2) rather than the cross-domain perspective (i.e., Hypothesis 1).

Although not part of our hypotheses, we tested whether the coefficients of the two paths from work-related strain to WIF ( $\beta = .08, p < .05$ ; 95% CI: .06, .09) and FIW ( $\beta = .05, p < .05$ ; 95% CI: .03, .07) differed. We constrained the two paths to be equal and compared this constrained model with the unconstrained model. Model comparisons revealed that the unconstrained model fitted the data better than the constrained model ( $\Delta\chi^2(1) = 4.29, p < .05$ ). Consequently, we favored the unconstrained model and concluded that work-related strain had a stronger influence on WIF than on FIW.

### **Discussion**

This meta-analysis examined the direction of effect between WIF/FIW and strain by applying meta-analytic path analyses to longitudinal studies. The results support the common assumption that WIF and FIW predict strain. The results also reveal that strain predicts WIF and FIW. Thus, the results provide support for reciprocal effects and challenge the common assumption that WIF and FIW antecede strain in a unidirectional way. Additionally, WIF had a stronger effect on work-specific strain than did FIW. This pattern of results supports the matching hypothesis rather than the cross-domain perspective.

### **Implications for Research**

Our results have important theoretical implications. Most models in the work-family literature assume that work-family conflict influences strain (e.g., Frone et al., 1992, 1997) but do not acknowledge potential influences of strain on work-family conflict. As our results reveal reciprocal relationships between both forms of work-family conflict and strain, existing models could be extended by taking reciprocal effects into account. Similarly, researchers aiming at building future models of work-family conflict and strain should explicitly acknowledge

reciprocal effects. These models would provide a more complete picture of how WIF and FIW are related to strain. Although not a genuine theory of work-family relationships, scholars have proposed that COR theory (Hobfoll, 1989) may offer an appropriate framework for work-family researchers (Grandey & Cropanzano, 1999). Indeed, the reciprocal relationships found in this meta-analysis are consistent with COR's notion of loss spirals. Thus, Hobfoll's COR theory seems to be a valuable lens that can be used to better understand the relationship between work-family conflict and strain.

Although the present meta-analysis provides a rigor test of the direction of effect, we could not examine why work-family conflict and strain are related. Insights into the underlying mechanisms are important to more fully understand the relationship between work-family conflict and strain. Therefore, we encourage future research to address mediators and suggest compensatory effort as a prime candidate. People experiencing WIF or FIW may try to invest more effort than usual (i.e., compensatory effort) to meet the role demands of the receiving role (Hockey, 1997). Sustaining compensatory effort is likely to drain individuals' energy which should lead them to feel worn out and exhausted (Demerouti, Nachreiner, Bakker, & Schaufeli, 2001).

In additional analyses, we found that the reciprocal relationships between WIF/FIW and strain held for both men and women. According to gender role theory, women tend to place greater identity and value on the family role than men, and men are more concerned with the work role than women (Gutek, Searle, & Klepa, 1991). Consequently, one could argue that women experience more strain when facing WIF compared with men, and men experience more strain when facing FIW compared with women. However, because gender roles are becoming more egalitarian (e.g., Brewster & Padavic, 2000), men and women may react to WIF and FIW similarly.

Moreover, it is noteworthy that the time lag between the measurement waves did not influence the magnitude of the reciprocal effects between work-family conflict and strain. As the time lags of the analyzed studies were rather long, future research should explore whether stronger effects emerge for very short time lags (e.g., a few hours). Diary studies could provide insights into the short-term dynamics of WIF, FIW, and strain (Butler, Song, & Ilies, 2013).

Additionally, our results shed light on an aspect of the debate about matching- versus cross-domain relationships. Specifically, we compared the parts of the two perspectives that focus on work-related strain and found that WIF has a stronger effect on work-related strain than FIW supporting the matching-hypothesis. A recent meta-analysis on cross-sectional studies found that WIF was more strongly correlated with emotional exhaustion than FIW, although both correlations were significant (Amstad et al., 2011). We found, however, that only WIF (but not FIW) predicted work-related strain over time. In contrast to the prior meta-analysis, we used path analysis and regressed work-related strain on WIF and FIW simultaneously thereby accounting for the shared variance between the two constructs. Thus, our results suggest that when accounting for the shared variance between WIF and FIW, only WIF predicts work-related strain but not FIW.

In line with the current debate, this meta-analysis applied the cross-domain and matching-perspective to the influence of WIF and FIW on work-related strain. As suggested by an anonymous reviewer, the two perspectives could also be applied to the reversed effect of work-related strain on WIF and FIW. Results of this meta-analysis revealed that the influence of work-related strain on WIF was stronger than on FIW, thereby supporting the matching-perspective. Thus, both directions of effect between WIF/FIW and work-related strain are in line with the matching-perspective. The implication here is that future research should further examine the

relative merits of the two perspectives and address the circumstances under which matching versus cross-domain relationships are stronger.

In general, the lagged effects were rather small. However, it is important to note that the magnitude of relationships we found is within the range of effects reported in other cross-lagged panel analyses controlling for baseline scores, for example in studies on work stressors and strain (Dormann & Haun, 2010) and job satisfaction and performance (Ricketta, 2008). Notwithstanding this, future studies should examine whether the lagged relationships of work-family conflict with strain are stronger under certain conditions. Thus, more nuanced theoretical insights and practical recommendations could be gained.

### **Limitations**

This meta-analysis has some limitations. First, all studies used self-report measures of strain which might have increased common method bias. Future research on work-family conflict and strain should use objective strain indicators as alternative or additional measures. Second, we could not differentiate between time-, strain-, and behavior-based WIF/FIW (Greenhaus & Beutell, 1985) due to a lack of studies distinguishing between these three forms of conflict. The relationship of WIF and FIW with strain may unfold differently depending on the type of conflict. Third, a lack of studies also prevented us from coding family-related strain. Consequently, we could not fully test the cross-domain and matching hypotheses; rather, we could only compare the parts of the perspectives that focus on work-related strain. Future studies should, therefore, address the longitudinal relationships of work-family conflict with family-related strain. Fourth, as our meta-analysis is based on correlational data, it does not allow us to draw strong causal conclusions. Although this study provides a more rigorous test of causal relationships than previous meta-analyses, experiments are required to establish causality between WIF/FIW and strain. Finally, the number of available longitudinal studies is rather small

and may limit the generalizability of our findings. However, the magnitude of mean concurrent correlations found in the present study is consistent with the results reported in previous meta-analyses on cross-sectional data (Allen et al., 2000; Amstad et al., 2011), alleviating the concern that there are systematic differences between longitudinal and cross-sectional studies.

### **Conclusions**

This meta-analysis provides support for reciprocal lagged relationships of WIF and FIW with strain. Given the rather small effects, future studies should examine moderators of those lagged relationships. Additionally, the present findings support the matching-hypothesis rather than the cross-domain perspective. More research is needed to examine under which circumstances matching or cross-domain relationships are stronger. Finally, future studies should use longitudinal research designs to broaden the database for future meta-analyses on reciprocal relationships between work-family conflict and strain.

### Footnote

<sup>1</sup> Various models exist for how affect has an influence on judgments. For example, the affect-as-information model assumes effects on the judgmental stage (Schwarz & Clore, 1988), whereas affect-priming models (e.g., Bower, 1991) also predict effects on attention, encoding, and learning. Additionally, process models further suggest effects on the processing strategy (Forgas, 1995). A systematic overview on these models can be found in Forgas (1992).

### References

- Allen, T. D., Herst, D. E. L., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology, 5*(2), 278-308. doi: 10.1037//1076-899B.5.2.278
- Amstad, F. T., Meier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A meta-analysis of work-family conflict and various outcomes with a special emphasis on cross-domain versus matching-domain relations. *Journal of Occupational Health Psychology, 16*(2), 151-169. doi: 10.1037/a0022170
- Belkic, K., Landsbergis, P. A., Schnall, P. L., & Baker, D. (2004). Is job strain a major source of cardiovascular disease risk? *Scandinavian Journal of Work, Environment & Health, 30*(2), 85-128. doi: 10.5271/sjweh.769
- Bellavia, G. M., & Frone, M. R. (2005). Work-family conflict. In J. Barling, E. K. Kelloway & M. R. Frone (Eds.), *Handbook of work stress* (pp. 113-147). CA: Sage Publications, Inc.
- Bower, G. H. (1991). Mood congruity of social judgments. In J. P. Forgas (Ed.), *Emotion and social judgments* (pp. 31-53). Oxford: Pergamon.

- Brewster, K. L., & Padavic, I. (2000). Change in gender-ideology, 1977–1996: The contributions of intracohort change and population turnover. *Journal of Marriage and Family*, *62*(2), 477-487. doi: DOI: 10.1111/j.1741-3737.2000.00477.x
- Britt, T. W., & Dawson, C. R. (2005). Predicting work-family conflict from workload, job attitudes, group attributes, and health: A longitudinal study. *Military Psychology*, *17*(3), 203-227. doi: 10.1207/s15327876mp1703\_5
- Butler, A., Song, Z., & Ilies, R. (2013). Experience sampling methods for work-family research: A review and research agenda. In J. G. Grzywacz & E. Demerouti (Eds.), *New Frontiers in Work and Family Research in Organizational Behavior* (pp. 133-149). London: Psychology Press and Routledge.
- Cheung, M. W. L., & Chan, W. (2005). Meta-analytic structural equation modeling: A two-stage approach. *Psychological Methods*, *10*(1), 40-64. doi: 10.1037/1082-989x.10.1.40
- De Jonge, J., Dormann, C., Janssen, P. P. M., Dollard, M. F., Landeweerd, J. A., & Nijhuis, F. J. N. (2001). Testing reciprocal relationships between job characteristics and psychological well-being: A cross-lagged structural equation model. *Journal of Occupational and Organizational Psychology*, *74*(1), 29-46. doi: 10.1348/096317901167217
- Demerouti, E., Bakker, A. B., & Bulters, A. J. (2004). The loss spiral of work pressure, work-home interference and exhaustion: Reciprocal relations in a three-wave study. *Journal of Vocational Behavior*, *64*(1), 131-149. doi: 10.1016/S0001-8791(03)00030-7
- Demerouti, E., Nachreiner, F., Bakker, A. B., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*, 499-512.
- Demerouti, E., Taris, T. W., & Bakker, A. B. (2007). Need for recovery, home-work interference and performance: Is lack of concentration the link? *Journal of Vocational Behavior*, *71*(2), 204-220. doi: 10.1016/j.jvb.2007.06.002

Dormann, C., & Haun, S. (2010). Longitudinal effects of stress at work: A meta-analysis. Paper presented at the 26th Annual SIOP Conference, Chicago, Illinois.

Edwards, J. R., & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *Academy of Management Review*, 25(1), 178-199. doi: 10.5465/AMR.2000.2791609

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, 63(3), 665-694. doi: 10.1348/000711010X502733

Finkel, S. E. (1995). *Causal analysis with panel data*. Thousand Oaks, CA: Sage.

Finne, L. B., Knardahl, S., & Lau, B. (2011). Workplace bullying and mental distress – a prospective study of Norwegian employees. *Scandinavian Journal of Work, Environment and Health*, 37(4), 276-287.

Ford, M. T. (2010). A three-wave study of work–family conflict, enrichment, and health. Paper presented at the 26th Annual SIOP Conference, Chicago, Illinois.

Ford, M. T., Heinen, B. A., & Langkamer, K. L. (2007). Work and family satisfaction and conflict: A meta-analysis of cross-domain relations. *Journal of Applied Psychology*, 92(1), 57-80.

Forgas, J. P. (1992). Affect in social judgments and decisions: A multiprocess model. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 227-275). New York: Academic Press.

Forgas, J. P. (1995). Mood and judgment: the affect infusion model (AIM). *Psychological Bulletin*, 117(1), 39-66. doi: 10.1037/0033-2909.117.1.39

Frese, M. (1985). Stress at work and psychosomatic complaints: A causal interpretation. *Journal of Applied Psychology*, 70(2), 314-328. doi: 10.1037/0021-9010.70.2.314

- Frone, M. R., Russell, M., & Cooper, M. L. (1992). Antecedents and outcomes of work-family conflict: Testing a model of the work-family interface. *Journal of Applied Psychology, 77*(1), 65-78. doi: 10.1037/0021-9010.77.1.65
- Frone, M. R., Yardley, J. K., & Markel, K. S. (1997). Developing and testing an integrative model of the work-family interface. *Journal of Vocational Behavior, 50*(2), 145-167. doi: 10.1006/jvbe.1996.1577
- Ganster, D. C., & Rosen, C. C. (2013). Work Stress and Employee Health: A Multidisciplinary Review. *Journal of Management*. doi: 10.1177/0149206313475815
- Geurts, S. A. E., Kompier, M. A. J., Roxburgh, S., & Houtman, I. L. D. (2003). Does work-home interference mediate the relationship between workload and well-being? *Journal of Vocational Behavior, 63*(3), 532-559.
- Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dijkers, J. S. E., Van Hooff, M. L. M., & Kinnunen, U. M. (2005). Work-home interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. *Work & Stress, 19*(4), 319-339. doi: 10.1080/02678370500410208
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review, 25*(4), 483-496. doi: 10.2307/2092933
- Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work-family conflict and strain. *Journal of Vocational Behavior, 54*(2), 350-370. doi: 10.1006/jvbe.1998.1666
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review, 10*(1), 76-88.

- Griffin, M. A., & Clarke, S. (2011). Stress and well-being at work. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology* (Vol. 3, pp. 359-397). Washington, DC: American Psychological Association.
- Gutek, B. A., Searle, S., & Klepa, L. (1991). Rational versus gender role explanations for work-family conflict. *Journal of Applied Psychology, 76*(4), 560-568. doi: 10.1037/0021-9010.76.4.560
- Hammer, L. B., Cullen, J. C., Neal, M. B., Sinclair, R. R., & Shafiro, M. V. (2005). The longitudinal effects of work-family conflict and positive spillover on depressive symptoms among dual-earner couples. *Journal of Occupational Health Psychology, 10*(2), 138-154. doi: 10.1037/1076-8998.10.2.138
- Hammer, L. B., Kossek, E. E., Anger, W. K., Bodner, T., & Zimmerman, K. L. (2011). Clarifying work-family intervention processes: The roles of work-family conflict and family-supportive supervisor behaviors. *Journal of Applied Psychology, 96*(1), 134-150. doi: 10.1037/a0020927
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513-524. doi: 10.1037/0003-066X.44.3.513
- Hockey, G. R. J. (1997). Compensatory control in the regulation of human performance under stress and high workload: A cognitive-energetical framework. *Biological psychology, 45*(1), 73-93.
- Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Thousand Oaks, CA: Sage.
- Ibrahim, S., Smith, P., & Muntaner, C. (2009). A multi-group cross-lagged analyses of work stressors and health using Canadian National sample. *Social Science & Medicine, 68*(1), 49-59. doi: 10.1016/j.socscimed.2008.10.019

- Innstrand, S. T., Langballe, E. M., Espnes, G. A., Falkum, E., & Gjerl, O. (2008). Positive and negative work–family interaction and burnout: A longitudinal study of reciprocal relations. *Work & Stress*, 22(1), 1-15.
- Jacobshagen, N., Amstad, F. A., Meier, L. L., & Semmer, N. K. (2006). [Work stress in a logistic organisation]. Unpublished raw data.
- James, L. R. (1980). The unmeasured variables problem in path analysis. *Journal of Applied Psychology*, 65(4), 415-421. doi: 10.1037/0021-9010.65.4.415
- Kälin, W., Gross, S., & Semmer, N. K. (2008). [Work stress and well-being]. Unpublished raw data.
- Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology*, 4(4), 337-346. doi: 10.1037/1076-8998.4.4.337
- Kinnunen, U., Feldt, T., Mauno, S., & Rantanen, J. (2010). Interface between work and family: A longitudinal individual and crossover perspective. *Journal of Occupational & Organizational Psychology*, 83(1), 119-137. doi: 10.1348/096317908X399420
- Kinnunen, U., Geurts, S., & Mauno, S. (2004). Work-to-family conflict and its relationship with satisfaction and well-being: A one-year longitudinal study on gender differences. *Work & Stress*, 18(1), 1-22. doi: 10.1080/02678370410001682005
- Lang, J., Bliese, P. D., Lang, J. W. B., & Adler, A. B. (2011). Work gets unfair for the depressed: Cross-lagged relations between organizational justice perceptions and depressive symptoms. *Journal of Applied Psychology*, 96(3), 602-618. doi: 10.1037/a0022463
- Lazarus, R. S. (1991). Psychological stress in the workplace. *Journal of Social Behavior and Personality*, 6(7), 1-13.

- Leiter, M. P., & Durup, M. J. (1996). Work, home, and in-between: A longitudinal study of spillover. *Journal of Applied Behavioral Science*, 32(1), 29-47. doi: 10.1177/0021886396321002
- Marks, S. R. (1977). Multiple role and role strain: Some notes on human energy, time, and commitment. *American Sociological Review*, 42(6), 921-936. doi: 10.2307/2094577
- Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, 93(3), 498-512. doi: 10.1037/0021-9010.93.3.498
- Mauno, S. (2010). Effects of work–family culture on employee well-being: Exploring moderator effects in a longitudinal sample. *European Journal of Work and Organizational Psychology*, 19(6), 675-695. doi: 10.1080/13594320903106588
- Meier, L. L., Jacobshagen, N., & Semmer, N. K. (2007). [Work stress in the public sector]. Unpublished raw data.
- Meier, L. L., Jacobshagen, N., Semmer, N. K., & Weber, L. (2010). [SWiNG - Work stress and well-being]. Unpublished raw data.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry & C. J. de Wolff (Eds.), *Handbook of work and organizational, Vol. 2: Work psychology*. (2nd ed., pp. 5-33). Hove England: Psychology Press/Erlbaum (UK) Taylor & Francis.
- Mesmer-Magnus, J. R., & Viswesvaran, C. (2005). Convergence between measures of work-to-family and family-to-work conflict: A meta-analytic examination. *Journal of Vocational Behavior*, 67(2), 215-232. doi: 10.1016/j.jvb.2004.05.004
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles: Muthén & Muthén.

- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology, 81*(4), 400-410. doi: 10.1037/0021-9010.81.4.400
- Nohe, C., & Sonntag, K. (2010). [Work-life balance and organizational culture]. Unpublished raw data.
- Nohe, C., & Sonntag, K. (2013). Work-family conflict and turnover intentions. Paper presented at the 16th congress of the European Association of Work and Organizational Psychology, Münster, Germany.
- O'Driscoll, M. P., Brough, P., & Kalliath, J. T. (2004). Work/family conflict, psychological well-being, satisfaction and social support: A longitudinal study in New Zealand. *Equal Opportunities International, 23*(1/2), 36-56.
- Peeters, M. C. W., ten Brummelhuis, L. L., & van Steenbergen, E. F. (2013). Consequences of combining work and family roles. In J. G. Grzywacz & E. Demerouti (Eds.), *New frontiers in work and family research* (pp. 93-109). Sussex: Psychology Press.
- Rantanen, J., Kinnunen, U., Feldt, T., & Pulkkinen, L. (2008). Work-family conflict and psychological well-being: Stability and cross-lagged relations within one- and six-year follow-ups. *Journal of Vocational Behavior, 73*(1), 37-51. doi: 10.1016/j.jvb.2008.01.001
- Ricketta, M. (2008). The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology, 93*(2), 472-481. doi: 10.1037/0021-9010.93.2.472
- Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement and sickness absenteeism. *Journal of Organizational Behavior, 30*(7), 893-917. doi: 10.1002/job.595

- Schwarz, N., & Clore, G. L. (1988). How do I feel about it? The informative function of affective states. In K. Fiedler & J. P. Forgas (Eds.), *Affect, cognition, and social behavior* (pp. 44-62). Toronto: Hogrefe.
- Semmer, N. K., Tschan, F., Dauwalder, J.-P., & Kälin, W. (2005). [Work experience and quality of life in Switzerland]. Unpublished raw data.
- Shockley, K. M., & Singla, N. (2011). Reconsidering work-family interactions and satisfaction: A meta-analysis. *Journal of Management*, 37(3), 861-886. doi: 10.1177/0149206310394864
- Steinmetz, H., Frese, M., & Schmidt, P. (2008). A longitudinal panel study on antecedents and outcomes of work-home interference. *Journal of Vocational Behavior*, 73(2), 231-241. doi: 10.1016/j.jvb.2008.05.002
- van der Heijden, B. I. J. M., Demerouti, E., & Bakker, A. B. (2008). Work-home interference among nurses: Reciprocal relationships with job demands and health. *Journal of Advanced Nursing*, 62(5), 572-584. doi: 10.1111/j.1365-2648.2008.04630.x
- van Hooff, M. L. M., Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dijkers, J. S. E., Houtman, I. L. D., & van der Heuvel, F. M. M. (2005). Disentangling the causal relationships between work-home interference and employee health. *Scandinavian Journal of Work, Environment & Health*, 31(1), 15-29. doi: 10.5271/sjweh.844
- Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, 48(4), 865-885. doi: 10.1111/j.1744-6570.1995.tb01784.x
- Westman, M., Etzion, D., & Gattenio, E. (2008). International business travels and the work-family interface: A longitudinal study. *Journal of Occupational & Organizational Psychology*, 81(3), 459-480. doi: 10.1348/096317908X310265

Wilson, D. B., & Lipsey, M. W. (2001). *Practical Meta-Analysis*. Delhi: Sage Publications, Inc.

Zapf, D., Dormann, C., & Frese, M. (1996). Longitudinal studies in organizational stress research: A review of the literature with reference to methodological issues. *Journal of Occupational Health Psychology, 1*(2), 145-169. doi: 10.1037/1076-8998.1.2.145

Table 1

*Longitudinal Studies of the Relationship Between Work Interference with Family and Strain*

Study	N	Participants	Country	Strain	Lag	Coded correlations for the overall analysis					
						W <sub>1</sub> -S <sub>2</sub>	S <sub>1</sub> -W <sub>2</sub>	W <sub>1</sub> -S <sub>1</sub>	W <sub>2</sub> -S <sub>2</sub>	W <sub>1</sub> -W <sub>2</sub>	S <sub>1</sub> -S <sub>2</sub>
Britt and Dawson (2005)	489	Soldiers	USA	Depr., phy. health <sup>a</sup>	3.0	.22	.24	.29	.27	.58	.57
Demerouti et al. (2004)	335	Employment agency employees	The Netherlands	Exh.	1.5	.41	.41	.53	.54	.57	.68
M. T. Ford (2010)	328	Heterogeneous online panel from different countries	USA	Depr., phy. symptoms <sup>a</sup>	1.0	.32	.26	.35	.30	.75	.74
L B Hammer et al. (2005), female subsample	234	Wives from dual-earner couples	USA	Depr.	12.0	.22	.30	.32	.30	.57	.43
L B Hammer et al. (2005), male subsample	234	Husbands from dual-earner couples	USA	Depr.	12.0	.17	.21	.19	.30	.54	.60
Innstrand et al. (2008)	2,235	Professionals	Norway	Exh., disengagement <sup>a</sup>	24.0	.31	.30	.42	.44	.63	.62
Kelloway et al. (1999)	236	Hospital and grocery store employees	Canada	Stress symptomatology	6.0	.43	.48	.55	.46	.71	.72
Kinnunen et al. (2010), female subsample	239	Wives from dual-earner couples	Finland	Parental distress	12.0	.18	.18	.11	.22	.57	.71
Kinnunen et al. (2010), male subsample	239	Husbands from dual-earner couples	Finland	Parental distress	12.0	.17	.17	.13	.23	.59	.62
Kinnunen et al. (2004), female subsample	138	Female employees with family	Finland	Psychological and phy. symptoms, parental distress <sup>a</sup>	12.0	.31	.27	.28	.34	.71	.61

Kinnunen et al. (2004), male subsample	160	Male employees with family	Finland	Psychological and phy. symptoms, parental distress <sup>a</sup>	12.0	.24	.35	.30	.38	.63	.65
Leiter and Durup (1996)	151	Female hospital employees with family	Canada	Exh., depersonalisation, accomplishment <sup>a</sup>	3.0	.29	.35	.33	.42	.61	.67
Mauno (2010)	409	Hospital employees	Finland	Exh.	24.0	.45	.34	.54	.65	.66	.56
Semmer, Tschan, Dauwalder, and Kälin (2005)	382	Professionals	Switzerland	Irritation, somatic complaints <sup>a</sup>	72.0	.17	.16	.30	.33	.23	.51
Meier, Jacobshagen, and Semmer (2007)	78	Government agency employees	Switzerland	Exh., irritation, depr., anxiety, somatic complaints <sup>a</sup>	6.0	.40	.37	.42	.56	.57	.64
Meier, Jacobshagen, Semmer, and Weber (2010)	256	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	9.0	.33	.25	.40	.47	.65	.60
Jacobshagen, Amstad, Meier, and Semmer (2006)	76	Blue- and white-collar workers	Switzerland	Exh., irritation, somatic complaints <sup>a</sup>	24.0	.38	.29	.46	.44	.50	.64
Kälin, Gross, and Semmer (2008)	94	Government agency employees	Switzerland	Exh., irritation, depr., anxiety, somatic complaints <sup>a</sup>	6.0	.28	.26	.42	.38	.52	.54
Meier et al. (2010)	260	Hospital employees	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	12.0	.27	.29	.49	.40	.57	.56
Meier et al. (2010)	600	Professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	15.0	.28	.23	.41	.40	.58	.56
Meier et al. (2010)	462	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	12.0	.33	.28	.42	.51	.56	.53

Meier et al. (2010)	215	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	15.0	.31	.32	.41	.48	.58	.64
Nohe and Sonntag (2010)	1,292	Managers and professionals	Germany	Exh.	9.0	.54	.50	.62	.66	.71	.75
Nohe and Sonntag (2010)	470	Blue-collar workers	Germany	Exh.	9.0	.36	.51	.63	.34	.66	.46
Nohe and Sonntag (2013)	665	Managers and professionals	Germany	Exh.	5.0	.59	.60	.68	.69	.75	.82
O’Driscoll, Brough, and Kalliath (2004)	403	Employees from different organizations	New Zealand	Psychological strain, phy. health <sup>a</sup>	3.0	.15	.20	.24	.14	.70	.70
Rantanen, Kinnunen, Feldt, and Pulkkinen (2008)	153	Employees with a family	Finland	Exh., psychological distress, parental distress <sup>a</sup>	72.0	.07	.24	.14	.16	.54	.51
Schaufeli, Bakker, and Van Rhenen (2009)	201	Telecom managers and executives	The Netherlands	Exh., cynicism <sup>a</sup>	12.0	.41	.18	.46	.36	.50	.65
Steinmetz, Frese, and Schmidt (2008)	130	Convenience sample of employees	Germany	Depr.	12.0	.25	.34	.25	.39	.82	.62
van der Heijden, Demerouti, and Bakker (2008)	946	Nurses	The Netherlands	General health	12.0	.18	.20	.23	.22	.48	.59
van Hooff et al. (2005)	730	Police officers	The Netherlands	Exh., depr.	12.0	.22	.20	.28	.31	.62	.44
Westman, Etzion, and Gattenio (2008)	66	Managers and professionals	Israel	Burnout	0.3	.32	.29	.41	.46	.64	.81

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*Note.* Lag = time lag between the coded measurement waves in months; W<sub>1</sub> and W<sub>2</sub> = work interference with family at first and second coded wave, respectively; S<sub>1</sub> and S<sub>2</sub> strain at first and second coded wave, respectively; depr. = depression; phy. = physical; exh. = exhaustion. <sup>a</sup> correlations were averaged using Fisher’s z-scores.

Table 2

*Longitudinal Studies of the Relationship Between Family Interference with Work and Strain*

Study	N	Participants	Country	Strain	Lag	Coded correlations for the overall analysis					
						F <sub>1</sub> -S <sub>2</sub>	S <sub>1</sub> -F <sub>2</sub>	F <sub>1</sub> -S <sub>1</sub>	F <sub>2</sub> -S <sub>2</sub>	F <sub>1</sub> -F <sub>2</sub>	S <sub>1</sub> -S <sub>2</sub>
Demerouti, Taris, and Bakker (2007)	123	Employees from different companies	The Netherlands	Need for recovery	1.0	.19	.18	.19	.14	.66	.70
Ford (2010)	328	Heterogeneous online panel from different countries	USA	Depr., phy. symptoms <sup>a</sup>	1.0	.31	.34	.34	.37	.72	.74
L B Hammer et al. (2005), female subsample	234	Wives from dual-earner couples	USA	Depr.	12.0	.24	.12	.28	.22	.49	.43
L B Hammer et al. (2005), male subsample	234	Husbands from dual-earner couples	USA	Depr.	12.0	.19	.09	.18	.24	.45	.60
Innstrand et al. (2008)	2,235	Professionals	Norway	Exh., disengagement	24.0	.19	.18	.24	.23	.63	.62
Kelloway et al. (1999)	236	Hospital and grocery store employees	Canada	Stress symptomatology	6.0	.50	.39	.47	.47	.76	.72
Kinnunen et al. (2010), female subsample	239	Wives from dual-earner couples	Finland	Parental distress	12.0	.40	.32	.41	.41	.44	.71
Kinnunen et al. (2010), male subsample	239	Husbands from dual-earner couples	Finland	Parental distress	12.0	.21	.28	.26	.30	.56	.62
Leiter and Durup (1996)	151	Female hospital employees with families	Canada	Exh., depersonalisation, accomplishment <sup>a</sup>	3.0	.08	.15	.09	.20	.51	.67
Semmer et al. (2005)	382	Professionals	Switzerland	Irritation, somatic complaints <sup>a</sup>	72.0	.07	.11	.16	.23	.26	.51

Meier et al. (2010)	256	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	9.0	.19	.19	.22	.16	.51	.60
Meier et al. (2010)	600	Professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	15.0	.20	.22	.30	.28	.48	.56
Meier et al. (2010)	462	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	12.0	.15	.14	.31	.25	.46	.53
Meier et al. (2010)	215	Managers and professionals	Switzerland	Exh., depr., somatic complaints <sup>a</sup>	15.0	.29	.18	.28	.26	.48	.64
Nohe and Sonntag (2010)	1,292	Managers and professionals	Germany	Exh.	9.0	.11	.12	.16	.14	.54	.75
Nohe and Sonntag (2010)	470	Blue-collar workers	Germany	Exh.	9.0	.19	.19	.22	.11	.53	.46
Nohe and Sonntag (2013)	665	Managers and professionals	Germany	Exh.	5.0	.12	.14	.13	.20	.66	.82
O'Driscoll et al. (2004)	403	Employees from different organizations	New Zealand	Psychological strain, phy. health <sup>a</sup>	3.0	.08	.11	.13	.18	.62	.70
Rantanen et al. (2008)	153	Employees with a family	Finland	Exh., psychological distress, parental distress <sup>a</sup>	72.0	-.03	.16	.16	.17	.39	.51
Westman et al. (2008)	66	Managers and professionals	Israel	Burnout	0.3	.37	.34	.50	.47	.64	.81

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*Note.* Lag = time lag between the coded measurement waves in months; F<sub>1</sub> and F<sub>2</sub> = family interference with work at first and second coded wave, respectively; S<sub>1</sub> and S<sub>2</sub> strain at first and second coded wave, respectively; depr. = depression; phy. = physical; exh. = exhaustion. <sup>a</sup> correlations were averaged using Fisher's z-scores.

Table 3

*Weighted and Corrected Mean Correlations for Work Interference with Family and Strain*

Analyses		W <sub>1</sub> -S <sub>2</sub>	S <sub>1</sub> -W <sub>2</sub>	W <sub>1</sub> -S <sub>1</sub>	W <sub>2</sub> -S <sub>2</sub>	W <sub>1</sub> -W <sub>2</sub>	S <sub>1</sub> -S <sub>2</sub>
All strain types (overall analysis)							
	<i>r</i>	.32	.32	.41	.42	.61	.62
<i>k</i> = 32	$\rho$	.40	.39	.51	.51	.77	.75
<i>N</i> = 12,906	<i>SD</i> <sub><math>\rho</math></sub>	.14	.14	.18	.17	.13	.11
	95% CI	0.34; 0.45	0.34; 0.44	0.45; 0.57	0.45; 0.57	0.72; 0.81	0.71; 0.79
	80% CrI	0.21; 0.58	0.22; 0.56	0.28; 0.74	0.29; 0.73	0.6; 0.94	0.61; 0.89
Work-specific strain							
	<i>r</i>	.39	.37	.51	.52	.62	.62
<i>k</i> = 20	$\rho$	.48	.46	.64	.64	.80	.74
<i>N</i> = 9,130	<i>SD</i> <sub><math>\rho</math></sub>	.12	.12	.12	.13	.12	.11
	95% CI	0.42; 0.54	0.40; 0.52	0.59; 0.69	0.58; 0.69	0.74; 0.85	0.69; 0.79
	80% CrI	0.33; 0.63	0.31; 0.61	0.49; 0.79	0.48; 0.80	0.64; 0.95	0.60; 0.88

*Note.* *k* = number of studies; *N* = sample size; W<sub>1</sub> and W<sub>2</sub> = work interference with family at first and second coded wave, respectively; S<sub>1</sub> and S<sub>2</sub> = strain at first and second coded wave, respectively; effect size  $\rho$  = weighted mean correlation corrected for unreliability; CI = confidence interval; CrI = credibility interval; *SD* <sub>$\rho$</sub>  = standard deviation of  $\rho$ .

Table 4

*Weighted and Corrected Mean Correlations for Family Interference with Work and Strain*

Analyses		F <sub>1</sub> -S <sub>2</sub>	S <sub>1</sub> -F <sub>2</sub>	F <sub>1</sub> -S <sub>1</sub>	F <sub>2</sub> -S <sub>2</sub>	F <sub>1</sub> -F <sub>2</sub>	S <sub>1</sub> -S <sub>2</sub>
All strain types (overall analysis)							
	<i>r</i>	.18	.18	.23	.23	.56	.64
<i>k</i> = 20	$\rho$	.22	.22	.29	.28	.73	.76
<i>N</i> = 8,983	<i>SD</i> <sub><math>\rho</math></sub>	.10	.07	.09	.08	.12	.11
	95% CI	0.17; 0.27	0.18; 0.26	0.24; 0.34	0.24; 0.32	0.68; 0.79	0.71; 0.81
	80% CrI	0.10; 0.35	0.13; 0.31	0.17; 0.41	0.17; 0.39	0.58; 0.88	0.61; 0.90
Work-specific strain							
	<i>r</i>	.16	.17	.22	.21	.55	.64
<i>k</i> = 7	$\rho$	.20	.21	.28	.25	.73	.76
<i>N</i> = 7,070	<i>SD</i> <sub><math>\rho</math></sub>	.07	.00	.07	.05	.10	.12
	95% CI	0.16; 0.25	0.19; 0.24	0.23; 0.32	0.22; 0.29	0.67; 0.79	0.69; 0.82
	80% CrI	0.12; 0.29	0.21; 0.21	0.18; 0.37	0.19; 0.32	0.61; 0.85	0.61; 0.90

*Note.* *k* = number of studies; *N* = sample size; F<sub>1</sub> and F<sub>2</sub> = family interference with work at first and second coded wave, respectively; S<sub>1</sub> and S<sub>2</sub> = strain at first and second coded wave, respectively; effect size  $\rho$  = weighted mean correlation corrected for unreliability; CI = confidence interval; CrI = credibility interval; *SD* <sub>$\rho$</sub>  = standard deviation of  $\rho$ .

Table 5

*Meta-Analytic Path Analyses for all Strain Types (Overall Analysis)*

		Cross-lagged effects		Synchronous effects		Stability effects	
<i>k</i> ( <i>N</i> )		$W_1 \rightarrow S_2$	$S_1 \rightarrow W_2$	$W_1 \leftrightarrow S_1$	$W_2 \leftrightarrow S_2$	$W_1 \rightarrow W_2$	$S_1 \rightarrow S_2$
Work interference with family (WIF)							
Coef. (s.e.)	32 (12,906)	.08 (.01)	.08 (.01)	.41 (.01)	.30 (.01)	.58 (.01)	.59 (.01)
95% CI		.07; .10	.06; .09	.39; .42	.28; .31	.57; .59	.57; .60
Family interference with work (FIW)							
Coef. (s.e.)	20 (8,983)	.03 (.01)	.05 (.01)	.23 (.01)	.15 (.01)	.55 (.01)	.63 (.01)
95% CI		.02; .05	.03; .07	.21; .25	.13; .17	.53; .56	.62; .65

*Note.* Coefficients are standardized path coefficients. Analyses are based on weighted mean correlations.  $W_1$  and  $W_2$  = work-family conflict at first and second coded wave, respectively;  $S_1$  and  $S_2$  = strain at first and second coded wave, respectively; CI = confidence interval; *k* = number of studies; *N* = sample size; Coef. = coefficient; s.e. = standard error.

**Study 2:**

Nohe, C. & Sonntag, K. (under review). Work–family conflict, social support, and turnover intentions: A longitudinal study. *Journal of Vocational Behavior*.

Work-Family Conflict, Social Support, and Turnover Intentions: A Longitudinal Study

## Abstract

This longitudinal study examined the relative merits of two alternative perspectives on the interplay between work-family conflict, social support, and turnover intentions. According to the cross-domain perspective, family-to-work conflict (FWC) should be more important in predicting increases in turnover intentions than work-to-family conflict (WFC). According to the matching-principle perspective, however, WFC should be more important in predicting increases in turnover intentions than FWC. We expanded the debate about matching- versus cross-domain relationships by testing whether resources (i.e., social support) should stem from the same domain (i.e., work or family) as the conflict (i.e., matching-principle) or from the other domain (i.e., cross-domain perspective). Additionally, authors hypothesized that changes in WFC and FWC predicted changes in turnover intentions and tested reciprocal relationships between WFC/FWC and turnover intentions. This longitudinal study (5- month time lag) with 665 employees revealed that (increases in) WFC predicted increases in turnover intentions, whereas (increases in) FWC did not. The relationship between WFC and increases in turnover intentions was buffered by work-family specific leader support but not by work-family specific support from family and friends. Further, results revealed reverse relationships such that turnover intentions predicted increases in WFC and FWC. Taken together, the results of this study supported the matching-principle rather than the cross-domain perspective. The reverse relationships found between work-family conflict and turnover intentions challenge the common view that work-family conflict antecedes turnover intentions in a unidirectional way.

*Keywords:* work-family conflict; turnover intentions; social support; longitudinal study

### Work-Family Conflict, Social Support, and Turnover Intentions: A Longitudinal Study

The many incompatibilities experienced by employees between their work and family roles are typically referred to as work-family conflict (Greenhaus & Beutell, 1985). Work-family conflict can occur in two directions: work can interfere with family (work-to-family conflict; WFC) and family can interfere with work (family-to-work conflict; FWC; Frone, Yardley, & Markel, 1997). A considerable body of research has examined the potential consequences of high WFC and FWC, such as lower job satisfaction and lower organizational commitment. From a managerial perspective, one of the most important findings in this regard are the positive associations of WFC and FWC with turnover intentions (Amstad, Meier, Fasel, Elfering, & Semmer, 2011). Turnover intentions are one of the most powerful predictors of actual turnover (Griffeth, Hom, & Gaertner, 2000), which incurs financial costs (Allen, Bryant, & Vardaman, 2010), increases accident rates (Shaw, Gupta, & Delery, 2005), and decreases customer service and quality (Hancock, Allen, Bosco, McDaniel, & Pierce, 2011).

Among work-family researchers, there is an ongoing debate about the pattern of relationships of work-family conflict with domain-specific consequences (Amstad et al., 2011). The matching-hypothesis assumes that the primary effect of WFC and FWC on domain-specific consequences lies within the sending domain (e.g., WFC primarily affects job satisfaction and FWC primarily affects marital satisfaction). According to the cross-domain perspective, however, the primary effect of WFC and FWC lies within the receiving domain (e.g., WFC primarily affects marital satisfaction and FWC primarily affects job satisfaction). Most studies on work-family conflict and turnover intentions (e.g., Carr, Boyar, & Gregory, 2008; Hom & Kinicki, 2001) are mute on the relative merits of each perspective because they do not simultaneously consider WFC and FWC.

The aim of the present study is to contribute toward resolving this debate by testing a model of work-family conflict and turnover intentions. To compare the parts of the matching and cross-domain perspectives that focus on work-related outcomes, we simultaneously regress turnover intentions on WFC and FWC. In doing this, we account for the shared variance between WFC and FWC and provide a more rigorous comparison of the matching- versus cross-domain perspective than prior research (e.g., Amstad et al., 2011). We test our model with two waves of data. Compared with previous cross-sectional studies (e.g., Greenhaus, Parasuraman, & Collins, 2001; Kirchmeyer & Cohen, 1999), our longitudinal design provides more opportunities to test alternative interpretations such as reverse relationships. Additionally, we expand the debate on matching versus cross-domain relationships by testing whether social support that stems from the domain in which the conflict originates (i.e., matching-principle) is more important in alleviating the negative effects of WFC and FWC on turnover intentions than social support that stems from the other domain (i.e., cross-domain principle). Gaining differentiated insights into moderators of the relationship between work-family conflict and turnover intentions is particularly important because work-family conflict is very common in contemporary jobs and may reflect a phenomenon that cannot be completely avoided.

Our second aim is to shed light on work-family conflict and turnover intentions as dynamic constructs that change over time. Although work and family interactions reflect some of the most dynamic processes experienced by employees (Ode-Dusseau et al., 2013), most previous studies used a static approach that fails to capture the dynamic nature of work-family interactions and the turnover process (Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007). To illustrate the distinction between a static and a dynamic approach, we adapt an example from Chen, Ployhart, Thomas, Anderson, and Bliese (2011). Consider two employees with an identical level of WFC (e.g., a rating of 3 on a 5-point scale). According to a static approach, the two

employees are equally likely to leave or stay in the organization. However, what if one employee's WFC level has decreased from 4 to 3 and the other employee's WFC level has increased from 2 to 3? Would change in WFC exert unique influences on turnover intentions that go above and beyond the influence of static levels of WFC? Examining the dynamics of WFC change and FWC change can provide better tests of theory and offer stronger theoretical and practical implications (Mitchell & James, 2001).

### **Work-Family Conflict and Turnover Intentions**

Employees experiencing extensive work-family conflict may try to reduce the conflict by quitting their job. Thus, withdrawal from the job may be seen as a coping reaction in response to incompatible work and family demands. Specifically, when an employee experiences WFC, he/she may be inclined to quit and search for a more family friendly new job to eliminate the occurrence of WFC. Similarly, when an employee's family responsibilities interfere with work duties (FWC), he/she may see quitting as a means to reduce FWC and to better meet family obligations (Boyar, Maertz, Pearson, & Keough, 2003). Meta-analyses on cross-sectional studies have generally supported positive associations of WFC and FWC with turnover intentions (Allen, Herst, Bruck, & Sutton, 2000; Amstad et al., 2011).

We shed new light on the relationships of WFC and FWC to turnover intentions by comparing the parts of the cross-domain and matching perspectives that focus on work-related outcomes. The cross-domain perspective assumes that WFC, although originating in the work domain, primarily impairs family-related variables such as marital satisfaction, and FWC, although originating in the family domain, primarily impairs work-related variables such as job satisfaction. The rationale behind this idea is that when one role (e.g., family) interferes with another role (e.g., work), individuals will have problems fulfilling demands in the receiving role (e.g., work). As a consequence of struggle in meeting receiving role demands, satisfaction related

to the life domain of the receiving role suffers (Amstad et al., 2011). Accordingly, FWC is assumed to be more important in predicting job satisfaction than WFC (Frone et al., 1997). In turn, low levels of job satisfaction are one of the key antecedents of turnover intentions in theories of voluntary turnover (Holtom, Mitchell, Lee, & Eberly, 2008; Hom & Kinicki, 2001). Thus, according to the cross-domain perspective, FWC (vs. WFC) should be mainly related to turnover intentions because FWC more strongly reduces job satisfaction.

However, more recently, researchers have argued that a matching-hypothesis seems at least as plausible (Amstad et al., 2011; Peeters, ten Brummelhuis, & van Steenbergen, 2013; Shockley & Singla, 2011). According to this perspective, WFC predominantly affects work-related outcomes, while FWC predominantly affects family-related outcomes. The notion behind this assumption is grounded in appraisal theories. Appraisal theories assume that when self-relevant roles are threatened, people are likely to appraise the cause of the threat negatively (Lazarus, 1991; Shockley & Singla, 2011). For example, when one role (e.g., work) interferes with another role (e.g., family), individuals will appraise the role (e.g., work) which the conflict stems from negatively. Negative appraisals are likely to go along with a negative affective tone, which, when experienced frequently, can result in dissatisfaction in the domain where the conflict originates (Amstad et al., 2011). Thus, according to the matching-hypothesis, WFC (vs. FWC) should be mainly related to turnover intentions because WFC more strongly reduces job satisfaction which, in turn, should lead to higher levels of turnover intentions. To compare the parts of the two perspectives that focus on work-related outcomes, we state two competing hypotheses:

*Hypothesis 1: Following the cross-domain perspective, FWC is more important in predicting turnover intentions than WFC.*

*Hypothesis 2: Following the matching-hypothesis, WFC is more important in predicting turnover intentions than FWC.*

### **The Moderating Role of Social Support**

We refer to social support as the instrumental, emotional, informational, and appraisal support individuals receive through interactions with other individuals (House, 1981). According to the buffering hypothesis, the amount of social support an individual perceives can influence his or her appraisal of stressful situations, i.e., potential stressors are appraised as more manageable and less threatening when individuals perceive high levels of social support (Cohen, Gottlieb, & Underwood, 2000; Cohen & Wills, 1985). In line with this notion, a meta-analysis found that social support alleviated the negative relationship between workplace stressors and strain (Viswesvaran, Sanchez, & Fisher, 1999).

Social support can be received from different sources, such as the leader or family members (Carlson & Perrewé, 1999). More recently, work-family researchers have distinguished between general and work-family specific social support which refers to the degree to which employees perceive that others “care about their ability to experience positive work-family relationships and demonstrate this care by providing helpful social interaction and resources” (Kossek, Pichler, Bodner, & Hammer, 2011, p. 292). For example, the leader could show understanding when an employee is late for work because of family matters or provide emotional support when an employee needs to work long hours. Similarly, family members and friends can provide encouragement and understanding, thereby helping an individual cope with work-family conflicts. Work-family specific social support from both leader and family members may function as protective factors that prevent negative emotions and maladaptive coping strategies when work and family roles collide (Wang, Liu, Zhan, & Shi, 2010). As a result of high levels of

work-family specific social support, an employee should be less likely to have turnover intentions when experiencing WFC or FWC.

Although researchers have suggested that social support from work and family may play important buffering roles in the work-family conflict process (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005), it remains unclear whether the source of social support should match the domain from which the conflict stems or belong to the other domain. That is, is leader work-family specific support more effective in alleviating the WFC-turnover intentions relationship (matching principle) than in alleviating the FWC-turnover intentions relationship (cross-domain principle)? Similarly, is work-family specific support from family and friends more effective in alleviating the WFC-turnover intentions relationship (cross-domain principle) or is it more effective in alleviating the FWC-turnover intentions relationship (matching principle)? To compare the relative merits of the matching versus the cross-domain principle, we state the following:

*Hypotheses 3a and 3b: Following the cross-domain perspective, (a) leader support moderates the relationship between FWC and turnover intentions, such that this positive relationship is weaker when leader support is high; and (b) support from family and friends moderates the relationship between WFC and turnover intentions, such that this positive relationship is weaker when support from family and friends is high.*

*Hypotheses 4a and 4b: Following the matching perspective, (a) leader support moderates the relationship between WFC and turnover intentions, such that this positive relationship is weaker when leader support is high; and (b) support from family and friends moderates the relationship between FWC and turnover intentions, such that this positive relationship is weaker when support from family and friends is high.*

### **Change in Work-Family Conflict as Predictor of Turnover Intentions**

We propose that changes in WFC and FWC predict change in turnover intentions. To be theoretically meaningful, changes in WFC and FWC should influence turnover intentions with absolute levels of WFC and FWC controlled. Controlling for absolute levels of WFC and FWC helps to identify the extent to which change in work-family conflict uniquely predicts change in turnover intentions above and beyond the absolute level of work-family conflict.

Hobfoll's (1989) conservation of resources theory can be used as a lens through which to better understand the relationships between changes in work-family conflict and turnover intentions. The theory proposes that individuals are motivated to gain or maintain resources, including "objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions or energies" (Hobfoll, 1989, p. 516). The theory further proposes that individuals experience stress when they face actual or possible loss of such resources. As a result of actual or potential loss, individuals strive to protect resources by seeking to gain new or alternative resources. However, protecting and replenishing resources requires the investment of other resources, i.e. restoring one resource can deplete another resource, and so individuals become susceptible to "loss spirals" (Hobfoll, 1989, p. 519).

According to conservation of resources theory, work-family conflict change, especially systematic increases of work-family conflict, should heighten individuals experience of stress because it indicates actual or potential loss in critical resources (Grandey & Cropanzano, 1999). For example, an increase in FWC may be stressful because it threatens an employee's status at work. Similarly, an increase in WFC may be stressful because it harms an individual's family life. In turn, the experience of stress is likely to affect employees' intentions and choices at work, such as whether to quit or remain on their jobs. For instance, De Croon, Sluiter, Blonk, Broersen,

and Frings-Dresen (2004) found that high job demands and experienced stress predicted turnover two years later.

Previous studies provide only indirect support for a relationship between work-family conflict change and turnover intentions. For example, increases in family-supportive work environments predicted decreases in psychological strain (Ode-Dusseau et al., 2013). In another study, decreases in job satisfaction predicted increases in turnover intentions (Chen et al., 2011). Furthermore, experimental studies showed that when individuals' experience during a task becomes worse (improves) their intentions to reengage in the task decreases (increases) (Kahneman, 1999; Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993). We state the following:

*Hypotheses 5a and 5b: (a) WFC change and (b) FWC change predict change in turnover intentions over and above the baseline levels of WFC and FWC.*

### **Reverse Relationships between Work-Family Conflict and Turnover Intentions**

Models of work-family conflict assume that WFC and FWC antecede turnover intentions (Amstad et al., 2011; Frone et al., 1997). However, most empirical evidence about the relationship of WFC and FWC with turnover intentions has been based on cross-sectional designs, which strongly limits conclusions about the direction of the relationship. Does work-family conflict lead to turnover intentions? Or vice versa? Or are there reciprocal relationships, such that work-family conflict and turnover intentions predict each other? The only study we are aware of that tested reciprocal relationships between work-family conflict and turnover intentions is Kelloway, Gottlieb, and Barham (1999). Using a sample of about 230 employees and two measurement waves with a time lag of six months, Kelloway et al. (1999) found that only strain-based FWC (called FIW in their study) at Time 1 predicted turnover intentions at Time 2. Other lagged relationships of strain-based WFC/FWC and time-based WFC/FWC to turnover intentions

were not found. A possible explanation of these null-findings is that lagged relationships of WFC and FWC to turnover intentions are relatively small and larger samples are needed for adequate statistical power.

As explained above, WFC and FWC are typically assumed to antecede turnover intentions. However, there might be reverse relationships; that is, turnover intentions may predict WFC and FWC. Specifically, employees inclined to quit their jobs may experience more WFC because of a self-serving bias. To protect their self-esteem, employees might attribute their turnover intentions to their work conditions. For example, employees could scapegoat their work in terms of high work demands that interfere with their family life (Kelloway et al., 1999). Employees high in turnover intentions might also be subject to selective attention. As a result, they would be more sensitive to the occurrence of WFC and might experience an increase in WFC. Additionally, turnover intentions may be related to higher FWC. In terms of Hobfoll's (1989) conservation of resources theory, employees who want to quit their job would be likely not to value and protect it as an important resource anymore. As employees no longer want to protect their work role, they make the boundary between family and work more permeable. Consequently, family demands may more strongly spill over into the work role and interfere with work-related duties. We state the following:

*Hypotheses 6a and 6b: Turnover intentions predict (a) WFC and (b) FWC.*

## **Method**

### **Sample and Procedure**

We collected survey data from a large German company. On our behalf, the company sent an email to 4,843 employees encouraging participation in the study. The email described the purpose and procedure of our research project and contained a link granting access to the online survey. Participants were asked to fill out two surveys with a time lag of 5 months. At Time 1,

2,148 employees returned questionnaires, for an initial response rate of 44%. Of this sample, 665 employees completed the survey at Time 2, reflecting 31% of the employees who completed Time 1. This response rate was lower than in some other longitudinal studies, likely because we did not use an “opt in” strategy (i.e., employees first commit themselves to take part in the study and are thus more likely to respond) and did not pay participants for each response.

The final sample consisted of 665 participants. Of those, 21% were female, 79% male. Seventeen percent were 30 years old or younger; 29% were between 31 and 40 years old; 33% between 41 and 50 years old; 21% between 51 and 60 years old; 1% were 61 years old or older. Thirty-eight percent held supervisory positions, and 92% indicated they worked full time. Twenty-three percent had tenure of 5 years or less; 32% had tenure between 6 and 15 years; 16% had tenure between 16 and 25 years; and 28% had tenure of 26 years or more. Eighty-four percent were living with a partner, and 50% were living with children.

To examine the potential impact of attrition, differences on study variables were tested between participants who completed both Time 1 and Time 2 assessments and participants who dropped out of the study after Time 1. For leader support, participants who dropped out ( $M = 3.52$ ,  $SD = 1.02$ ) reported lower values than participants who completed the full study ( $M = 3.62$ ,  $SD = 0.97$ ;  $t(2,145) = 2.19$ ,  $p < .05$ ). According to Cohen (1988), this difference was small ( $d = .10$ ). No significant differences emerged for any of the other study variables (i.e., WFC, FWC, turnover intentions, and family/friends support).

## Measures

All measures were translated into German following Brislin's (1980) translation-back-translation procedure. If not otherwise indicated, items had to be answered on a five-point Likert scale ranging from 1 “I do not agree at all” to 5 “I completely agree”.

**WFC.** WFC was measured with four items from Netemeyer, Boles, and McMurrian (1996). A sample item is “The demands of my work interfere with my home and family life.” The internal consistency for this scale was .80 at Time 1, and .82 at Time 2.

**FWC.** Parallel to the WFC scale, FWC was measured with four items from Netemeyer et al. (1996). A sample item is “The demands of my home and family life interfere with work-related activities.” The internal consistency for this scale was .81 at Time 1 and Time 2.

**Turnover intentions.** Turnover intentions were measured with three items from Kelloway et al. (1999). A sample item is “I’m thinking about leaving this organization.” The internal consistency for this scale was .90 at Time 1, and .91 at Time 2.

**Leader support.** At Time 1, leader support was measured with three items adapted from Haynes, Wall, Bolden, Stride, and Rick (1999). Items were modified to focus on leader support regarding work-family issues. The three items are (1) “To what extent can you count on your leader to back you up when you have difficulties combining work and family?”; (2) “To what extent can you count on your leader to listen to you when you face difficulties in combining work and family?”; and (3) “To what extent can you count on your leader to help you when you face difficulties combining work and family?” Items had to be answered on a five-point Likert scale ranging from 1 “not at all” to 5 “a great deal”. The internal consistency for this scale was .86.

**Family/friends support.** Parallel to the leader support scale, work-family specific support from family and friends was measured with the same three items modified to focus on participants’ family and friends. A sample item is “To what extent can you count on your family and friends to back you up when you have difficulties combining work and family?” The internal consistency for this scale was .85.

**Control variables.** We controlled for participants’ age (1 < 31 years; 2 = 31-40 years; 3 = 41-50 years; 4 = 51-60 years; 5 > 60 years), management position (0 = no supervisory position; 1

= lower management; 2 = middle and upper management), and organizational tenure (1 < 1 year; 2 = 1-5 years; 3 = 6-15 years; 4 = 16-25 years; 5 > 25 years). In addition, we controlled for gender (0 = male; 1 = female), living with a partner (0 = not married/no partner; 1 = married/living with a partner), living with children (0 = no; 1 = yes), and working full-/part-time (0 = part time; 1 = full time).

### **Analysis**

We used hierarchical regression analyses to test our hypotheses. Predictor variables were z-standardized before they were entered into the regression model. Interaction terms were computed on the basis of z-standardized component variables (Aiken & West, 1991). To confirm the moderation hypotheses, the coefficient for the interaction had to be significant and the pattern of the simple slopes had to be as predicted.

Changes in WFC and FWC were measured as standardized residual scores (for a similar approach see Schaufeli, Bakker, & Van Rhenen, 2009). These change scores were obtained by regressing Time 2 scores of WFC and FWC on the corresponding Time 1 scores (Smith & Beaton, 2008). Positive residual scores indicate an increase and negative scores a decrease in WFC or FWC. Compared with difference scores, using residual scores as indicators of change has the advantage of not inflating error (Cronbach & Furby, 1970).

### **Confirmatory Factor Analysis**

Before proceeding with hypothesis testing, we conducted a series of confirmatory factor analyses to examine the distinctiveness of WFC, FWC, leader support, family/friends support, and turnover intentions. We used Time 1 data to conduct these analyses. The hypothesized five-factor model fit the data satisfactorily ( $\chi^2(109) = 264.93, p < .001, CFI = .97, TLI = .96, RMSEA = .05$ ). All factor loadings were statistically significant ( $p < .001$ ). Standardized factor loadings were on average .71 for WFC, .72 for FWC, .83 for leader support, .81 for

family/friends support, and .87 for turnover intentions. We compared the hypothesized five-factor model with a series of alternative four-, three-, two-, and single-factor models. The hypothesized five-factor model fit the data significantly better than all alternative models. Hence, results indicate that our measures capture distinct constructs.

### Results

Table 1 shows descriptive statistics and correlations among the study variables. Most notably, WFC ( $r = .36, p < .01$ ) and FWC ( $r = .10, p < .01$ ) at Time 1 were significantly correlated with turnover intentions at Time 2.

#### Work-Family Conflict, Social Support, and Turnover Intentions

To test whether WFC at Time 1 or FWC at Time 1 was more important in predicting increases in turnover intentions (i.e., Hypotheses 1 and 2), we first regressed turnover intentions at Time 2 on the control variables and turnover intentions at Time 1 (see Table 2). Next, we entered WFC and FWC into the regression model. Whereas WFC predicted increases in turnover intentions ( $\beta = .08, p < .01$ ), FWC did not ( $\beta = .01, n.s.$ ). To evaluate the relative importance of WFC and FWC in predicting increases in turnover intentions, we computed  $R^2$ . WFC contributed to a significant increase in explained variance ( $\Delta R^2 = .01; p < .001$ ) over and above control variables, turnover intentions at Time 1, and FWC. In contrast, FWC failed to account for additional variance ( $\Delta R^2 = .00; n.s.$ ) over and above control variables, turnover intentions at Time 1, and WFC. These results are contrary to Hypothesis 1 and in line with Hypothesis 2. Thus, results lend support for the matching- rather than the cross-domain perspective.

Then, we tested the moderation hypotheses (i.e., Hypotheses 3a–4b). After the main effects of WFC, FWC, leader support, and family/friends support were entered into the regression model, we entered the four interaction terms. Neither the interaction term between FWC and leader support (Hypothesis 3a) nor the interaction term between WFC and family/friends support

(Hypothesis 3b) predicted turnover intentions. Thus, Hypotheses 3a and 3b could not be supported. However, the interaction term between WFC and leader support significantly predicted turnover intentions (Hypothesis 4a;  $\beta = -.05, p < .05$ ). To more closely examine this interaction effect, we plotted the simple slopes for one *SD* above and one *SD* below the mean of leader support (Aiken & West, 1991). Figure 1 illustrates that WFC is only positively related to increases in turnover intentions at low levels of leader support ( $\beta = .13, p < .001$ ), but not at high levels ( $\beta = .03, n.s.$ ). That is, in line with Hypothesis 4a, leader support buffered the relationship between WFC and turnover intentions.

Although we could not find a direct relationship between FWC and increases in turnover intentions, the interaction term between FWC and family/friends support significantly predicted turnover intentions (Hypothesis 4b;  $\beta = -.05, p < .05$ ). The plotted simple slopes (Figure 2) tentatively suggest that the relationship between FWC and turnover intentions is positive for low levels of family/friends support and negative for high levels of family/friends support. However, analyses revealed that the simple slopes were non-significant. Thus, although the simple slopes differed significantly from each other (as indicated by a significant interaction term), they did not differ from zero. In other words, the relationship between FWC and turnover intentions is significantly different for high versus low levels of family/friends support, but the relationship itself does not reach statistical significance. This pattern of results does not support Hypothesis 4b. Taken together, however, results of the moderation analyses tend to support the matching- rather than the cross-domain perspective.

### **Work-Family Conflict Change and Turnover Intentions**

Hypotheses 5a and 5b proposed that changes in WFC and FWC predict turnover intentions over and above baseline scores of WFC and FWC. To test these hypotheses, we first regressed turnover intentions at Time 2 on our control variables, turnover intentions at Time 1,

and baseline scores of WFC and FWC. Then, we entered WFC change and FWC change into the regression model. While WFC change ( $\beta = .09, p < .001$ ) significantly added to the prediction of turnover intentions, FWC change did not ( $\beta = .04, p = .11$ ). The positive relationship between WFC change and turnover intentions indicated that increases in WFC predicted increases in turnover intentions. Thus, results supported Hypothesis 5a but did not support Hypothesis 5b.

### **Reverse Relationships between Work-Family Conflict and Turnover Intentions**

Hypotheses 6a and 6b proposed that turnover intentions predict WFC and FWC. To test whether turnover intentions predict WFC, we regressed WFC at Time 2 on the control variables, WFC at Time1, and turnover intentions at Time 1. Results revealed that turnover intentions predicted WFC ( $\beta = .05, p < .05$ ). Thus, Hypothesis 6a was supported by the data. To test whether turnover intentions predict FWC, we regressed FWC at Time 2 on the control variables, FWC at Time1, and turnover intentions at Time 1. In support of Hypothesis 6a, results showed that turnover intentions predicted FWC ( $\beta = .05, p < .01$ ). Thus, our results suggest that there are reverse relationships, such that turnover intentions predict increases in WFC and FWC.

### **Discussion**

Our longitudinal study examined the interplay between the work-family interface and turnover intentions, with a special emphasis on matching- versus cross-domain relationships. Results revealed that WFC predicted an increase in turnover intentions five months later, whereas FWC did not predict turnover intentions. The relationship between WFC and increases in turnover intentions was buffered by work-family specific leader support but not by work-family specific support from family and friends. Thus, social support mitigated the relationship of WFC to turnover intentions when it came from the same domain (i.e., work) as the conflict. Additionally, this study shed some light on WFC and FWC as dynamic constructs and found that increases in WFC predicted increases in turnover intentions over and above static baseline scores

of WFC and FWC. Increases in FWC, however, did not predict increases in turnover intentions. Taken together, these findings are in line with the matching-perspective rather than the cross-domain view. Finally, we tested whether there are reverse relationships between WFC, FWC, and turnover intentions and found that turnover intentions predicted increases in WFC and FWC five months later.

### **Theoretical Implications**

This study has important theoretical implications. First, by simultaneously regressing turnover intentions on WFC and FWC, we accounted for the shared variance of these two constructs and were able to compare the cross-domain versus the matching perspective for the relationships of WFC and FWC with turnover intentions. The result that WFC predicted increases in turnover intentions but FWC did not is in line with the matching-perspective rather than the cross-domain view. Other recent studies have also challenged the cross-domain perspective. For example, in a recent meta-analysis on domain-specific satisfaction, WFC had a stronger relationship with job satisfaction than with family satisfaction, and FWC had a stronger relationship with family satisfaction than with job satisfaction (Shockley & Singla, 2011). It is a fruitful avenue for future research to further examine the relative merits of the matching and the cross-domain perspectives and address the circumstances under which matching versus cross-domain relationships are stronger.

Second, we expanded the debate about matching- versus cross-domain relationships by testing the relative merits of these two perspectives regarding the buffering role of leader and family/friends support in the relationship of WFC and FWC to turnover intentions. Previous research on matching- versus cross-domain relationships mainly focused on direct relationships of work and family support with WFC and FWC (Byron, 2005). However, as Greenhaus and Beutell (1985) proposed, social support is not only directly related to work-family conflict but

also buffers the relationship between work-family conflict and outcome variables. Regarding the buffering role of social support, we are unaware of studies testing the relative merits of cross-domain versus matching-relationships. Our results revealed that work-family specific leader support mitigated the WFC-turnover intentions relationship. Thus, a major contribution of our study derives from our finding that work-family specific social support is most effective in buffering the relationship of WFC to turnover intentions when the support stems from the same domain as the conflict (i.e., work). Again, this pattern of results supports the matching-perspective rather than the cross-domain principle.

Third, we contributed to a better understanding of work-family conflict as a dynamic construct by examining the relationship of WFC change and FWC change to turnover intentions. Although work and family interactions reflect one of the most dynamic processes experienced by an employee, previous studies mainly addressed static levels of work-family conflict (Casper et al., 2007). We found that WFC change uniquely explained changes in turnover intentions over and above baseline scores of WFC and FWC. FWC change, however, was unrelated to changes in turnover intentions. Again, these findings lend support for the matching- rather than the cross-domain perspective. Additionally, these findings extend extant models of the work-family interface. While existing models (e.g., Frone et al., 1997) failed to consider the dynamics of work-family conflict, our results demonstrate that changes in WFC play a unique and important role in contributing to employees' inclination to stay at or leave their organization.

Finally, although previous research has assumed the direction of the relationship between work-family conflict and turnover intentions from theoretical models, empirical tests of the direction of this relationship are scant at best. Due to the longitudinal design of our study, we could test reverse relationships and examined whether turnover intentions predicted increases in WFC and FWC. In contrast to a prior study (Kelloway et al., 1999), we used a larger sample and

found, in support of reverse relationships, that turnover intentions predicted increases in WFC and FWC. Thus, these results challenge the common assumption that WFC and FWC antecede turnover intentions in a unidirectional way and support the notion of a vicious cycle. Future models of work-family conflict should acknowledge that not only WFC and FWC are potential antecedents of turnover intentions but that turnover intentions can also be a potential antecedent of WFC and FWC.

In general, the relationships we found were rather small; however, it is important to note that the magnitude of effects in this study is within the range of effects reported in other studies controlling for baseline scores, for example in studies on job attitudes and performance (Riketta, 2008) and job demands and emotional exhaustion (Sonnentag, Binnewies, & Mojza, 2010).

### **Practical Implications**

Our findings suggest important practical implications for organizations. Perhaps the most obvious implication is that organizations may reduce employees' turnover intentions by reducing their WFC. Organizations may want to offer formal work-family policies such as flexible work schedules and on-site child care that assist employees in juggling work and family demands (Ryan & Kossek, 2008; Sutton & Noe, 2005). Employees may also benefit from intervention programs targeted at improving specific skills for handling work and family demands such as time-management skills and the use of selection, optimization, and compensation behaviors (Baltes & Heydens-Gahir, 2003). A second implication is that organizations could alleviate the relationship between work-family conflict and turnover intentions by fostering work-family specific social support. In this regard, our findings offer differential suggestions. Specifically, to alleviate the relationship between WFC and turnover intentions, organizations should foster work-family specific leader support. For example, through official organizational guidelines, leaders could be encouraged to provide emotional and instrumental support when their

employees' experience WFC. Leaders could also discuss work–family issues with their employees and inform them of supportive organizational policies. Finally, our findings also suggest that organizational surveys using only one point in time may miss important information regarding their employee's turnover intentions (Chen et al., 2011). The results of our study suggest that organizations can identify potential quitters with greater accuracy if they survey employees at multiple points in time to identify systematic changes in WFC.

### **Limitations and Future Research**

Our study has several limitations that highlight fruitful avenues for future research. First, we examined turnover intentions rather than actual turnover behaviors in this research. Although turnover intentions are one of the most powerful predictors of actual turnover (Griffeth et al., 2000), additional research linking WFC, FWC and changes in these two constructs to actual turnover is needed. Second, because all our measures are based on self-reports, common method bias may have inflated the observed relationships. Due to the use of two measurement waves and the pattern of interactions we found, we do not believe that common method bias is a major concern in the present study. Third, although we used longitudinal data to test our model, we cannot draw strong causal inferences from this research. To establish causality between WFC, FWC and turnover intentions, experiments are required. Finally, it would be worthwhile to examine the relationship of WFC change and FWC change to other outcome variables such as job attitudes (e.g., job satisfaction and organizational commitment) or work behaviors (e.g., organizational citizenship behaviors and counterproductive work behaviors). Thus, future research is needed to further examine the nomological network of WFC change and FWC change.

### References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allen, D. G., Bryant, P. C., & Vardaman, J. M. (2010). Retaining talent: Replacing misconceptions with evidence-based strategies. *The Academy of Management Perspectives*, 24(2), 48-64. doi: 10.5465/AMP.2010.51827775
- Allen, T. D., Herst, D. E. L., Bruck, C. S., & Sutton, M. (2000). Consequences associated with work-to-family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology*, 5(2), 278-308. doi: 10.1037//1076-899B.5.2.278
- Amstad, F. T., Meier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A meta-analysis of work-family conflict and various outcomes with a special emphasis on cross-domain versus matching-domain relations. *Journal of Occupational Health Psychology*, 16(2), 151-169. doi: doi: 10.1037/a0022170
- Baltes, B. B., & Heydens-Gahir, H. A. (2003). Reduction of work-family conflict through the use of selection, optimization, and compensation behaviors. *Journal of Applied Psychology*, 88(6), 1005-1018. doi: 10.1037/0021-9010.88.6.1005
- Boyar, S. L., Maertz Jr, C. P., Pearson, A. W., & Keough, S. (2003). Work-family conflict: A model of linkages between work and family domain variables and turnover intentions. *Journal of Managerial Issues*, 175-190.
- Byron, K. (2005). A meta-analytic review of work-family conflict and its antecedents. *Journal of Vocational Behavior*, 67(2), 169-198. doi: 10.1016/j.jvb.2004.08.009
- Carlson, D. S., & Perrewé, P. L. (1999). The role of social support in the stressor-strain relationship: An examination of work-family conflict. *Journal of Management*, 25(4), 513-540. doi: 10.1177/014920639902500403

- Carr, J. C., Boyar, S. L., & Gregory, B. T. (2008). The Moderating Effect of Work-Family Centrality on Work-Family Conflict, Organizational Attitudes, and Turnover Behavior. *Journal of Management, 34*(2), 244-262. doi: 10.1177/0149206307309262
- Casper, W. J., Eby, L. T., Bordeaux, C., Lockwood, A., & Lambert, D. (2007). A review of research methods in IO/OB work-family research. *Journal of Applied Psychology, 92*(1), 28-43. doi: 10.1037/0021-9010.92.1.28
- Chen, G., Ployhart, R. E., Thomas, H. C., Anderson, N., & Bliese, P. D. (2011). The power of momentum: A new model of dynamic relationships between job satisfaction change and turnover intentions. *Academy of Management Journal, 54*(1), 159-181. doi: 10.5465/AMJ.2011.59215089
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, S., Gottlieb, B. H., & Underwood, L. G. (2000). Social relationships and health. In S. Cohen, L. G. Underwood & B. H. Gottlieb (Eds.), *Social support measurement and intervention: A guide for health and social scientists* (pp. 3-25). New York, NY: Oxford University Press.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*(2), 310-357. doi: 10.1037/0033-2909.98.2.310
- Cronbach, L. J., & Furby, L. (1970). How we should measure "change": Or should we? *Psychological Bulletin, 74*(1), 68-80. doi: 10.1037/h0029382
- De Croon, E. M., Sluiter, J. K., Blonk, R. W., Broersen, J. P., & Frings-Dresen, M. H. (2004). Stressful work, psychological job strain, and turnover: A 2-year prospective cohort study of truck drivers. *Journal of Applied Psychology, 89*(3), 442-454. doi: 10.1037/0021-9010.89.3.442

- Eby, L. T., Casper, W. J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005). Work and family research in IO/OB: Content analysis and review of the literature (1980-2002). *Journal of Vocational Behavior, 66*(1), 124-197. doi: 10.1016/j.jvb.2003.11.003
- Frone, M. R., Yardley, J. K., & Markel, K. S. (1997). Developing and testing an integrative model of the work-family interface. *Journal of Vocational Behavior, 50*(2), 145-167. doi: 10.1006/jvbe.1996.1577
- Grandey, A. A., & Cropanzano, R. (1999). The conservation of resources model applied to work-family conflict and strain. *Journal of Vocational Behavior, 54*(2), 350-370. doi: 10.1006/jvbe.1998.1666
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review, 10*(1), 76-88.
- Greenhaus, J. H., Parasuraman, S., & Collins, K. M. (2001). Career involvement and family involvement as moderators of relationships between work-family conflict and withdrawal from a profession. *Journal of Occupational Health Psychology, 6*(2), 91-100. doi: 10.1037/1076-8998.6.2.91
- Griffeth, R. W., Hom, P. W., & Gaertner, S. (2000). A meta-analysis of antecedents and correlates of employee turnover: Update, moderator tests, and research implications for the next millennium. *Journal of Management, 26*(3), 463-488. doi: 10.1177/014920630002600305
- Hancock, J. I., Allen, D. G., Bosco, F. A., McDaniel, K. R., & Pierce, C. A. (2011). Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management, 37*(1), 1-20. doi: 10.1177/0149206311424943
- Haynes, C. E., Wall, T. D., Bolden, R. I., Stride, C., & Rick, J. E. (1999). Measures of perceived work characteristics for health services research: Test of a measurement model and

- normative data. *British Journal of Health Psychology*, 4(3), 257-275. doi: 10.1348/135910799168614
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513-524. doi: 10.1037/0003-066X.44.3.513
- Holtom, B. C., Mitchell, T. R., Lee, T. W., & Eberly, M. B. (2008). Turnover and retention research: A glance at the past, a closer review of the present, and a venture into the future. *The Academy of Management Annals*, 2(1), 231-274. doi: 10.1080/19416520802211552
- Hom, P. W., & Kinicki, A. J. (2001). Toward a greater understanding of how dissatisfaction drives employee turnover. *Academy of Management Journal*, 44(5), 975-987. doi: 10.2307/3069441
- House, J. S. (1981). *Job stress and social support*. Reading, MA: Addison-Wesley.
- Kelloway, E. K., Gottlieb, B. H., & Barham, L. (1999). The source, nature, and direction of work and family conflict: A longitudinal investigation. *Journal of Occupational Health Psychology*, 4(4), 337-346. doi: 10.1037/1076-8998.4.4.337
- Kirchmeyer, C., & Cohen, A. (1999). Different strategies for managing the work/non-work interface: A test for unique pathways to work outcomes. *Work & Stress*, 13(1), 59-73. doi: 10.1080/026783799296192
- Kossek, E. E., Pichler, S., Bodner, T., & Hammer, L. B. (2011). Workplace social support and work-family conflict: A meta-analysis clarifying the influence of general and work-family-specific supervisor and organization support. *Personnel Psychology*, 64(2), 289-313. doi: 10.1111/j.1744-6570.2011.01211.x
- Lazarus, R. S. (1991). Psychological stress in the workplace. *Journal of Social Behavior and Personality*, 6(7), 1-13.

- Mitchell, T. R., & James, L. R. (2001). Building better theory: Time and the specification of when things happen. *The Academy of Management Review*, *26*(4), 530-547. doi: 10.5465/AMR.2001.5393889
- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict scales. *Journal of Applied Psychology*, *81*(4), 400-410. doi: 10.1037/0021-9010.81.4.400
- Odle-Dusseau, H. N., Herleman, H. A., Britt, T. W., Moore, D. D., Castro, C. A., & McGurk, D. (2013). Family-supportive work environments and psychological strain: A longitudinal test of two theories. *Journal of Occupational Health Psychology*, *18*(1), 27-36. doi: 10.1037/a0030803
- Peeters, M. C. W., ten Brummelhuis, L. L., & van Steenbergen, E. F. (2013). Consequences of combining work and family roles. In J. G. Grzywacz & E. Demerouti (Eds.), *New frontiers in work and family research* (pp. 93-109). Sussex: Psychology Press.
- Ricketta, M. (2008). The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology*, *93*(2), 472-481. doi: 10.1037/0021-9010.93.2.472
- Ryan, A. M., & Kossek, E. E. (2008). Work-life policy implementation: Breaking down or creating barriers to inclusiveness? *Human Resource Management*, *47*(2), 295-310.
- Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement and sickness absenteeism. *Journal of Organizational Behavior*, *30*(7), 893-917. doi: 10.1002/job.595
- Shaw, J. D., Gupta, N., & Delery, J. E. (2005). Alternative conceptualizations of the relationship between voluntary turnover and organizational performance. *Academy of Management Journal*, *48*(1), 50-68. doi: 10.5465/AMJ.2005.15993112

- Shockley, K. M., & Singla, N. (2011). Reconsidering work-family interactions and satisfaction: A meta-analysis. *Journal of Management*, 37(3), 861-886. doi: 10.1177/0149206310394864
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology*, 95(5), 965-976. doi: 10.1037/a0020032
- Sutton, K. L., & Noe, R. A. (2005). Family-friendly programs and work-life integration: More myth than magic? In E. E. Kossek & S. J. Lambert (Eds.), *Work and life integration: Organizational, cultural, and individual perspectives* (pp. 151-169). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers.
- Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54(2), 314-334. doi: 10.1006/jvbe.1998.1661
- Wang, M., Liu, S., Zhan, Y., & Shi, J. (2010). Daily work-family conflict and alcohol use: Testing the cross-level moderation effects of peer drinking norms and social support. *Journal of Applied Psychology*, 95(2), 377-386. doi: 10.1037/a0018138

Table 1

*Descriptive Statistics and Correlations among Variables*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Age	2.61	1.03	--															
2. Gender	0.79	0.41	.12	--														
3. Living with a partner	0.84	0.37	.22	.02	--													
4. Living with children	0.50	0.50	.29	.14	.41	--												
5. Management position	2.59	0.54	.34	.20	.14	.20	--											
6. Organizational tenure	3.44	1.22	.71	.12	.18	.20	.22	--										
7. Working full-/part-time	0.92	0.28	-.08	.38	-.04	-.15	.10	-.10	--									
8. WFC (t 1)	2.98	0.91	-.05	.06	.01	-.01	.18	-.01	.17	--								
9. WFC (t 2)	2.94	0.88	-.03	.02	.04	.00	.18	-.01	.14	.75	--							
10. ΔWFC	0.00	0.58	.01	-.03	.04	.01	.07	.01	.02	.00	.66	--						
11. FWC (t 1)	1.57	0.62	-.06	-.04	-.01	.07	-.05	-.07	-.10	.19	.14	-.01	--					
12. FWC (t 2)	1.59	0.60	-.01	-.04	.04	.13	-.05	-.02	-.13	.16	.23	.17	.66	--				
13. ΔFWC	0.00	0.45	.04	-.02	.06	.10	-.02	.03	-.08	.05	.19	.23	.00	.75	--			
14. Support leader (t 1)	3.61	0.97	-.05	.08	-.05	-.01	.04	-.10	.01	-.33	-.29	-.07	-.06	-.05	-.02	--		
15. Support family/friends (t 1)	4.36	0.72	-.11	-.07	.05	-.03	-.01	-.05	-.01	-.12	-.10	-.02	-.08	-.10	-.06	.20	--	
16. Turnover intentions (t 1)	1.53	0.86	-.18	.03	-.05	-.10	-.01	-.20	.07	.34	.30	.07	.09	.12	.08	-.14	-.08	--
17. Turnover intentions (t 2)	1.64	0.94	-.17	.01	-.05	-.10	.02	-.21	.06	.36	.37	.15	.10	.16	.12	-.19	-.13	.78

*Note.* N = 665. Correlations  $\geq .08$  are significant with  $p > .05$ ; correlations  $\geq .10$  are significant with  $p > .01$ . Age (1 < 31 years; 2 = 31-40 years; 3 = 41-50 years; 4 = 51-60 years; 5 > 60 years), management position (0 = no supervisory position; 1 = lower management; 2 = middle and upper management), and organizational tenure (1 < 1 year; 2 = 1-5 years; 3 = 6-15 years; 4 = 16-25 years; 5 > 25 years) were categorically measured. Gender (0 = male; 1 = female), living with a partner (0 = not married/no partner; 1 = married/living with a

partner), living with children (0 = no; 1 = yes), and working full-/part-time (0 = part time; 1 = full time) are dummy variables. WFC = work-to-family conflict, FWC = family-to-work conflict, t = measurement wave,  $\Delta$  = t1-t2 residual change score.

Table 2  
Main and Moderation Effects of WFC, FWC, and Social Support on Turnover Intentions (Time 2)

Variable	Model 1		Model 2		Model 3		Model 4	
	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>	$\beta$	<i>t</i>
Age	-.006	-0.191	.007	0.199	-.004	-0.122	-.010	-0.310
Gender	-.024	-0.389	-.011	-0.181	-.006	-0.091	-.008	-0.125
Living with a partner	-.009	-0.134	-.011	-0.166	-.006	-0.093	-.013	-0.190
Living with children	-.017	-0.320	-.024	-0.447	-.026	-0.495	-.035	-0.676
Management position	.086	1.865	.051	1.087	.069	1.481	.072	1.553
Tenure	-.048	-1.787	-.058	-2.156*	-.062	-2.302*	-.056	-2.092*
Working full-/part-time	-.010	-0.112	-.066	-0.702	-.062	-0.662	-.079	-0.857
Turnover intentions (Time 1)	.718	30.414***	.793	27.572***	.676	27.467***	.668	-27.140***
WFC (Time 1)			.104	4.086***	.079	2.967**	.075	2.802**
FWC (Time 1)			.007	0.281	.005	0.204	.000	-0.014
Support leader (Time 1)					-.058	-2.340*	-.054	-2.167*
Support family/friends (Time 1)					-.048	-2.046*	-.058	-2.445*
WFC $\times$ Support leader							-.047	-2.147*
WFC $\times$ Support family/friends							-.019	-0.813
FWC $\times$ Support leader							.010	0.455
FWC $\times$ Support family/friends							-.053	-2.212*
<i>R</i> <sup>2</sup>	.610		.621		.628		.635	
$\Delta R^2$			.011***		.007**		.007*	

Note. *N* = 665.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

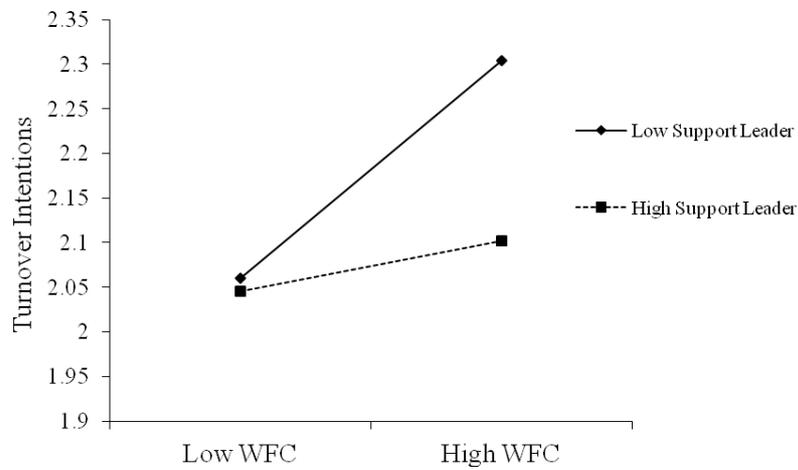


Figure 1. Interaction effect between WFC and leader support on turnover intentions. WFC = work-to-family conflict.

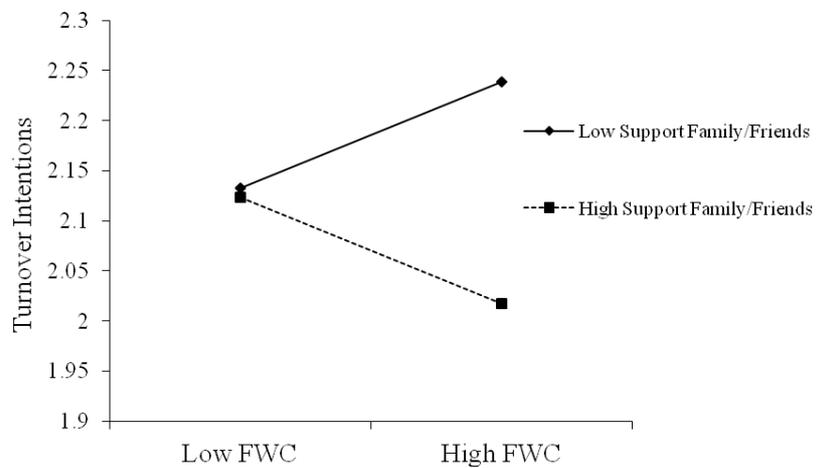


Figure 2. Interaction effect between FWC and support from family members and friends on turnover intentions. FWC = family-to-work conflict.

## Family–work conflict and job performance: A diary study of boundary conditions and mechanisms

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### Summary

In this study, we used a within-person daily research paradigm to examine the relationship between daily family–work conflict (FWC) and daily job performance. On the basis of theory on dynamic behavior, we hypothesized that concentration serves as a mechanism through which daily FWC impairs daily job performance. We further predicted that psychological detachment from work during time-off (i.e., mentally switching off) buffers the negative relationship between daily FWC and daily job performance. Ninety-five employees completed daily surveys over one workweek. Multilevel modeling results showed that daily FWC was negatively associated with daily job performance and that concentration mediated this relationship. Furthermore, general psychological detachment, but not daily psychological detachment, buffered the negative relationship between daily FWC and daily job performance. The current findings suggest that daily FWC has negative performance implications and that the general level rather than the daily level of psychological detachment from work helps alleviate the negative implications. Copyright © 2013 John Wiley & Sons, Ltd.

**Keywords:** family–work conflict; job performance; psychological detachment from work; concentration; diary study

Job performance refers to employees' behaviors at work that support organizational goals (Motowildo, Borman, & Schmit, 1997). Most previous studies focused on job performance as a static, trait-like construct and examined its relationship with other more static variables such as the “Big Five” personality dimensions (Barrick & Mount, 1991). More recently, however, researchers acknowledged that short-term (e.g., from day to day) within-person fluctuations in job performance are substantial and meaningful (Beal, Weiss, Barros, & MacDermid, 2005). Indeed, previous studies estimated that roughly half the variance in job performance is within individuals (Dalal, Lam, Weiss, Welch, & Hulin, 2009). Understanding how these short-term fluctuations occur is important especially because managers may be well-advised to deal with smaller performance issues before they accumulate.

Some of the performance fluctuations may arise because employees' family responsibilities interfere with their work duties, which is typically called family–work conflict (FWC; Greenhaus & Beutell, 1985). Similar to research demonstrating that job performance fluctuates daily, evidence has demonstrated that FWC also fluctuates daily (e.g., Wang, Liu, Zhan, & Shi, 2010). Addressing whether, why, and when daily FWC is associated with daily job performance holds the potential of an improved understanding of employees' job performance and may show pathways to facilitate it.

Our study addresses this issue. Linking FWC to theory on dynamic behavior (Beal et al., 2005), we examine whether daily FWC is associated with daily job performance. Additionally, by addressing daily concentration as a mediator and psychological detachment from work during time-off (i.e., mentally switching off) as a moderator, we examine mechanisms and boundary conditions of the within-person relationship between daily FWC and daily job performance. Figure 1 shows our conceptual model.

We make three important contributions to the literature. First, we add to studies on the FWC–performance linkage. Although previous studies (e.g., Demerouti, Taris, & Bakker, 2007; Witt & Carlson, 2006) focusing on chronic work

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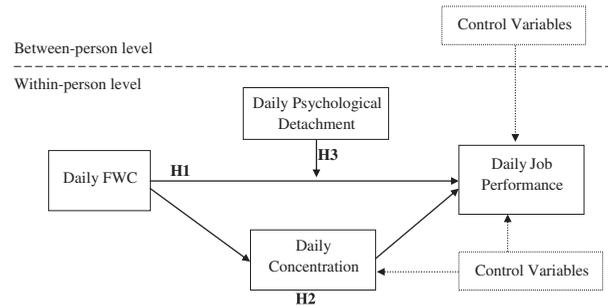


Figure 1. Proposed conceptual model and hypotheses. H, hypothesis; FWC, family–work conflict

conditions addressed this relationship from a static between-person perspective, we go beyond prior research by taking a dynamic within-person account to examine short-term relationships. Although within-person and between-person studies often lead to congruent results, these two approaches relate to different research questions (Cervone, 2005; Dalal et al., 2009). At the between-person level, the question is whether people who generally experience a high (vs. low) level of FWC show lower levels of job performance. At the within-person level, the question is whether a person's performance fluctuations systematically covary with his or her FWC fluctuations.

We agree with Dalal et al. (2009) that similarities and differences between levels contribute to theory development. Similarities testify to “the parsimony and breadth of theories” (Chen, Bliese, & Mathieu, 2005, p. 376) and allow researchers to export nomological networks for use at multiple levels. Differences, however, require researchers to build distinct nomological networks at different levels. Thus, given that FWC and job performance show substantial within-person variation (which would be considered measurement error in a between-person design), examining their nomological network and the relationship between these constructs is required at the within-person level.

Second, by examining whether impaired concentration mediates the relationship between daily FWC and daily job performance, we address the question of why daily FWC negatively relates to daily job performance. As previous studies mainly addressed direct relationships between FWC and job performance (e.g., Frone, Yardley, & Markel, 1997), little is known about the mechanisms that underlie this relationship. The Beal et al. (2005) model assumes the within-person fluctuations of job performance to be in synchrony with employees' levels of concentration at work. By examining concentration at work as a potential mediator of the relationship between daily FWC and daily job performance, we address a mechanism derived from theoretical models on dynamic performance.

Third, by examining psychological detachment from work during time off for its moderating effect on the association between FWC and job performance, we advance the understanding of boundary conditions for this association (Witt & Carlson, 2006). Recently, it was suggested that the recovery experience of psychological detachment from work during time off may influence reactions to FWC (Moreno-Jiménez et al., 2009), but empirical tests have been limited to psychological strain and life satisfaction as outcome variables and have failed to examine whether psychological detachment from work buffers the negative association between FWC and job performance. Psychological detachment from work during time off is likely to mitigate the performance implications of daily FWC, because the personal resources restored through psychological detachment (Sonnetag, Binnewies, & Mojza, 2010) can help prevent decreases in performance from FWC. By addressing psychological detachment from work as a potential moderator of the within-person relationship between daily FWC and daily job performance, we extend the literature on boundary conditions of this relationship and offer practical implications. If psychological detachment from work can be shown to buffer the relationship between daily FWC and daily job performance, employees should be encouraged to develop strategies for detaching themselves from work during time off (Kreiner, Hollensbe, & Sheep, 2009; Sonnetag et al., 2010).

### *Family–work conflict*

Work–family conflict generally refers to the extent to which work and family roles interfere with one another and is typically defined as “a type of inter-role conflict that occurs as a result of incompatible role pressures from the work and family domains” (Greenhaus & Beutell, 1985, p. 77). The relationship between work and family is posited to be bidirectional: Work can interfere with family (work–family conflict, WFC), and family can interfere with work (FWC; Frone et al., 1997). This conceptualization is primarily based on role theory and the scarcity of resources hypothesis, which proposes that demands of one role deplete personal resources, such as time and physical or mental energy, leaving insufficient resources to allocate to other roles (Edwards & Rothbard, 2000; Goode, 1960; Marks, 1977). The influential model of Frone et al. (1997) exemplifies this approach. According to the model, family-related demands (e.g., parental overload and parenting time) are associated with more FWC, which in turn impairs work behaviors such as job performance.

### *Dynamic job performance*

As an indicator of job performance, we use task performance, defined as behaviors “that are recognized by the formal reward systems and are part of the requirements as described in job descriptions” (Williams & Anderson, 1991, p. 606). Most previous studies focused on between-person differences in job performance and examined its relationship with trait-like variables such as self-monitoring personality (Day, Shleicher, Unckless, & Hiller, 2002), core self-evaluations (Judge & Bono, 2001), and positive and negative affectivity (Kaplan, Bradley, Luchman, & Haynes, 2009).

Unlike those prior studies, we address job performance as a dynamic construct that changes within individuals over short periods. The Beal et al. (2005) model provides a theoretical basis for examining short-term within-person changes in job performance. According to the model, short-term performance depends on resource allocation. The term *resource* primarily refers to mental reserves, such as cognitive and self-regulatory resources. When an individual allocates sufficient mental resources to the task at hand, he or she can deliver his or her maximum performance. In contrast, off-task attentional demands can pull an individual’s mental resources away from the task. As a consequence, an individual cannot allocate all available resources to the task, and his or her performance is likely to suffer at that point in time. As Beal et al. (2005, p. 1056) contended: “To the extent that attention, and thereby resources, is focused on the work, performance will be facilitated (Hirst & Kalmar, 1987; Kahneman, 1973). To the extent that attention and resources are focused elsewhere, performance will suffer (Schneider & Fisk, 1982; Speier, Valacich, & Vessey, 1999).”

The model further proposes that resource allocation depends on resource levels: high mental resource levels enable individuals to allocate more resources to the task. Thus, for successful dynamic performance, individuals must not be distracted by off-task attentional demands and must have high levels of resources available.

### *Family–work conflict, concentration, and job performance*

We argue that daily FWC impairs daily job performance because it keeps employees from fully concentrating on their work tasks. Concentration is a state characterized by focusing mental resources toward work tasks. Whereas the only study on FWC, concentration, and job performance we are aware of focused on the between-person level (Demerouti et al., 2007), we examine the relationships between these constructs at the within-person level. Although analogous constructs can have similar relationships at different levels, they may operate differently. For example, general FWC may affect general job performance primarily via a change in structural, more stable personal resources such as health and mental resilience. Daily FWC, however, may affect daily job performance via changes in volatile personal resources such as concentration and mood (ten Brummelhuis & Bakker, 2012).

In terms of the Beal et al. (2005) model, daily FWC may impair daily concentration because the off-task attentional family demands associated with daily FWC consume cognitive and self-regulatory resources, both of

which are limited. Regarding cognitive resources, scholars generally agree that a central resource that is taxed by multiple activities limits cognitive processes (e.g., Kahneman, 1973; Pashler, 1994). If an individual performing a central task is burdened with distracting stimuli that require processing power, his or her performance on the central task declines (Schneider & Fisk, 1982). If the burden is removed, the individual returns to the initial processing capacity. We argue that daily FWC is likely to require processing power. Imagine, for instance, an employee who answers phone calls from home or ruminates over family problems while at work. These distracting stimuli consume cognitive resources that cannot be directed simultaneously toward the work task. As a result, concentration at work suffers.

Regarding self-regulatory resources, self-control requires a particular regulatory resource (Muraven & Baumeister, 2000). Each time individuals exert self-control, they deplete part of this regulatory resource, making subsequent regulation more difficult. We argue that when an individual experiences high levels of FWC, his or her self-regulatory resources are consumed more quickly and are therefore unavailable for maintaining concentration on the work task. FWC consumes self-regulatory resources in several ways. First, daily FWC can disrupt achievement of the focal goal and disorganize or at least fragment ongoing activity at work. As a result, employees must exert self-control in adjusting and monitoring their goal-directed behavior. Second, experiencing FWC makes people feel negative emotions at work (Judge, Ilies, & Scott, 2006), but they are required to exert self-control in regulating these negative emotions (Muraven & Baumeister, 2000). In sum, we argue that daily FWC consumes cognitive and self-regulatory resources, leading to lower levels of concentration at work.

However, concentrating on the task is crucial for successful daily job performance; individuals perform their best when they allocate their maximum resources to the task (Beal et al., 2005). By focusing attention and concentration on task-relevant information, employees ensure they are using all their resources as efficiently as possible (Beal et al., 2005; Demerouti et al., 2007). That is, on days when an individual fully concentrates on the task, he or she efficiently allocates all available resources to the work task. In contrast, if an individual cannot concentrate on the task at hand, performance will suffer. Taken together, we argue that the off-task attentional demands associated with daily FWC pull attention from the task. As a result, an individual's performance suffers. We therefore predict the following.

*Hypothesis 1:* Daily FWC is negatively related to daily job performance.

*Hypothesis 2:* Concentration mediates the negative relationship between daily FWC and daily job performance.

### *Moderation effects of psychological detachment from work*

Psychological detachment from work during time off refers to “the individual's sense of being away from the work situation” (Etzion, Eden, & Lapidot, 1998, p. 579). This implies that one is neither physically working nor mentally preoccupied with job-related issues during after-work hours (Sonnentag et al., 2010). Psychological detachment from work is considered an important part of the recovery process (Sonntag & Fritz, 2007), a recuperation process that alleviates negative effects of demands and reduces short-term strain (Craig & Cooper, 1992). Psychological detachment from work has been shown to help restore lost personal resources and/or gain new ones. For example, a within-person study over four consecutive workweeks showed that psychological detachment from work during the weekend predicted the state of recovery (i.e., feeling physically and mentally refreshed) at the beginning of the next workweek (Binnewies, Sonntag, & Mojza, 2010).

Most studies focus on direct relationships between psychological detachment from work and outcome variables (e.g., Fritz, Yankelevich, Zarubin, & Barger, 2010). More recently, studies have begun to address psychological detachment from work as a moderator, arguing that the negative relationship between stressors and well-being is attenuated for employees who show high (vs. low) levels of psychological detachment from work during time off (e.g., Moreno-Jiménez et al., 2009; Sonntag et al., 2010). Their results suggest that high levels of psychological detachment from work alleviate negative reactions to work stress.

We argue that high (vs. low) levels of daily psychological detachment from work during time off attenuate the negative relationship between daily FWC and daily job performance. Employees who detach mentally from work during time off can replenish resources, for example, by spending time on reenergizing activities (Sonnentag et al., 2010). The underlying logic stems mainly from the notion of effort and recovery (Meijman & Mulder, 1998), which explains that effort at work can generate negative load reactions such as strain and fatigue. Furthermore, recovery, which denotes a time when the functional systems challenged during work go untaxed, can reverse negative load reactions. Psychological detachment from work implies that one is not mentally preoccupied with work and thus should be especially relevant for replenishing mental resources.

The restoration of mental resources through daily psychological detachment from work should help employees compensate for the mental resources consumed by daily FWC, thereby avoiding reduced performance. When maximum mental resources are available, employees should be able to efficiently react to daily FWC and minimize negative performance implications. For example, if an employee who has high mental resources is interrupted at work by a phone call from a family member, that employee should be able to quickly switch focus back to the work task (Monsell, 2003). In contrast, an employee who cannot detach from work during time off and continues thinking about work-related issues will have even further drained mental resources. As a consequence, fewer resource reserves will be available at work, and the employee should show the greatest performance decrements when facing daily FWC. We suggest the following.

*Hypothesis 3:* Daily psychological detachment from work during time off moderates the relationship between daily FWC and daily job performance, such that the negative relationship is weaker for those who experience high (vs. low) levels of daily psychological detachment from work.

## Method

### *Sample and procedure*

To examine the hypotheses, we used a within-person daily research design. Compared with between-person designs, within-person paradigms reduce retrospective bias, measurement error, and biased self-serving attributions (Bolger, Davis, & Rafaeli, 2003; Maertz & Boyar, 2011). Participants consisted of employees recruited from an internationally operating German company. On our behalf, the head of a human resources unit emailed all 230 unit members, encouraging participation. Although participation was encouraged, it was completely voluntary. The email described the purpose and procedure of our research project and contained a link granting access to a baseline survey on demographic information. One week before the daily surveys started, employees who agreed to participate completed a baseline questionnaire on demographic information. Then, participants were asked to fill out two surveys each day during the following workweek. All data were collected online using electronic surveys. Monday through Friday of the following workweek, we sent daily morning and evening emails containing links to the start-of-workday and end-of-workday surveys, respectively. To account for varying work schedules, participants could fill out their start-of-workday survey from 6:00 AM to 10:00 AM and their end-of-workday survey from 3:00 PM to 8:00 PM. At the beginning of work, they reported their level of psychological detachment from work during the previous evening. Surveys at the end of the workday assessed FWC, concentration, and job performance.

Of 230 human resources unit members, 172 completed the baseline survey, giving us an initial response rate of 75 percent. Of this sample, 24 individuals did not respond to any of the daily morning or evening surveys, and thus, their data were not usable. Consistent with other diary studies, we removed participants who did not have at least three matched sets of daily morning and daily evening surveys (e.g., Dimotakis, Scott, & Koopman, 2011).

The final sample consisted of 95 employees with 390 days (i.e., on average 4.1 days per employee) reflecting 55 percent of the individuals who completed the baseline survey. This response rate was lower than in some other diary

studies, likely because we did not use an “opt in” strategy (i.e., employees first commit themselves to take part in the diary study and are thus more likely to respond) and did not pay participants for each response. Of the final sample, 59 percent were female, and 41 percent male. Fifteen percent were 30 years old or younger; 27 percent were between 31 and 40 years old; 36 percent were between 41 and 50 years old; 17 percent were between 51 and 60 years old; 5 percent were 61 years old or older. Fifty-seven percent held supervisory positions, and 86 percent indicated they worked full time. Eighteen percent had a tenure of 5 years or less; 36 percent had a tenure between 6 and 15 years; 30 percent had a tenure between 16 and 25 years; and 17 percent had a tenure of 26 years or more. Ninety-eight percent had completed secondary education (64 percent held college or university degrees; 34 percent had completed an apprenticeship). Eighty-five percent were married or in relationships, and 46 percent had children.

Differences on demographic variables were tested between respondents who were excluded and those who fulfilled our inclusion criteria. Compared with respondents who met our inclusion criteria, respondents who were excluded indicated more often that they worked part time (36 vs. 13 percent;  $\chi^2(1) = 14.16, p < .001$ ) and shared a household with children (61 vs. 46 percent;  $\chi^2(1) = 4.54, p < .05$ ). Other differences on demographic variables did not emerge.

## Measures

All measures were translated into German following Brislin’s (1980) translation–back-translation procedure, except for psychological detachment from work, for which a German version already exists. Items had to be answered on a 5-point Likert scale ranging from 1 (*I do not agree at all*) to 5 (*I completely agree*). Given that participants completed two surveys each day over five consecutive workdays, it was important to keep the scales as short as possible. Therefore, we used reduced sets of items from validated scales for FWC, concentration, and job performance and focused on items that were most likely to vary on a daily basis. Thereby, we followed a practice other diary studies have applied (e.g., Rodell & Judge, 2009). All scales showed high reliabilities, indicating that their psychometric quality remained acceptable.

### Daily family–work conflict

Daily FWC was measured with three items from Netemeyer, Boles, and McMurrian’s (1996) scale. All items were adjusted to refer to the current day: “Today, the demands of my family interfered with work-related activities,” “Today, things I wanted to do at work did not get done because of the demands of my family,” and “Today, my home life interfered with my responsibilities at work such as getting to work on time.” Daily FWC was assessed at the end of the workday. Over the five days, the average internal consistency was .82 (range between .67 and .91).

### Daily concentration

Daily concentration was measured with three items adjusted to refer to the current day. We used two items from Jackson and Marsh’s (1996) flow state scale, assessing the degree to which employees have a complete focus on their task: “Today, it was no effort to keep my mind on what was happening” and “Today, I had total concentration.” The third item was developed by Demerouti et al. (2007): “Today, my thoughts were wandering to other things during the task” (reverse coded). Employees assessed their daily concentration at the end of the workday. Over the five days, the average internal consistency was .75 (range between .66 and .83).

### Daily task performance

Daily task performance was assessed with four items from Williams and Anderson (1991) adjusted to refer to the current day, such as “Today, I adequately completed assigned duties.” Employees assessed their daily task performance at the end of the workday. Over the five days, the average internal consistency was .84 (range between .79 and .87).

### Daily psychological detachment from work

Daily psychological detachment from work was measured with the four-item scale developed by Sonnentag and Fritz (2007) adjusted to refer to the previous evening, such as “Yesterday evening, I forgot about work.” At the beginning of each workday, employees assessed the degree of their psychological detachment from work the previous evening. Over the five days, the average internal consistency was .86 (range between .76 and .92).

### Control variables at the day level

We assessed daily work hours and daily role conflict at the end of the workday as daily control variables because they potentially influence job performance (Gilboa, Shirom, Fried, & Cooper, 2008; Ng & Feldman, 2008). Employees indicated how many hours they spent at work during the present day ( $M=8.66$ ;  $SD=1.39$ ). Daily role conflict was assessed with four items. We used three items from Rizzo, House, and Lirtzman’s (1970) measure of role conflict, adjusted to refer to the current day, such as “Today, I received incompatible requests from two or more people.” We developed an additional item for the present study: “Today, I received several assignments without information about their priority.” Over the five days, the average internal consistency of the role conflict measure was .79 (range between .75 and .83).

### Control variables at the person level

In the baseline questionnaire, participants provided information about demographic and social factors. Age (1 = <31 years; 2 = 31–40 years; 3 = 41–50 years; 4 = 51–60 years; 5 = >60 years) and management level (1 = without supervisory position; 2 = lower management; 3 = middle and upper management) were categorically measured. Gender (0 = female; 1 = male), marital status (0 = married/living in a relationship; 1 = not married/no relationship), living with children in the same household (0 = no; 1 = yes), and part-time employment (0 = part time; 1 = full time) were measured as dummy variables.

## Analysis

We used multilevel path modeling to accommodate the multilevel nature of our study and the nonindependence of our data (i.e., multiple observations were nested within persons). We followed previous multilevel studies (e.g., Song, Foo, Uy, & Sun, 2011) and formed our variables by computing average scale scores. The analyses were conducted using MPLUS 6.0 (Muthén & Muthén, 2012, Los Angeles, CA) with maximum-likelihood estimation. Following Hofmann and Gavin (1998), we centered all daily predictor variables around each participant’s mean value.

To confirm the moderation Hypothesis 3, the coefficient for the interaction had to be significant, and the pattern of the simple slopes had to be as predicted. As a measure of effect size, we computed pseudo- $R^2$  on the basis of Snijders and Bosker (1999). Pseudo- $R^2$  reflects the percentage of the total variance (Level 1 plus Level 2 variances) in the dependent variable accounted for by the added predictors (Bryk & Raudenbush, 1992; Snijders & Bosker, 1999).

To test the significance of the hypothesized mediational effect (Hypotheses 2), we used the product-of-coefficients method to obtain the indirect effect estimate.

## Confirmatory factor analysis

Before proceeding with hypothesis testing, we conducted a series of multilevel confirmatory factor analyses to examine the distinctiveness of the three within-individual constructs that were measured at the same time (i.e., daily FWC, daily concentration, and daily job performance). We centered all item scores relative to each participant’s mean item score and used these person-mean centered items as indicators for each construct. The hypothesized three-factor model (Model 1 in Table 1) fit the data satisfactorily ( $\chi^2(32)=71.62$ ,  $p < .001$ , CFI=0.93, TLI=0.90, RMSEA=0.06). All 10 factor loadings were statistically significant ( $p < .001$ ). Standardized factor loadings were on average

Table 1. Model fit results for confirmatory factor analyses.

Model	$\chi^2$	<i>df</i>	$\Delta\chi^2$ ( $\Delta df$ )	CFI	TLI	RMSEA
1. Hypothesized three-factor model	71.62	32	—	0.93	0.90	0.06
2. Two-factor model (concentration and job performance are combined)	131.34	34	59.72 (2)	0.83	0.78	0.09
3. Two-factor model (FWC and concentration are combined)	140.98	34	69.36 (2)	0.82	0.76	0.09
4. Two-factor model (FWC and job performance are combined)	173.94	34	102.32 (2)	0.76	0.68	0.10
5. Single-factor model (FWC, concentration, and job performance are combined)	224.20	35	152.58 (3)	0.68	0.58	0.12

Note.  $N=95$  persons and 390 days. All alternative models were compared with the hypothesized three-factor model. All  $\Delta\chi^2$  are significant at  $p < .001$ . For Models 3, 4 and 5, we reverse coded all FWC items, such that low values indicated high levels of FWC; otherwise, the models did not converge. FWC, family–work conflict.

.66 for daily FWC, .56 for daily concentration, and .54 for daily job performance. We compared the hypothesized three-factor model with a series of alternative models. In Models 2, 3, and 4, items for two variables loaded on a common factor, and the other items loaded on their own respective factor. Model 5 is a single-factor model in which all items loaded on a general factor. Table 1 shows the results of model fit comparisons. The hypothesized three-factor model fit the data significantly better than all alternative models. Hence, results indicate that our measures capture distinct constructs.

## Results

### *Descriptive statistics*

Table 2 shows summary statistics, intraclass correlations (ICC1, described later), and correlations among the study variables at the within-person and between-person levels of analysis. Notably, the within-person correlations of daily FWC with daily concentration ( $r = -.50$ ,  $p < .01$ ) and daily job performance ( $r = -.31$ ,  $p < .01$ ) were statistically significant. The within-person correlation between daily concentration and daily job performance ( $r = .40$ ,  $p < .01$ ) was also statistically significant. These three correlations preliminarily indicated that testing our mediation model was justified.

In Table 2, we also reported ICC1 values, which reflect the extent by which a measure varies between units, as compared with within units (Klein & Kozlowski, 2000). In diary studies, ICC1 reflects the percentage of variance in each daily-measured variable that is explained by between-person differences. ICC1 values suggest that for all daily measures, large proportions of variance are explained by within-person differences. For example, 51 percent of the variance of daily FWC was explained by within-person differences, whereas 49 percent was explained by between-person differences.

### *Testing within-person main and mediation effects*

We hypothesized that daily FWC is negatively associated with daily job performance (Hypothesis 1). To test this hypothesis, we ran a model in which daily job performance was regressed on daily FWC and control variables (Model 2 in Table 3). The results showed that daily FWC was negatively related to daily job performance ( $b = -.21$ ,  $p < .001$ ). Thus, Hypothesis 1 was supported.

Table 2. Descriptive statistics and within-individual and between-individual correlations among variables.

Variable	M	SD	ICCI	1	2	3	4	5	6	7	8	9	10	11
1. Daily FWC	1.40	0.76	.49	—	-.50**	-.31**	-.12*	.20**	-.16**					
2. Daily concentration	3.99	0.82	.53	-.61**	—	.40**	.10*	-.22**	.07					
3. Daily job performance	4.13	0.68	.64	-.32**	.44**	—	.18**	-.36**	.02					
4. Psychological detachment	3.17	1.22	.52	-.17	.18 <sup>†</sup>	.26**	—	-.17**	-.21**					
5. Daily role conflict	2.09	0.97	.63	.27**	-.31**	-.43**	-.26*	—	.09					
6. Daily work hours	8.66	1.39	—	-.22*	.06	.04	-.28**	.09	—					
7. Gender	0.60	0.50	—	-.07	.03	.02	.17	-.31**	-.45**	—				
8. Age	2.71	1.08	—	-.10	.08	.01	-.14	-.09	.36**	-.27**	—			
9. Marital status	0.15	0.36	—	.09	-.05	-.06	.06	-.02	-.15	.17	-.19 <sup>†</sup>	—		
10. Children in household	0.46	0.50	—	.30**	-.22*	-.20 <sup>†</sup>	-.28**	.16	.18 <sup>†</sup>	-.38**	.18 <sup>†</sup>	-.21*	—	
11. Part time	0.87	0.34	—	-.13	.15	.17	.24*	-.19 <sup>†</sup>	.21*	-.19 <sup>†</sup>	-.03	.07	-.15	—
12. Management level	1.74	0.73	—	-.08	.02	-.11	-.20 <sup>†</sup>	.19 <sup>†</sup>	.59**	-.30**	.44**	-.14	.34**	.04

Note. Correlations above the diagonal are based on nonaveraged data (N=390), while correlations below the diagonal are based on within-person averages (N=95). For nonaveraged data, sample size varies depending on missing data and variables involved. See Results section for a description of ICC1. Age (1 = <31 years; 2 = 31–40 years; 3 = 41–50 years; 4 = 51–60 years; 5 = >60 years) and management level (1 = without supervisory position; 2 = lower management; 3 = middle and upper management) were categorically measured. Gender (0 = female; 1 = male), marital status (0 = married/living in a relationship; 1 = not married/no relationship), living with children in the same household (0 = no; 1 = yes), and part time (0 = part time; 1 = full time) are dummy variables.

FWC, family–work conflict.  
<sup>†</sup>p < .10; \*p < .05; \*\*p < .01.

Table 3. Main and moderation effects of daily FWC and daily psychological detachment on daily job performance (Hypotheses 1 and 3).

	Model 1 control variables		Model 2 main effects		Model 3 moderation effects	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Level 1 variables						
Role conflict	-.134**	0.040	-.117**	0.039	-.115**	0.039
Work hours	-.031	0.037	-.007	0.032	-.008	0.032
FWC			-.207***	0.043	-.202***	0.043
Psychological detachment			-.019	0.027	-.012	0.027
Psychological detachment × FWC					.094	0.075
Level 2 variables						
Gender	.000	0.137	.011	0.139	.016	0.139
Age	.023	0.063	.024	0.064	.027	0.064
Marital status	-.173	0.168	-.176	0.171	-.178	0.171
Children in household	-.195	0.135	-.153	0.137	-.149	0.137
Part time	.274	0.183	.294	0.186	.285	0.186
Management level	-.067	0.095	-.084	0.097	-.083	0.096
-2 × log-likelihood ( <i>df</i> )	574.344 (11)		513.038 (13)		511.468 (14)	
Δ-2 × log-likelihood ( <i>Δdf</i> )	24.10** (8)		61.306*** (2)		1.570 (1)	
Level 1 error variance ( <i>SE</i> )	0.158 (0.013)		0.138 (0.012)		0.137 (0.012)	
Level 2 error variance ( <i>SE</i> )	0.273 (0.046)		0.286 (0.047)		0.285 (0.047)	
Pseudo- <i>R</i> <sup>2</sup>	0.069		0.084		0.089	

Note. Model 1 was compared with a null model, with intercept as the only predictor,  $\gamma=4.129$ ;  $SE=0.060$ ;  $-2 \times \log=598.444$ ,  $df=3$ . Level 1 error variance = .164;  $SE=0.014$ . Level 2 error variance = 0.299;  $SE=0.050$ . Unstandardized coefficients are reported. Pseudo- $R^2$  was calculated on the basis of Snijders and Bosker (1999).

FWC, family-work conflict.

<sup>†</sup> $p < .10$  \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

In Hypothesis 2, we proposed that concentration mediates the negative association between daily FWC and daily job performance. To test this hypothesis, we first compared a full-mediation model with a partial-mediation model. Specifically, we compared a mediation model including a direct path between daily FWC and daily job performance (i.e., partial-mediation model) with a mediation model without such a direct path (i.e., full-mediation model). Because the model with a direct path showed a better fit to the data ( $\Delta-2 \times \log=14.99$ ;  $\Delta df=1$ ;  $p < .001$ ), we retained this partial-mediation model for testing Hypothesis 2. In this model, the association between daily FWC and concentration was negative (Path a;  $b = -.31$ ,  $p < .001$ ), and the association between concentration and daily job performance was positive (Path b;  $b = .16$ ,  $p < .001$ ). Further supporting the notion of partial mediation, the direct association between daily FWC and daily job performance remained significant when concentration was included as a mediator ( $b = -.16$ ,  $p < .001$ ). To quantify the indirect effect of daily FWC on daily job performance through daily concentration, we used the product-of-coefficients method (i.e., multiplying the coefficient of Path a by the coefficient of Path b; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Analysis resulted in a significant indirect effect (coefficient =  $-.05$ ,  $SE=0.015$ ,  $z=-3.34$ ,  $p < .01$ , 95%CI [-0.08, -0.02]). Taken together, the results meet the conditions for mediation (Baron & Kenny, 1986; Hayes, 2009) and therefore support daily concentration as a partial mediator in the relationship between daily FWC and daily job performance. Hypothesis 2 was supported.

### Testing within-person moderation effects

In Hypothesis 3, we proposed that daily psychological detachment from work buffers the negative association between daily FWC and daily job performance. To test this hypothesis, we compared a set of nested models with

daily job performance as the dependent variable. As shown in Table 3, Model 1—which included control variables—fit the data better than the null model ( $\Delta-2 \times \log = 24.10$ ;  $\Delta df = 8$ ;  $p < .01$ ). Model 2, which additionally included daily FWC and daily psychological detachment, resulted in an improved model fit compared with Model 1 ( $\Delta-2 \times \log = 61.31$ ;  $\Delta df = 2$ ;  $p < .001$ ). Model 3, which additionally included the interaction term between daily FWC and daily psychological detachment, did not fit the data better than Model 2 ( $\Delta-2 \times \log = 1.57$ ;  $\Delta df = 1$ ; *n.s.*). The interaction term between daily psychological detachment and daily FWC did not predict daily job performance ( $b = .09$ , *n.s.*). Therefore, Hypothesis 3 was not supported.

### *Additional analysis*

At the within-person level, the data support an association between daily FWC and daily job performance but do not support the role of daily psychological detachment from work in buffering this association. Perhaps it is not the daily experience of psychological detachment that alleviates the negative performance implications of daily FWC, but rather the general between-person level of psychological detachment from work.

Previous studies have demonstrated the influence of general, more stable variables on short-term, within-person relationships between work–family constructs and several outcome variables. For example, trait extraversion moderated the within-person relationship between work–family role juggling and task enjoyment (Williams, Suls, Alliger, Learner, & Wan, 1991). Peer drinking norms and social support moderated the within-person relationship between daily work–family conflict and daily alcohol use (Wang et al., 2010). Trait guilt and trait hostility moderated the within-person relationships of work–family conflict with guilt and hostility, respectively (Judge et al., 2006). Although we are unaware of studies addressing general-level psychological detachment from work as moderating within-person relationships, between-person studies show that between-person differences in psychological detachment from work influence reactions to chronic job stressors (e.g., Moreno-Jiménez et al., 2009; Sonnentag et al., 2010).

To examine whether person-level psychological detachment from work buffers the association between daily FWC and daily job performance, we aggregated daily scores of psychological detachment to the person level. Aggregating repeated daily diary data paints a more valid picture of a person's psychological detachment over that period than we could obtain from a single retrospective report summarizing the entire workweek (Bolger et al., 2003). We inspected ICC1 and ICC2 values to judge whether aggregation was empirically justified. As indicated by an ICC1 value of .52, a substantial proportion of variance occurs for psychological detachment at both the within-person and between-person levels (48 and 52 percent, respectively). Additionally, an ICC2 value of .83 indicates that the aggregated means of psychological detachment can be reliably distinguished between persons. Thus, for psychological detachment from work, both a substantial proportion of variance and reliable aggregated scores occurred at the person level, indicating that aggregation was justified. For the analyses, we centered person-level psychological detachment from work around the grand mean (Hofmann & Gavin, 1998).

To test whether person-level psychological detachment from work buffers the relationship between daily FWC and daily job performance, we compared a set of nested models with daily job performance as the dependent variable. Table 4 shows the results of these model comparisons. Model 1, which included the control variables, daily FWC and person-level psychological detachment, resulted in an improved model fit compared with a model that included control variables only ( $\Delta-2 \times \log = 29.47$ ;  $\Delta df = 2$ ;  $p < .001$ ). Model 2, which additionally included the cross-level interaction term between person-level psychological detachment and daily FWC, fit the data better than Model 1 ( $\Delta-2 \times \log = 5.23$ ;  $\Delta df = 1$ ;  $p < .05$ ). The cross-level interaction term significantly predicted job performance ( $b = -.10$ ,  $p < .05$ ). The pseudo- $R^2$  change was 0.004 after the interaction term was added to the model (Table 4). Thus, the interaction term accounted for an additional 0.04 percent of the total variance in job performance. When applying ordinary least squares (OLS) regression-based  $R^2$  standards, the magnitude of this pseudo- $R^2$  change is considered small (Chaplin, 1991; McClelland & Judd, 1993). However, it lies within the  $R^2$  range of change reported in previous research. For example, pseudo- $R^2$  changes of approximately 0.010 occur

Table 4. Cross-level interaction of daily FWC and person-level psychological detachment on daily job performance (additional analyses).

	Model 1 main effects		Model 2 moderation effects	
	Coefficient	SE	Coefficient	SE
Level 1 variables				
Role conflict	-.125**	0.038	-.122**	0.038
Work hours	-.040	0.026	-.039	0.026
FWC	-.213***	0.041	-.192***	0.042
Level 2 variables				
Gender	-.029	0.135	-.029	0.135
Age	.028	0.062	.028	0.062
Marital status	-.163	0.165	-.163	0.165
Children in household	-.157	0.134	-.156	0.134
Part time	.189	0.185	.189	0.185
Management level	-.052	0.093	-.052	0.093
Psy. detachment	.121 <sup>†</sup>	0.063	.121 <sup>†</sup>	0.063
Cross-level interaction				
Psychological detachment × FWC			.096*	0.042
-2 × log-likelihood ( <i>df</i> )				
	544.874 (13)		539.644 (14)	
Δ-2 × log-likelihood ( $\Delta df$ )				
	29.47*** (2)		5.23* (1)	
Level 1 error variance ( <i>SE</i> )				
	0.144 (0.012)		0.142 (0.012)	
Level 2 error variance ( <i>SE</i> )				
	0.265 (0.044)		0.265 (0.044)	
Pseudo- $R^2$				
	0.117		0.121	

Note. Model 1 was compared with Model 1 from Table 3. Unstandardized coefficients are reported. Pseudo- $R^2$  was calculated on the basis of Snijders and Bosker (1999).

FWC, family-work conflict.

<sup>†</sup> $p < .10$  \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

in the research by Chen, Sharma, Edinger, Shapiro, and Farh (2011). Furthermore, Sonnentag et al. (2010) reported some OLS  $R^2$  changes of about 0.005.

To examine the direction of this cross-level moderation, we plotted the simple slopes for 1 *SD* above and 1 *SD* below the mean of between-person psychological detachment, following Preacher, Curran, and Bauer (2006). As presented in Figure 2, daily FWC was only negatively related to daily job performance at low levels of psychological detachment ( $b = -.29$ ,  $p < .001$ ), but not at high levels ( $b = -.10$ , *n.s.*). That is, person-level psychological

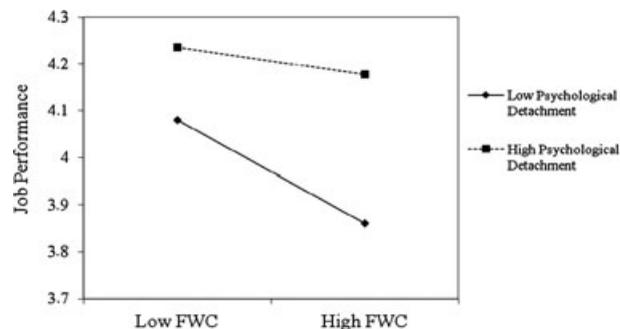


Figure 2. Moderating effect of person-level psychological detachment from work on the within-person association between family-work conflict (FWC) and job performance

detachment buffered the negative association between daily FWC and daily job performance. Figure 3 shows the results of our final model.

## Discussion

The current study is the first to examine the within-person association between daily FWC and daily job performance. Results revealed that daily FWC was negatively associated with daily job performance. Results also showed that the negative association between daily FWC and daily job performance was mediated by daily concentration such that daily FWC was related to lower levels of daily concentration, which in turn were associated with lower levels of daily job performance. These results were consistent with our hypotheses.

Contrary to our hypotheses, however, daily psychological detachment from work did not buffer the negative relationship between daily FWC and daily job performance. Additional analyses revealed that the general level of psychological detachment moderated the daily FWC–performance relationship: People who generally experienced high (vs. low) levels of psychological detachment did not show a negative relationship between daily FWC and daily job performance. That is, the general level of psychological detachment from work rather than the daily level of psychological detachment helped employees alleviate the negative performance implications of daily FWC.

As a whole, the findings highlight the double-edged interplay between work and nonwork. On one hand, family demands can interfere with work responsibilities and generate negative consequences for employees and their organizations. On the other hand, the nonwork domain can offer important opportunities to recover from work-related demands, helping employees to stay healthy and productive. Our finding that person-level psychological detachment from work during time off buffered the negative FWC–job performance relationship illustrates the complex double-edged interplay between work and nonwork.

### Theoretical implications

Our findings have several important theoretical implications. First, our finding that daily FWC and daily job performance are negatively associated extends previous studies by demonstrating that this relationship also holds at the within-person level. That is, on any given day when an individual faces more FWC than average, his or her job performance will suffer. Combining our findings and findings from extant between-person studies (e.g., Witt & Carlson, 2006) shows a consistent picture of the FWC–job performance relationship; FWC and job performance are negatively associated both at the within-person level and at the between-person level. Our findings not only extend existing work but also contribute theoretically by integrating daily FWC into theory on dynamic behavior.

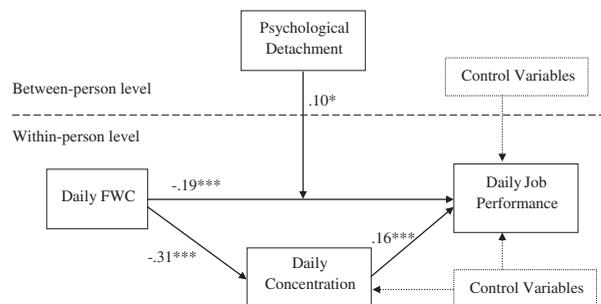


Figure 3. Results of the final model. Unstandardized coefficients from the mediation analyses and Model 3 from Table 4 are reported. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ . FWC, family–work conflict

We are unaware of any study that has relied on the Beal et al. (2005) model of dynamic behavior to derive hypotheses on the within-person fluctuations of FWC and their potential consequences. More recently, researchers have criticized studies on FWC and WFC for failing to use theory to articulate why particular relationships are expected among study variables (Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005). By applying the Beal et al. (2005) model to the within-person relationship between FWC and job performance, we respond to those criticisms and theoretically advance our understanding of FWC as a phenomenon that fluctuates within persons over short periods.

Second, our study revealed that impaired concentration is one underlying mechanism between daily FWC and daily job performance. This finding can be interpreted through the lens of the Beal et al. (2005) model, which explains that off-task attentional demands pull attention and resources from the task, which in turn impairs job performance. From this argument, daily FWC is associated with off-task attentional demands that consume limited mental resources, making it more difficult to concentrate and perform well at work. In our study, by drawing on theory that explicitly predicts within-person relationships (Beal et al., 2005), we built a model for the relationships among daily FWC, daily concentration, and daily job performance that our empirical test strongly supported. As such, the model responds to the call of Casper et al. (2007) for work–family research regarding within-person relationships and could guide future research on within-person relationships between FWC and job performance.

Third, our results demonstrate that person-level psychological detachment from work can alleviate the negative relationship between daily FWC and daily job performance. Thereby, the present results not only contribute new insights into moderators of the link between FWC and job performance but also demonstrate that recovery experiences can buffer this relationship. As mentioned in the Results section, the interaction term between daily FWC and person-level psychological detachment from work during time off contributed only to a small increase in explained variance. In multilevel models, measures of explained variance can be difficult to interpret. For instance, adding an additional predictor can lead to decreases in explained variance, and therefore, methodologists advise caution in interpreting explained variance in multilevel models (e.g., Roberts, Monaco, Stovall, & Foster, 2011; Snijders & Bosker, 1999). Interestingly, we find that the general rather than the daily level of psychological detachment from work buffered the negative relationship between daily FWC and daily job performance. What implications follow from this finding? Although considerable research agrees that daily psychological detachment benefits employee well-being (Sonnentag, 2012), research on daily psychological detachment and daily job performance is lacking. In the context of the daily FWC–performance relationship, our findings suggest that a lack of psychological detachment from work for a single evening is harmless if the individual generally experiences high levels of psychological detachment. That is, daily psychological detachment must accumulate to build or replenish the personal resources necessary for buffering the negative relationship between daily FWC and daily job performance. This does not imply that research and organizations should stop focusing on daily psychological detachment from work. To the contrary, daily and general levels of psychological detachment are closely related; daily detachment is a prerequisite for high general detachment.

### *Practical implications*

This study has several practical implications for organizations. First, the findings show that daily FWC and daily job performance are negatively associated, which underscores the need for formal work–family policies such as flexible work schedules and on-site child care that assist employees in juggling family and work demands (Ryan & Kossek, 2008; Sutton & Noe, 2005). To improve work–family balance and to reduce FWC, organizations should also foster a work–family culture (e.g., through official organizational guidelines) and work–family-specific supervisor support (Allen, 2001; Kossek, Pichler, Bodner, & Hammer, 2011). For example, supervisors could discuss work–family issues with their employees and inform about supportive organizational policies. Employees may also benefit from intervention programs targeted at improving specific skills for handling family and work demands, such as time management skills and the use of selection, optimization, and compensation behaviors (Baltes & Heydens-Gahir, 2003). Given that employees' partners play an important role in juggling work and family demands, specific

interventions that focus on couples may help in reducing FWC. For example, couples could be instructed to discuss work–family issues, such as whether and how to communicate during work hours.

Second, our findings show that the recovery experience of psychological detachment from work during time off helps employees maintain their performance when they are experiencing FWC, which suggests that employees should detach from work during time off. One means to successfully detach from work during time-off may be rituals of separation when crossing the work–nonwork boundary (Ashforth, Kreiner, & Fugate, 2000). For example, the commute between work and other life domains could serve as a transition period allowing individuals to mentally disengage from their work roles. Additionally, absorbing activities during time-off (e.g., sports) might help employees to psychologically detach from work. Finally, organizations could help their employees learn how to psychologically detach from work by providing trainings (Hahn, Binnewies, Sonnentag, & Mojza, 2011).

### *Limitations and future research*

Our study has several potential limitations. First, as in many diary studies published in top-tier journals (e.g., Dalal et al., 2009; Rodell & Judge, 2009), our performance measure is based on self-reports, which may have introduced the problem of self-presentational bias. Although obtaining daily external ratings or daily objective performance criteria would be ideal, we agree that “self-ratings may be more valid with EMA [ecological momentary assessment] than with other methods” (Beal et al., 2005, p. 1064, brackets added). The concern that a self-presentational bias affected the relationship between daily FWC and daily job performance can be even further alleviated by a recent meta-analysis on work stressors and job performance in which the authors explained: “the results between the different role stressors and self-rated performance ... were for the most part similar or in the same direction to the results, which were based on supervisory ratings or objective performance data ... [thus] researchers and practitioners may obtain some useful information from self-report data on stress and performance” (Gilboa et al., 2008, p. 257).

Second, common-method bias may have inflated the observed relationships. We tried to minimize this concern by following recommendations from Podsakoff, MacKenzie, Lee, and Podsakoff (2003). First, we assured participants that their answers were anonymous and encouraged them to respond as honestly as possible. Second, we collected data at two daily measurement points in time. Additionally, the pattern of interaction we found and our factor analytical results further minimize the concern of common-method bias (Aiken & West, 1991; Podsakoff et al., 2003). Although common-method bias is unlikely to be a major concern in the present study, future studies could use additional measurement time points and, as mentioned earlier, other performance criteria than self-reports.

Third, our design prohibits statements about causal directions. Although the direction between FWC and job performance is not debated in the literature, one might argue that high levels of performance may increase sensitivity to FWC (Witt & Carlson, 2006). To establish causality between FWC, concentration, and job performance, experiments are required.

Fourth, although we used established scales to measure FWC (Netemeyer et al., 1996) and task performance (Williams & Anderson, 1991), the two constructs may have some conceptual overlap. FWC reflects a judgment that the family role interferes with the work role and may, thus, be related to job performance by definition. We believe that this concern can be partly alleviated. First, a recent meta-analysis reported a medium-sized mean correlation of  $-.20$  for FWC and task performance (Amstad, Meier, Fasel, Elfering, & Semmer, 2011). If the conceptual overlap were substantial, a bigger correlation could be expected. Second, as shown by the present and a previous study (Witt & Carlson, 2006), FWC has differential relationships with task performance depending on moderator variables, suggesting that the relationship between FWC and task performance is not merely attributable to conceptual overlap. Future studies could focus on family demands or use nontraditional measures of WFC/FWC, such as composite scores of family and work demands (Haun, Steinmetz, & Dormann, 2011).

Finally, although we relied on theory to derive psychological detachment from work as a moderator of the association between FWC and task performance, we did not directly test the proposed underlying mechanism of psychological detachment’s effect (i.e., rebuilding mental resources). Therefore, we encourage future research to empirically test

whether psychological detachment from work during time off moderates the FWC–task performance relationship by rebuilding mental resources.

This study provides fruitful avenues for future research. Although it delivers important insights into intra-individual dynamics of FWC, more research is needed to advance the understanding of FWC as a phenomenon that fluctuates within persons (Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Sonntag, Frieling, & Stegmeier, 2012). Although considering a broad range of different job stressors was beyond the scope of this study, future studies may examine the relative importance of daily FWC in predicting daily task performance and concentration by additionally considering further job stressors such as interpersonal conflicts, procedural injustice, and other role conflicts. Additionally, this study assessed only task performance. Given that job performance is a multidimensional construct (Motowildo et al., 1997), future studies should address whether other forms of job performance such as personal initiative and creativity are also negatively associated with daily FWC.

Furthermore, in this study, we focused only on psychological detachment from work. Future research is needed to address whether other recovery strategies, such as relaxation or mastery experiences (Sonnetag & Fritz, 2007), may also buffer the FWC–performance relationship. Although our study identifies low levels of psychological detachment from work as a risk factor for being sensitive toward daily FWC, future studies could address personality variables, such as trait positive and negative affectivity, as potential moderators of the FWC–task performance relationship. Thereby, these future studies may identify further high-risk groups that organizational interventions could target. Finally, future studies could address whether employees' general level of FWC makes them more sensitive to daily FWC, which, in turn, may influence their well-being and performance when experiencing daily FWC. These insights would advance our understanding of and ability to enhance employee job performance.

In sum, our study provides compelling evidence of a negative relationship between daily FWC and daily job performance. At the same time, it points to nonwork experiences—psychological detachment from work during time off—as a way to alleviate the negative relationship. We hope that these insights contribute to a better understanding of the interplay between work and nonwork.

## Acknowledgements

We thank Raymond Noe and three anonymous reviewers for their very helpful comments throughout the review process and Laurenz L. Meier and Sabine Sonnetag for very helpful comments on an earlier version of this article.

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## References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Allen, T. D. (2001). Family-supportive work environments: The role of organizational perceptions. *Journal of Vocational Behavior*, 58(3), 414–435.
- Amstad, F. T., Meier, L. L., Fasel, U., Elfering, A., & Semmer, N. K. (2011). A meta-analysis of work–family conflict and various outcomes with a special emphasis on cross-domain versus matching-domain relations. *Journal of Occupational Health Psychology*, 16(2), 151–169. doi:10.1037/a0022170
- Ashforth, B. E., Kreiner, G. E., & Fugate, M. (2000). All in a day's work: Boundaries and micro role transitions. *Academy of Management Review*, 25(3), 472–491. doi:10.5465/AMR.2000.3363315
- Baltes, B. B., & Heydens-Gahir, H. A. (2003). Reduction of work–family conflict through the use of selection, optimization, and compensation behaviors. *Journal of Applied Psychology*, 88(6), 1005–1018.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. doi:10.1037/0022-3514.51.6.1173
- Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job performance: A meta analysis. *Personnel Psychology*, 44(1), 1–26.
- Beal, D. J., Weiss, H. M., Barros, E., & MacDermid, S. M. (2005). An episodic process model of affective influences on performance. *Journal of Applied Psychology*, 90(6), 1054–1068. doi:10.1037/0021-9010.90.6.1054
- Binnewies, C., Sonnentag, S., & Mojza, E. J. (2010). Recovery during the weekend and fluctuations in weekly job performance: A week-level study examining intra-individual relationships. *Journal of Occupational and Organizational Psychology*, 83(2), 419–441. doi:10.1348/096317909x418049
- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579–616. doi:10.1146/annurev.psych.54.101601.145030
- Brislin, R. (1980). Translation and content analysis of oral and written material. In H. C. Triandis, & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (Vol. 2, pp. 389–444). Boston, MA: Allyn & Bacon.
- ten Brummelhuis, L. L., & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist*, 67(7), 545–556. doi:10.1037/a0027974
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage.
- Casper, W. J., Eby, L. T., Bordeaux, C., Lockwood, A., & Lambert, D. (2007). A review of research methods in IO/OB work–family research. *Journal of Applied Psychology*, 92(1), 28–43. doi:10.1037/0021-9010.92.1.28
- Cervone, D. (2005). Personality architecture: Within-person structures and processes. *Annual Review of Psychology*, 56, 423–452. doi:10.1146/annurev.psych.56.091103.070133
- Chaplin, W. F. (1991). The next generation of moderator research in personality psychology. *Journal of Personality*, 59(2), 143–178. doi:10.1111/j.1467-6494.1991.tb00772.x
- Chen, G., Bliese, P. D., & Mathieu, J. E. (2005). Conceptual framework and statistical procedures for delineating and testing multilevel theories of homology. *Organizational Research Methods*, 8(4), 375–409. doi:10.1177/1094428105280056
- Chen, G., Sharma, P. N., Edinger, S. K., Shapiro, D. L., & Farh, J.-L. (2011). Motivating and demotivating forces in teams: Cross-level influences of empowering leadership and relationship conflict. *Journal of Applied Psychology*, 96(3), 541–557. doi:10.1037/a0021886
- Craig, A., & Cooper, R. E. (1992). Symptoms of acute and chronic fatigue. In A. P. Schmith, & D. M. Jones (Eds.), *Handbook of human performance* (Vol. 3, pp. 289–339). London, England: Academic Press.
- Dalal, R. S., Lam, H., Weiss, H. M., Welch, E. R., & Hulin, C. L. (2009). A within-person approach to work behavior and performance: Concurrent and lagged citizenship, counterproductivity associations, and dynamic relationships with affect and overall job performance. *Academy of Management Journal*, 52(5), 1051–1066.
- Day, D. V., Shleicher, D. J., Unckless, A. L., & Hiller, N. J. (2002). Self-monitoring personality at work: A meta-analytic investigation of construct validity. *Journal of Applied Psychology*, 87(2), 390–401.
- Demerouti, E., Taris, T. W., & Bakker, A. B. (2007). Need for recovery, home–work interference and performance: Is lack of concentration the link? *Journal of Vocational Behavior*, 71(2), 204–220. doi:10.1016/j.jvb.2007.06.002
- Dimotakis, N., Scott, B. A., & Koopman, J. (2011). An experience sampling investigation of workplace interactions, affective states, and employee well-being. *Journal of Organizational Behavior*, 32(4), 572–588. doi:10.1002/job.722
- Eby, L. T., Casper, W. J., Lockwood, A., Bordeaux, C., & Brinley, A. (2005). Work and family research in IO/OB: Content analysis and review of the literature (1980–2002). *Journal of Vocational Behavior*, 66(1), 124–197. doi:10.1016/j.jvb.2003.11.003
- Edwards, J. R., & Rothbard, N. P. (2000). Mechanisms linking work and family: Clarifying the relationship between work and family constructs. *Academy of Management Review*, 25(1), 178–199. doi:10.5465/AMR.2000.2791609

- Etzion, D., Eden, D., & Lapidot, Y. (1998). Relief from job stressors and burnout: Reserve service as a respite. *Journal of Applied Psychology, 83*(4), 577–585. doi:10.1037/0021-9010.83.4.577
- Fritz, C., Yankelevich, M., Zarubin, A., & Barger, P. (2010). Happy, healthy, and productive: The role of detachment from work during nonwork time. *Journal of Applied Psychology, 95*(5), 977–983. doi:10.1037/a0019462
- Frone, M. R., Yardley, J. K., & Markel, K. S. (1997). Developing and testing an integrative model of the work–family interface. *Journal of Vocational Behavior, 50*(2), 145–167. doi:10.1006/jvbe.1996.1577
- Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology, 61*(2), 227–271. doi:10.1111/j.1744-6570.2008.00113.x
- Goode, W. J. (1960). A theory of role strain. *American Sociological Review, 25*(4), 483–496. doi:10.2307/2092933
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review, 10*(1), 76–88.
- Hahn, V. C., Binnewies, C., Sonnentag, S., & Mojza, E. J. (2011). Learning how to recover from job stress: Effects of a recovery training program on recovery, recovery-related self-efficacy, and well-being. *Journal of Occupational Health Psychology, 16*(2), 202–216. doi:10.1037/a0022169
- Haun, S., Steinmetz, H., & Dormann, C. (2011). Objective work–nonwork conflict: From incompatible demands to decreased work role performance. *Journal of Vocational Behavior, 79*(2), 578–587. doi:10.1016/j.jvb.2011.05.001
- Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monographs, 76*(4), 408–420. doi:10.1080/03637750903310360
- Hirst, W., & Kalmar, D. (1987). Characterizing attentional resources. *Journal of Experimental Psychology. General, 116*(1), 68–81. doi:10.1037/0096-3445.116.1.68
- Hofmann, D. A., & Gavin, M. B. (1998). Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management, 24*(5), 623–641. doi:10.1177/014920639802400504
- Jackson, S. A., & Marsh, H. W. (1996). Development and validation of a scale to measure optimal experience: The Flow State Scale. *Journal of Sport & Exercise Psychology, 18*(1), 17–35.
- Judge, T. A., & Bono, J. E. (2001). Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology, 86*(1), 80–92.
- Judge, T. A., Ilies, R., & Scott, B. A. (2006). Work–family conflict and emotions: Effects at work and at home. *Personnel Psychology, 59*(4), 779–814. doi:10.1111/j.1744-6570.2006.00054.x
- Kahneman, D. (1973). *Attention and effort*. Englewood Cliffs, NJ: Prentice Hall.
- Kaplan, S., Bradley, J. C., Luchman, J. N., & Haynes, D. (2009). On the role of positive and negative affectivity in job performance: A meta-analytic investigation. *Journal of Applied Psychology, 94*(1), 162–176. doi:10.1037/a0013115
- Klein, K. J., & Kozlowski, S. W. J. (2000). From micro to meso: Critical steps in conceptualizing and conducting multilevel research. *Organizational Research Methods, 3*, 211–236. doi:10.1177/109442810033001
- Kossek, E. E., Pichler, S., Bodner, T., & Hammer, L. B. (2011). Workplace social support and work–family conflict: A meta-analysis clarifying the influence of general and work–family-specific supervisor and organization support. *Personnel Psychology, 64*(2), 289–313. doi:10.1111/j.1744-6570.2011.01211.x
- Kreiner, G. E., Hollensbe, E. C., & Sheep, M. L. (2009). Balancing borders and bridges: Negotiating the work–home interface via boundary work tactics. *Academy of Management Journal, 52*, 704–730.
- MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*(1), 83–104. doi:10.1037/1082-989x.7.1.83
- Maertz, C. P., & Boyar, S. L. (2011). Work–family conflict, enrichment, and balance under “levels” and “episodes” approaches. *Journal of Management, 37*(1), 68–98. doi:10.1177/0149206310382455
- Marks, S. R. (1977). Multiple role and role strain: Some notes on human energy, time, and commitment. *American Sociological Review, 42*(6), 921–936. doi:10.2307/2094577
- McClelland, G. H., & Judd, C. M. (1993). Statistical difficulties of detecting interactions and moderator effects. *Psychological Bulletin, 114*(2), 376–390. doi:10.1037/0033-2909.114.2.376
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *Handbook of work and organizational: Work psychology* (Vol. 2, 2nd ed., pp. 5–33). Hove, England: Psychology Press/Erlbaum (UK) Taylor & Francis.
- Monsell, S. (2003). Task switching. *Trends in Cognitive Sciences, 7*(3), 134–140.
- Moreno-Jiménez, B., Mayo, M., Sanz-Vergel, A. I., Geurts, S., Rodríguez-Muñoz, A., & Garrosa, E. (2009). Effects of work–family conflict on employees’ well-being: The moderating role of recovery strategies. *Journal of Occupational Health Psychology, 14*(4), 427–440. doi:10.1037/a0016739
- Motowildo, S. J., Borman, W. C., & Schmit, M. J. (1997). A theory of individual differences in task and contextual performance. *Human Performance, 10*(2), 71. doi:10.1207/s15327043hup1002\_1

- Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, *126*(2), 247–259. doi:10.1037/0033-2909.126.2.247
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.
- Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. *Journal of Applied Psychology*, *81*(4), 400–410. doi:10.1037/0021-9010.81.4.400
- Ng, T. W. H., & Feldman, D. C. (2008). Long work hours: A social identity perspective on meta-analysis data. *Journal of Organizational Behavior*, *29*(7), 853–880. doi: 10.1002/job.536
- Pashler, H. (1994). Dual-task interference in simple tasks: Data and theory. *Psychological Bulletin*, *116*(2), 220–244. doi: 10.1037/0033-2909.116.2.220
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. doi:10.1037/0021-9010.88.5.879
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interaction effects in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*, 437–448.
- Rizzo, J. R., House, R. J., & Lirtzman, S. I. (1970). Role conflict and ambiguity in complex organizations. *Administrative Science Quarterly*, *15*(2), 150–163. doi:10.2307/2391486
- Roberts, J. K., Monaco, J. P., Stovall, H., & Foster, V. (2011). Explained variance in multilevel models. In J. J. Hox, & J. K. Roberts (Eds.), *The handbook of advanced multilevel analysis* (pp. 219–230). New York, NY: Routledge.
- Rodell, J. B., & Judge, T. A. (2009). Can “good” stressors spark “bad” behaviors? The mediating role of emotions in links of challenge and hindrance stressors with citizenship and counterproductive behaviors. *Journal of Applied Psychology*, *94*(6), 1438–1451. doi:10.1037/a0016752
- Ryan, A. M., & Kossek, E. E. (2008). Work–life policy implementation: Breaking down or creating barriers to inclusiveness? *Human Resource Management*, *47*(2), 295–310.
- Schneider, W., & Fisk, A. D. (1982). Concurrent automatic and control visual search: Can it be done without cost? *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *8*(4), 261–278. doi:10.1037/0278-7393.8.4.261
- Snijders, T. A. B., & Bosker, R. J. (1999). *Multilevel analysis: An introduction to basic and advanced multilevel modeling*. Thousand Oaks, CA: Sage.
- Song, Z., Foo, M.-D., Uy, M. A., & Sun, S. (2011). Unraveling the daily stress crossover between unemployed individuals and their employed spouses. *Journal of Applied Psychology*, *96*(1), 151–168. doi:10.1037/a0021035
- Sonnentag, S. (2012). Psychological detachment from work during leisure time: The benefits of mentally disengaging from work. *Current Directions in Psychological Science*, *21*, 114–118. doi:10.1177/0963721411434979
- Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: Development and validation of a measure for assessing recuperation and unwinding from work. *Journal of Occupational Health Psychology*, *12*(3), 204–221. doi:10.1037/1076-8998.12.3.204
- Sonnentag, S., Binnewies, C., & Mojza, E. J. (2010). Staying well and engaged when demands are high: The role of psychological detachment. *Journal of Applied Psychology*, *95*(5). doi:10.1037/a0020032
- Sonntag, K., Frieling, E., & Stegmeier, R. (2012). *Lehrbuch Arbeitspsychologie [Handbook of industrial and organizational psychology]* (3rd ed.). Bern, Switzerland: Huber.
- Speier, C., Valacich, J. S., & Vessey, I. (1999). The influence of task interruption on individual decision making: An information overload perspective. *Decision Sciences*, *30*(2), 337–360. doi:10.1111/j.1540-5915.1999.tb01613.x
- Sutton, K. L., & Noe, R. A. (2005). Family-friendly programs and work–life integration: More myth than magic? In E. E. Kossek & S. J. Lambert (Eds.), *Work and life integration* (pp. 151–170). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Wang, M., Liu, S., Zhan, Y., & Shi, J. (2010). Daily work–family conflict and alcohol use: Testing the cross-level moderation effects of peer drinking norms and social support. *Journal of Applied Psychology*, *95*(2), 377–386. doi:10.1037/a0018138
- Williams, L. J., & Anderson, S. E. (1991). Job satisfaction and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management*, *17*(3), 601–617. doi:10.1177/014920639101700305
- Williams, K. J., Suls, J., Alliger, G. M., Learner, S. M., & Wan, C. K. (1991). Multiple role juggling and daily mood states in working mothers: An experience sampling study. *Journal of Applied Psychology*, *76*(5), 664–674.
- Witt, L. A., & Carlson, D. S. (2006). The work–family interface and job performance: Moderating effects of conscientiousness and perceived organizational support. *Journal of Occupational Health Psychology*, *11*(4), 343–357. doi:10.1037/1076-8998.11.4.343

## Appendix B: Declaration



UNIVERSITÄT  
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FAKULTÄT FÜR VERHALTENS-  
UND EMPIRISCHE KULTURWISSENSCHAFTEN  
FACULTY OF BEHAVIOURAL AND CULTURAL STUDIES

**Promotionsausschuss der Fakultät für Verhaltens- und Empirische  
Kulturwissenschaften  
der Ruprecht-Karls-Universität Heidelberg  
Doctoral Committee of the Faculty of Behavioural and Cultural Studies, of Heidelberg  
University**

**Erklärung gemäß § 8 Abs. 1 Buchst. b) der Promotionsordnung  
der Universität Heidelberg  
für die Fakultät für Verhaltens- und Empirische Kulturwissenschaften  
Declaration in accordance to § 8 (1) b) and § 8 (1) c) of the doctoral degree regulation  
of Heidelberg University, Faculty of Behavioural and Cultural Studies**

Ich erkläre, dass ich die vorgelegte Dissertation selbstständig angefertigt, nur die angegebenen Hilfsmittel benutzt und die Zitate gekennzeichnet habe.  
I declare that I have made the submitted dissertation independently, using only the specified tools and have correctly marked all quotations.

**Erklärung gemäß § 8 Abs. 1 Buchst. c) der Promotionsordnung  
der Universität Heidelberg  
für die Fakultät für Verhaltens- und Empirische Kulturwissenschaften**

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