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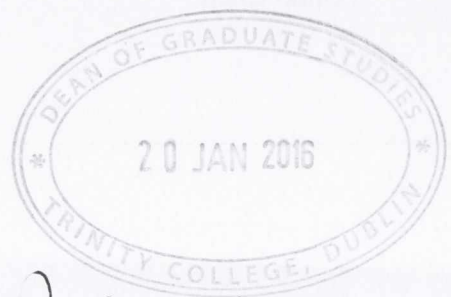
Extending the Job Demands-Resources Model of Work Engagement: The Role of Demands and Resources from Other Domains

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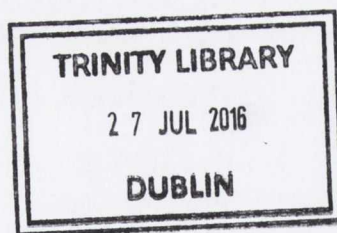
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Abstract

This study aims to extend the job demands-resources model (JD-R model) of work engagement by proposing that in addition to job demands and job resources, as proposed in the existing JD-R model, non-work factors (e.g., non-work resources and demands) affect work engagement and job performance. This study adopts the family and home life (i.e., FHL) domain as an important non-work domain because it is well documented that family and home life issues constitute an important source of occupation-related problems that affect the mental and physical health and job performance of employees. This study posits that family and home life (FHL) resources (and demands) both directly and indirectly increase (and decrease) employees' work engagement and influence their job performance. This study proposes a set of hypotheses derived from an extended JD-R model that integrates FHL demands and resources in the model. The empirical investigation employed a diary study design with a sample composed of 45 employees of international coffee chains in Ireland. Participants completed a baseline questionnaire and eight diary questionnaires over 4 weeks ($N=45*8=360$ occasions). The results of multi-level analyses support the proposed hypotheses and give credence to the theoretical extension of the JD-R model presented here. The theoretical contributions, research limitations, implications for future research, and practical implications of this study are discussed.

Keywords: Job demands-resources model; Work engagement; Personal resources; Family-work enrichment; Family-work conflict

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List of Abbreviations

Full Names	Abbreviations
Adjusted Goodness-of-Fit Index	AGFI
Broaden-and-Build Theory	B&BT
Conservation of Resources Theory	COR
Comparative Fit Index	CFI
Confirmation Factor Analysis	CFA
Common Method Variance	CMV
Condition Index	CI
Demand–Control Model	DCM
Effort-Recovery Model	E-R Model
Employee Assistance Professionals Association	EAPA
Exploratory Factor Analysis	EFA
Family-Work (Family-to-Work) Enrichment	FWE
Family-Work (Family-to-Work) Conflict	FWC
Goodness-of-Fit Index	GFI
Hierarchical Linear Modeling	HLM

Job Demands-Resources Model	JD-R Model
Job Content Questionnaire	JCQ
Maslach Burnout Inventory	MBI
MBI-General Survey	MBI-GS
Nonnormed Fit Index	NNFI
Normed Fit Index	NFI
Principle Axis Factoring	PAF
Root Mean Square Error of Approximation	RMSEA
Root Mean Square Residual	RMR
Standardized RMR	SRMR
Utrecht Work Engagement Scale	UWES
Variance Inflation Factor	VIF

Chapter 1 Introduction

The work engagement of employees is an important issue from both academic and pragmatic perspectives because engaged employees are not only physically and psychologically healthier at work than non-engaged employees (e.g., Dollard, & Bakker, 2010), but also have higher intrinsic motivation to pursue high job performance (e.g., Bakker & Schaufeli, 2008; Karatepe, 2013; Torrente, Salanova, Llorens, & Schaufeli, 2012). Work engagement in academic research refers to “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002, p. 74). The dominant theoretical emphasis in research on work engagement is the job demands-resources model (JD-R model; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

The JD-R model is heuristic in nature and represents a way of thinking about how job characteristics may affect an individual’s health, well-being, and job stress (Schaufeli & Taris, 2014). At the heart of the JD-R model is the premise that any organization may contain two specific sets of working conditions (Demerouti et al., 2001), job demands and job resources. Whereas job demands predict employees’ job stress, which contributes to the reduction of work engagement (e.g., Bakker & Demerouti, 2007; Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007), job resources predict employees’ motivation and well-being, which contributes to increased work engagement (e.g., Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). The JD-R model has been globally tested in a number of countries (e.g., Australia, Belgium, China, Finland, Germany, Greece, Italy, Norway, South Africa,

Spain, and Sweden; Bakker, 2014) with different samples (e.g., teachers, dentists, and telecom managers; Hakanen, Bakker, & Schaufeli, 2006; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008; Schaufeli, Bakker, & van Rhenen, 2009). It is a highly validated theoretical model that is widely used for explaining work engagement (Bakker, 2011; Bakker & Demerouti, 2008) and its related consequences, such as job performance (e.g., financial returns; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009a) and health (e.g., reduced absenteeism due to sickness; Schaufeli et al., 2009).

However, the development of the JD-R model has largely if not exclusively focused on the work environment and its impact on workers (Bakker & Demerouti, 2007). Demands and resources that do not arise directly from the work environment (i.e., non-work resources and demands) have not yet been systematically integrated into the JD-R theory. Katz and Kahn (1978) argue that individuals are involved in multiple social systems inside and outside of work. It is reasonable to assume that in addition to job demands and resources, employees may be affected by non-work environments and relationships in which they are involved (e.g., home, family, and other social networks, Hakanen, Schaufeli, & Ahola, 2008) through non-work demands and resources. Clark (2000) claims that individuals normally make daily transitions between work and non-work environments (e.g., family or home) and mobilize their limited personal resources to fit the demands of all of these environmental domains. In other words, if individuals and their limited personal resources are taxed too much by demands arising from non-work domains (e.g., family or home), they may have insufficient resources to successfully cope with the demands and tasks arising in their work. Their work environment may in turn end up overtaxing them which can increase their job stress. In contrast, if individuals gain resources from non-work environments (e.g., family or home), they may have

sufficient personal resources to cope even with elevated demands they may face at work. To summarise, non-work environments may directly and indirectly influence employees' experiences at work through non-work related resources and demands. The central premise here is that non-work demands may exacerbate job related stress, while non-work resources may increase work related well-being and may provide support in coping with job demands. As job stress reduces work engagement (e.g., Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Bakker, Demerouti, & Verbeke, 2004), and as well-being contributes to increased work engagement (e.g., Hakenen et al., 2006; Llorens, Bakker, Schaufeli, & Salanova, 2006), non-work resources and demands can also be expected to play a role in influencing work engagement.

This study aims to extend the current boundaries of the JD-R model of work engagement by theoretically integrating non-work antecedents of work engagement and empirically investigating these additional model elements and their links to work engagement. In this research, family and home life (FHL) is utilized as an example of a non-work domain. This choice is particularly appropriate because substantial research findings indicate that family issues are one of the most problematic issues across companies globally. In an investigation of employee assistance professionals (EAPA, 1996), family issues (25%) were identified the most prevalent employee problem (job stress [23%], depression [21%], substance abuse [16%], and workplace/job conflict [9%]). Rodriguez and Borgen (1998) found that employee assistance professionals rated marital and family problems as the most severe issues that affect employees at work, and employees rated marital and family problems in the top two most common issues (e.g., most common in EAPA, 1996; second most common in Rodriguez & Borgen, 1998). Family issues are associated with many

negative health (e.g., medical claims) and occupational (e.g., tardiness, employee turnover, and job damage) consequences (e.g., Carr & Hellan, 1980; Johnson & O'Neil, 1989; Roman, Blum, & Bennett, 1987). In contemporary industrialized societies, work and family spheres are often not entirely separate (Herlihy, 2000). A number of recent studies have found that family issues need to be understood as one of the key occupational-related influences that may affect employees' well-being (e.g., Li, Shaffer, & Bagger, 2015), job stress (e.g., Moen, Kaduk, Kossek, Hammer, Buxton, O'Donnell, ... & Casper, 2015), and job performance (e.g., Zhao, Mattila, & Ngan, 2014). In light of the above, this study argues that an extended JD-R model of work engagement that integrates these important non-work factors will offer both theoretical and pragmatic contributions.

Although family influences (i.e., family demands and resources) have been investigated and found to relate to work engagement (e.g., Bakker, Demerouti, & Schaufeli, 2005; Montgomery, Peeters, Schaufeli, & Ouden, 2003), the role of family demands and family resources in the development or impediment of work engagement has rarely been investigated, and only a few cross-sectional studies have been published on the topic (Hakanen et al., 2008). This study contributes to this apparent gap in the literature by theoretically elucidating how FHL resources/demands can directly and indirectly (through job demands/resources) influence work engagement and by empirically examining these theoretical claims.

The conceptualization of the FHL domain used in this study is deliberately broad to include the experiences of employees living in a wide variety of domestic arrangements. This is because a traditional, narrow conception of family typically refers to a traditional nuclear family defined by marital and blood relationships only (Kossek, Baltes, & Matthew, 2011). However, many individuals in contemporary

Western societies have other domestic living arrangements (e.g., living alone or living with friends). The conceptualization of FHL used in this study must reflect individual employees' actual home life, including close emotional and intimate relationships that are not covered by traditional narrow family conceptions. In this light, this study integrates the traditional concept of family with that of other domestic living arrangements because, in many cases, the traditional concept of home can be considered to be broader than the traditional nuclear family concept (Sok, Blomme, & Tromp, 2014). Existing research shows that by nature, the home covers a variety of possible home activities, interactions, and relationships that include the traditional nuclear family, community, and non-blood relationships as well as many other facets of people's personal lives (De Cieri, Holmes, & Pettit, 2005; Guest, 2002; Kossek et al., 2011; Ten Brummelhuis, ter Hoeven, de Jong, & Peper, 2013).

This research adopts a broad definition of FHL that integrates domestic arrangements of all types, including kinship, marital and non-kin/marital relationships and contacts that are a regular part of individuals' domestic living experiences. Hence, where the term FHL domain (as well as FHL resources and demands) is used throughout the document, it refers to the traditional nuclear family and the domestic, personal, and home life domains (as well as FHL resources and demands) of individuals. The adoption of such a broad concept (i.e., FHL) that incorporates these wider elements (e.g., FHL resources and demands) is a more accurate reflection of many individuals' lives in Western societies and is highly appropriate for the investigation of the relationships between the (broader) family/home domain and the work domain of employees (e.g., Beham, Drobnič, & Präg, 2014; Sok et al., 2014; Winefield, Boyd, & Winefield, 2014).

This study aims to extend the current boundaries of the JD-R model of work

engagement by theoretically integrating FHL antecedents of work engagement and empirically investigating these additional model elements and their links to work engagement. Thus, this study adopts two main theoretical constructs of the work-family interface (i.e., family-to-work [family-work] conflict and enrichment) for the model extension. Contemporary research related to the work-family interface suggests an integrated model that explains both conflicting and enriching relationships between the work and family domains (e.g., Ten Brummelhuis & Bakker, 2012a). Traditionally, however, work-family enrichment and conflict have been viewed as two unrelated and independent constructs (Frone, 2003; Greenhaus & Powell, 2006), and have thus largely been investigated separately (Ten Brummelhuis & Bakker, 2012a). This study reflects the most contemporary thinking (Ten Brummelhuis & Bakker, 2012a) in proposing a model (i.e., the extended JD-R model) that simultaneously considers and incorporates concepts from the different frameworks and theories of family-work enrichment and family-work conflict, respectively.

The present study is interested in the question of whether individuals' job performance may be affected by the influences of FHL on work engagement. However, the characteristic of the work environment in which the sample of this study works made it impossible to acquire objective and quantifiable performance measures or third-party performance evaluations, and data collection was limited to self-report measures of work performance. Such measures have frequently been criticized for potentially being biased due to self-serving or social desirability biases. For this reason, this thesis does not present linkages to job performance as a part of the model extension, and no formal study hypotheses regarding the relationships associated with job performance are derived from the extended JD-R model. The empirical evidence

related to the self-report measures on job performance will not be presented as part of the formal empirical model test but rather as a supplemental analysis in Chapter 5/Section 5.6.

The remainder of this paper is organized as follows: the literature on the JDR model and on work engagement more generally are reviewed in Chapter 2. Both the most recent iteration of the model as well as the more generally accepted and used version of this model are presented and discussed.

Chapter 3 develops and presents the arguments supporting the proposed extension of the JD-R model to include demands and resources from a non-work domain, specifically the family and home-life domain of employees. It presents the model extensions along with hypotheses designed to empirically test the predictions derived from the extended model. In addition, this chapter presents a discussion of the impact of FHL demands and resources on job performance through their impact on work engagement. These are presented in the form of propositions to distinguish them from the formal hypotheses used to explicitly test the model extensions.

Chapter 4 presents the study methodology. It describes the field setting and the study sample, and provides details of the study design, the instruments employed, and the procedures used for collecting data. It also outlines the analytical strategy employed to test the study hypotheses.

Chapter 5 describes the analyses conducted with the collected study data and provides information on the results arising from the data analyses. The results of the empirical investigation of the study hypotheses are presented in detail. In addition, this chapter includes separate sections that present supplemental analyses and results that address the impact of FHL resources and demands on self-reported job performance mediated through work engagement.

Finally, Chapter 6 discusses the results of the empirical investigation and the underlying evidence in support of the proposed JD-R model extension. It identifies and discussed the limitations of this study along with implications for future research and other relevant conclusions.

Chapter 2 Theoretical Background

In this chapter, the researcher discusses the concepts and definitions of work engagement and the job demands-resources (JD-R) model. This section also explains why the resources and demands of a domain may impact individuals' effective functioning in another domain.

2.1 Work engagement

This section introduces and discusses the conceptualization and definition of work engagement. It then presents an analysis and discussion of five critical assumptions that present reasons for why employees with higher levels of work engagement perform better than their less engaged counterparts do. These critical assumptions center on the issues of positive emotions, better mental and physical health, job crafting, work engagement vs. workaholism, and crossover dynamics (i.e., emotional contagion) (Demerouti & Cropanzano, 2010).

2.1.1 Conceptualization and definition of work engagement

Although the concept and empirical research (e.g., student engagement; Peterson & Fennema, 1985) related to engagement has a long history, Kahn's conceptualization of engagement is the one most commonly recognized by and adopted in existing occupational psychology studies because it particularly emphasizes individual engagement in work contexts (Kahn, 1990). Kahn conceptualizes engagement as the "...harnessing of organization members' selves to their work roles; in engagement,

people employ and express themselves physically, cognitively, and emotionally during role performances” (p. 694). In other words, individuals engage in their work because they identify with the work (Bakker, Demerouti, & Sanz-Vergel, 2014). Kahn (1992) claims that whereas individuals use their personal energies (e.g., physical, cognitive, emotional, and mental ones) in their work role, the work role helps them reflect who they are or what they want to be. Therefore, Kahn (1992) defines engagement as “the simultaneous employment and expression of a person’s ‘preferred self’ in task behaviors that promote connections to work and to others, personal presence (physical, cognitive, and emotional) and active, full performances” (p. 700).

To date, there are two schools of thought regarding the conceptualization of work engagement. The first school of thought views work engagement as the opposite of burnout (Maslach, Schaufeli, & Leiter, 2001). It is characterized by energy, involvement, and efficacy, in direct opposition to emotional exhaustion, cynicism, and the lack of efficacy/reduced accomplishment, respectively, which are three major components of burnout (Maslach & Leiter, 1997). This school of thought proposes that in a situation in which individuals experience high work engagement, exhaustion may turn into energy, cynicism to involvement, and ineffectiveness to efficacy. In other words, work engagement and burnout are regarded as two poles of a continuum. This conceptualization is reflected in the development and design of the Maslach Burnout Inventory (MBI) by Maslach and Jackson (1981). The MBI contains three measures: emotional exhaustion, depersonalization, and lack of personal accomplishment. *Emotional exhaustion* represents the draining of emotional resources due to an employee’s demanding interpersonal contacts with others. *Depersonalization* refers to a negative and/or excessively detached (i.e., callous) response and cynical attitude toward the individuals who are the recipients of one’s

services of care. *Lack of personal accomplishment* describes a decline in a person's feelings of competence and successful achievement at work.

The MBI was further revised to the MBI-General Survey (MBI-GS; Maslach, Jackson, & Leiter, 1996) and has been used more extensively in contemporary studies than its original version. This is because the original version could not be used appropriately in industries outside the human services (Schaufeli, Leiter, Maslach, & Jackson, 1996; Schutte, Toppinen, Kalimo, & Schaufeli, 2000). The MBI-GS includes three measures: emotional drain, cynicism, and low professional efficacy. *Emotional drain* accounts for the depletion of mental resources and feelings of strain, especially chronic fatigue, because of demanding work. *Cynicism* represents an indifferent or distant attitude toward work in general and a loss of interest in and passion at work. *Low professional efficacy* refers to reduced feelings of competence, successful achievement, and accomplishment in a person's job and organization. Whereas individuals with high scores on emotional exhaustion and cynicism and low scores on professional efficacy are believed to exhibit burnout, those with low scores on exhaustion and cynicism and high scores on professional efficacy are believed to exhibit work engagement. Empirical studies claim that emotional drain and cynicism constitute the essence of burnout (e.g., Green, Walkey, & Taylor, 1991; Schaufeli & Buunk, 2003), whereas a lack of professional efficacy plays a different role in comparison with the other two (e.g., Lee & Ashforth, 1996; Leiter, 1993). The MBI-GS is invariant in a number of occupations (e.g., nurses, university staff, and blue-collar and white-collar workers, Leiter & Schaufeli, 1996; Schutte et al., 2000; Taris, Schreurs, & Schaufeli, 1999) and countries (e.g., Finland, Sweden, and The Netherlands, Schaufeli et al., 2002).

Another school of thought conceptualizes work engagement as an independent

concept that is distinct from burnout (Schaufeli et al., 2002). Specifically, work engagement and burnout are viewed as distinct but related opposite constructs. This conceptualization was supported by a recent meta-analysis (Halbesleben, 2010a). Schaufeli and his collaborators (2002) propose that work engagement and burnout may need to be measured separately. They define work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002, p. 74).

In this context, *vigor* refers to “high levels of energy and mental resilience while working, willingness to invest effort in work, and persistence in the face of difficulties” (Schaufeli et al., 2002, p. 74). Empirical studies find that individuals who report high vigor at work are highly motivated by their jobs and are more likely to persist when they encounter difficulties at work (e.g., Mauno, Kinnunen, & Ruokolainen, 2007). Vigor is considered the core motivational dimension of work engagement (Salanova, Agut, & Peiro, 2005).

Dedication refers to “a strong psychological involvement in employees’ work, combined with a strong identification with their work and encompassed feelings of significance, enthusiasm, inspiration, pride, and challenge” (Schaufeli et al., 2002, p. 74). Related studies find that dedication is conceptually similar to job involvement (e.g., Brown, 1996; Cooper-Hakim & Viswesvaran, 2005; Kanungo, 1982; Mauno & Kinnunen, 2000). This is because dedication can be observed when individuals have great involvement with their work (Brown, 1996). Therefore, dedication has much in common with job involvement (i.e., the amount of attachment and identification with one’s job) (Hayati, Charkhabi, & Naami, 2014). However, related studies argue that dedication has a broader meaning than job involvement. Dedication is involved in various feelings of employees (e.g., enthusiasm, inspiration, pride, and challenge),

whereas job involvement is mainly involved in the psychological importance of the job within employees' lives.

Absorption refers to "being happily engrossed in work, whereby time passes quickly and one has difficulties detaching" (Schaufeli et al., 2002, p. 74). Existing studies reveal that absorption is conceptually similar to flow (e.g., Gonzalez-Roma, Schaufeli, Bakker, & Lloret, 2006; Langelaan, Bakker, Schaufeli, Van Rhenen, & Van Doornen, 2006; Llorens, Schaufeli, Bakker, & Salanova, 2007). *Flow* refers to a short-term peak experience in which individuals are so involved in a certain task that they regard other tasks as unimportant. Based on Bakker's (2005) discussion, flow involves absorption; flow occurs when individuals believe that something deserves their attention, so they remain absorbed, even at great cost (Csikszentmihalyi, 1990). However, flow generally happens outside of the work environment. Studies claim that when flow occurs in the work environment, it mainly indicates that there is a good match between a person's professional skills and specific demands at work (e.g., Bakker, 2005; Csikszentmihalyi, 1990; Eisenberger, Jones, Stinglhamber, Shanock, & Randall, 2005). In this light, the major difference between absorption and flow may depend on where such experiences take place. Whereas absorption occurs particularly in work, flow can occur in any life environment (Hallberg & Schaufeli, 2006; Schaufeli et al., 2002; Schaufeli, Bakker, & Salanova, 2006).

In keeping with this definition, Schaufeli and his collaborators (2002) developed the Utrecht Work Engagement Scale (UWES), which incorporates the three dimensions of vigor, dedication, and absorption to evaluate work engagement. Individuals with high scores on all measures are believed to be high in work engagement, whereas those with low scores are expected to have low work engagement. Studies claim that vigor and dedication are the direct opposites of

emotional drain and cynicism, respectively, which are components of burnout (e.g., Gonz lez-Roma et al., 2006; Maslach et al., 2001; Schaufeli & Bakker, 2001). The UWES is invariant across a number of occupations (e.g., teachers, information communication technology consultants, and dentists; Hakanen et al., 2006; Hakanen et al., 2008; Hallberg & Schaufeli, 2006) and countries (e.g., German, Italy, and The Netherlands, Sepp l , Mauno, Feldt, Hakanen, Kinnunen, Tolvanen, & Schaufeli, 2009; Sonnentag, 2003; Xanthopoulou et al., 2009a). Based on the above, the conceptualization of work engagement and the use of the instrument for measuring work engagement may differ across studies depending on which school of thought researchers adopt.

2.1.2 Five assumptions of work engagement

Five assumptions underpin work engagement to explain why engaged employees perform better than their disengaged counterparts at work. These assumptions involve positive emotions, better mental and physical health, job crafting, work engagement vs. workaholic tendencies, and crossover (emotional contagion) (Demerouti & Cropanzano, 2010).

The first assumption is that engaged employees frequently experience positive emotions (e.g., Bindl & Parker, 2010; Schaufeli & Van Rhenen, 2006). According to the broaden-and-build theory of positive emotions (B&BT; Fredrickson, 2001), positive emotions broaden individuals' attention and thinking, enabling them to draw on a wider range of ideas. This broadened outlook enables them to discover and build physical, social, cognitive, and psychological resources over time (Fredrickson, 2001) and produces a greater state of well-being (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Tsai, Chen, & Liu, 2007). Consequently, with the resources obtained and the

improved state of well-being, individuals may be likely to take advantage of opportunities at work, effectively meet work challenges, and be successful and happy at work (Cropanzano & Wright, 2001; Ouwenel, Le Blanc, Schaufeli, & Wijhe, 2012). In support of this theory, empirical studies reveal that engaged employees are more proactive in generating resources at work than disengaged ones are due to positive emotion (Bakker & Demerouti, 2008). With increased resources, engaged employees experience higher levels of well-being and are more productive than disengaged employees are (Bakker & Demerouti, 2008).

A number of additional empirical studies find supporting evidence. In their research, Ouwenel, Le Blanc, and Schaufeli (2011) conducted a two-wave questionnaire study with a 4-week interval among 391 Dutch university students. They found that positive emotion predicted both resource gains and work engagement and that work engagement was positively associated with resource gains and positive emotion. In another study of 59 Dutch university employees, Ouwenel, Le Blanc, Schaufeli, and Wijhe (2012) found that compared to disengaged employees, engaged employees frequently benefit from positive emotions at work.

The second assumption is that engaged employees have better mental and physical health than their disengaged counterparts do. Because employees with high work engagement frequently experience positive emotions (e.g., happiness, joy, and enthusiasm) (Bindl & Parker, 2010), they tend to avoid experiencing mental and physical illnesses (Richman, Kubzansky, Maselko, Kawachi, Choo, & Bauer, 2005). Engaged employees can thus focus and dedicate all their skills and energy resources to their work (Bakker, 2011). Consequently, they may be more productive than those with lower levels of work engagement.

Existing studies report similar findings. In their study of 587 telecom managers,

Schaufeli, Taris, and Van Rhenen (2008) found that engaged respondents had fewer psychosomatic complaints compared with their disengaged counterparts. In a study of 381 insurance company employees, Demerouti, Bakker, De Jonge, Janssen, and Schaufeli (2001) revealed a negative correlation between engagement (particularly vigor) and psychosomatic health complaints (e.g., headaches, chest pain). Hakanen, Bakker, and Schaufeli (2006) surveyed 2038 Finnish teachers and revealed that work engagement was positively related to self-rated health and persistence at work. Similarly, in a study of 326 psychotherapists and 550 students in two and three waves, respectively, over a 5-month time lag, Reis, Hoppe, and Schroder (2015) found that work engagement was positively associated with better mental health.

The third assumption is that engaged employees craft their job (i.e., job crafting). *Job crafting* refers to self-initiated change behaviors in which employees engage with the aim of aligning their jobs with their own preferences, motives, and passions (Wrzesniewski & Dutton, 2001). Before the introduction of job crafting, a similar concept was proposed by Kulik, Oldham, and Hackman in 1987. Kulik and collaborators (1987) argued that employees may rearrange their jobs on their initiative with(out) the involvement of management. Job crafting has the potential to change certain aspects of a job within the scope of the specific job tasks and/or to produce simple changes that may impact the achievement of short-term goals (Tims, Bakker, & Derks, 2012). When employees craft their jobs, they may change aspects of the jobs that are task related (e.g., workload) and/or that involve their work relationships (e.g., intensity of interaction with co-workers/customers) (Wrzesniewski & Dutton, 2001). They may also change their cognition concerning aspects of the job with the aim of improving the meaning of their work (Wrzesniewski & Dutton, 2001). Employees craft their jobs to increase their ability to gain relevant resources in their work

environment (e.g., personal knowledge, skills, abilities, preferences and needs) (Tims et al., 2012) and improve performance (Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). Studies find that engaged employees may exercise influence over events that affect their lives (e.g., Grant & Ashford, 2008). They may proactively strive to acquire resources that are available to them (Bakker, 2011) to reduce difficulties and accomplish required tasks at work; that is, they craft their jobs at work (Hakanen et al., 2008; Hyvonen, Feldt, Salmela-Aro, Kinnunen & Makikangas, 2009). Consequently, they may reach required performance levels more effectively and efficiently than employees who do not engage in job crafting.

Previous studies have produced supportive findings. Petrou, Demerouti, Peeters, Schaufeli, and Hetland (2012) studied 95 employees from several organizations who completed a 5-day diary survey. These authors found that day-level work engagement was positively associated with day-level resource seeking. Tim, Bakker, and Derks (2012) conducted three separate studies in The Netherlands (total $N=1181$) and found that work engagement was positively associated with job crafting. In their study, Weigl, Hornung, Parker, Petru, Glaser, and Angerer (2010) used data from a three-wave panel ($N = 416$) of hospital physicians with measurement intervals of 14 and 19 months and found that work engagement could be an antecedent of resource gains (e.g., task, social, and personal resources). Lu, Wang, Lu, Du, and Bakker (2014) studied a sample of 246 Chinese employees of a high technology company and found that work engagement was associated with physical and relational job crafting. Bakker and Bal (2010) studied 54 Dutch teachers who completed a weekly questionnaire every Friday for 5 consecutive weeks. These authors found that work engagement was positively related to job resources. In their research, Reis, Hoppe, and Schroder (2015) surveyed 326 psychotherapists and 550 students in two and three

waves, respectively, over a 5-month time period and found that work engagement led to an increase of resources (e.g., job, study, and personal resources).

The fourth assumption is that work engagement differs from workaholism. Work engagement and workaholism have similarities but are distinct from each other (Taris, Schaufeli, & Shimazu, 2010). *Workaholism* was proposed by Oates (1968) and refers to “a strong inner drive to work excessively hard” (Schaufeli, Taris, & Bakker, 2008, p. 219). Empirical studies find that workaholics invest considerable time and energy in work (Harpaz & Snir, 2003; Scott, Moore, & Miceli, 1997; Spence & Robbins, 1992). However, rather than enjoying their work (Porter, 2001), workaholics work compulsively (Schaufeli, Taris, & Bakker, 2006; Scott et al., 1997; van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012) and attempt to meet and/or exceed organizational requirements (Scott et al., 1997; Taris et al., 2010). They find it difficult to disengage from and forget about work (Bakker et al., 2008). Van Wijhe, Peeters, Schaufeli, and Ouweneel (2013) found that workaholics used more time at work in the evenings than nonworkaholics did. Related studies reveal that workaholics frequently experience poor physical and psychological health and well-being (e.g., Burke & Matthiesen, 2004; Schou Andreassen, Ursin, & Eriksen, 2007; Spence & Robbins, 1992; Taris, Geurts, Schaufeli, Blonk, & Lagerveld, 2008), such as subjective health complaints and exhaustion (e.g., Schou Andreassen et al., 2007), unhappiness (e.g., Scott et al., 1997; Schaufeli, Bakker, Van der Heijden, & Prins, 2009), increased distress (e.g., Schaufeli, Taris, & van Rhenen, 2008), and decreased energy levels (e.g., Schaufeli et al., 2009). Engaged employees differ from workaholics in that they lack the typical compulsive drive and experience positive feelings at work (Schaufeli et al., 2008). They work because work is fun to them (Bakker & Demerouti, 2008). Empirical studies find that compared to those who disengage, engaged employees perform more

efficiently at work (Gorgievski, Bakker, & Schaufeli, 2010).

Existing studies have produced supportive findings. In their research, Schaufeli, Taris, and van Rhenen (2008) studied 587 telecom managers and found that work engagement and workaholism could be empirically distinguished. Shimazu and Schaufeli (2009) surveyed a sample of 776 Japanese employees and found that workaholism was associated with a lack of well-being (i.e., high psychological distress and physical complaints, low job and family satisfaction, and low job performance), whereas work engagement was associated with well-being (i.e., low psychological distress and physical complaints, high job and family satisfaction, and high job performance). Shimazu, Schaufeli, Kubota, and Kawakami (2012) examined 1,967 Japanese employees from various occupations and found that workaholism was related to an increase in ill health and a decrease in life satisfaction. In contrast, work engagement was related to a decrease in ill health and to increases in both life satisfaction and job performance. Van Wijhe, Peeters, Schaufeli, and van den Hout (2011) studied 173 employees and found that workaholism was positively related to a negative mood and that work engagement was related to a positive mood. Libano, Llorens, Salanova, and Schaufeli (2012) studied a sample of 386 administrative staff from a Spanish university and showed that work engagement led to positive outcomes (e.g., high job satisfaction and high organizational commitment), whereas workaholism resulted in negative outcomes (e.g., low job satisfaction and low organizational commitment).

The final assumption is that engaged employees improve their co-workers' work engagement by crossover. *Crossover* refers to a dyadic, inter-individual transmission of well-being between closely related individuals that occurs within a particular domain (e.g., workplace) (Bakker & Demerouti, 2009). Previous studies claim that

job performance may sometimes need to be achieved by teamwork (e.g., Bakker, Schaufeli, Leiter, & Taris, 2008) and that teams with engaged employees achieve more efficient and effective job performance than do teams with disengaged employees (e.g., Bakker et al., 2008). Studies find that engaged employees are inclined to help their colleagues if needed (e.g., Organ & Paine, 1999) and contribute to the positive mental connection among colleagues to pursue job performance (e.g., Ashforth & Humphrey, 1995). Therefore, engaged employees may improve their colleagues' emotional state and motivate them to engage in their jobs. Specifically, studies claim that engaged employees may improve their colleagues' level of work engagement through interpersonal communication that is predominantly emotional in nature and involves the ability to be affected by the other's affective state because they place themselves psychologically in their colleagues' circumstances (Lazarus, 1991; Starcevic & Piontek, 1997). Through interpersonal communication, engaged employees may transmit their positive emotions to their colleagues through emotional contagion (Bakker & Xanthopoulou, 2009; Hatfield, Cacioppo, & Rapson, 1994) to further improve their positive affect at work (Bakker & Geurts, 2004), which consequently improves their work engagement level.

A number of empirical studies provide supportive evidence. Totterdell (2000) studied players from two professional cricket teams and found that there were significant positive associations between the average of teammates' happy moods and the players' own moods and subjective performances. In their research, Bakker and Xanthopoulou (2009) examined 62 dyads of employees ($N=124$) to study the crossover of work engagement and found that an actor's work engagement (particularly vigor) had a positive indirect relationship with the partner's performance through the partner's work engagement. Bakker, Emmerik, and Euwema (2006)

studied a sample of 2229 Royal Dutch constabulary officers working in one of 85 teams and found that team-level work engagement was related to individual team members' work engagement (vigor, dedication, and absorption). In their study, Tims, Bakker, Derks, and van Rhenen (2013) surveyed 525 individuals working in 54 teams that provided occupational health services. These authors found that team-level work engagement increased individuals' work engagement.

2.2 The job demands-resources model of work engagement

This section discusses the JD-R model, which has emerged as the leading theoretical framework for research on work engagement. The section considers the model's generalizability and then discusses five theoretical assumptions underpinning the model. Those assumptions are 1) two theoretical components in the model (i.e., job resources and job demands); 2) two theoretical paths (i.e., motivational and health impairment processes) developed by the addressed two theoretical components; 3) the moderating effect of job resources on the relationship between job demands and work engagement; 4) a new resource (i.e., personal resources) that has recently been discussed separately and has been included in recent discussions of the model; and 5) the reverse causal relationships between job resources/personal resources and work engagement.

2.2.1 *The most recent iteration of the JD-R model of work engagement*

Many related yet often slightly different forms of the JD-R model of work engagement are presented and used in the literature. The most recent iteration of the model (Bakker, 2011) is depicted in Figure 1. However, there are many issues with

regard to this model. First and foremost, the model has been developed conceptually without being empirically examined, leaving its validity open for further discussion. Second, its development is based on some existing research findings; therefore, some important theoretical assumptions are excluded from the model. For example, there is no relationship between job demands and work engagement (detailed explanations for this relationship are presented in section 2.2.3).

Third, there is no buffering (moderating) effect of job resources on the relationship between job demands and work engagement in the model, which is another important theoretical assumption in the JD-R model. In fact, Bakker and his collaborators present empirical support for such a relationship in 2007 (Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). Nonetheless, the most recent iteration of the model does not include this link. Theoretical explanations and empirical evidence for such a relationship are presented and discussed in detail in section 2.2.4.

Fourth, the moderating effect of job demands on the relationship between job resources and work engagement in the model warrants further discussion. Specifically, Bakker and his collaborators (2007) proposed that job resources boost work engagement, particularly when job demands are high. They addressed one of the theoretical assumptions of the conservation of resources theory (COR; Hobfoll, 2002) as their theoretical support for this relationship: resource gain itself has only a modest effect but acquires its saliency in the context of resource loss.

However, Hobfoll (2002) claimed that when resource loss has occurred, the ability to obtain resource gains becomes of increasing importance because it can help provide emotional respite. In other words, theoretically, it is not resource gain *per se* but individuals' ability to obtain resource gains that becomes important (salient) in the context of resource loss. Additionally, resource gain may not contribute to individuals

unless the resources gained by individuals fit their lost resources in the context of resource loss (Hobfoll, 2002). In fact, Hobfoll (1998) clarified that resources are not valued and salient unless they fit demands. Therefore, Hobfoll's (2002) claim is based on the fit between resource gain and resource loss, whereas Bakker and his collaborators' (2007) claim is based on the quantity of resources (resource gain) and demands (resource loss), which is theoretically and fundamentally not in line with Hobfoll's (2002) claim. Moreover, based on Hobfoll's (2002) claim, what makes this ability important in the context of resource loss is that resource gains (e.g., job resource) contribute to reducing the influence of resource loss (e.g., job demands) on individuals' psychological state (e.g., work engagement) by providing emotional respite. This effect is highly similar to the buffering (moderating) effect of job resources on the relationship between job demands and work engagement (details refer to section 2.2.4); it does not directly contribute to motivating or boosting individuals' psychological state (e.g., work engagement) in such a context, as proposed by Bakker and his collaborators (2007). Therefore, the moderating effect of job demands on the relationship between job resources and work engagement fundamentally remains theoretical arguments in the JD-R model.

Fifth, although Bakker (2011) included the predictive link between personal resources and job resources in the model, he fails to comprehensively discuss or support this element, nor does he present sufficient empirical evidence for it. Existing studies mainly support the predicted relationship of job resources to personal resources in the JD-R model (e.g., Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007, detailed explanations are presented in section 2.2.5). In light of the above concerns, rather than adopting the most recent iteration of the JD-R model of work engagement (Bakker, 2011) as a fundamental model for extension in this study, the

researcher summarizes and explains the more widely used and recognized version of the JD-R model (i.e., five assumptions as briefly addressed in section 2.2) which is discussed and justified in the following sections (sections 2.2.2 to 2.2.6). Taking these assumptions into account, the researcher depicts the JD-R model of work engagement that he proposes to extend in Figure 2.

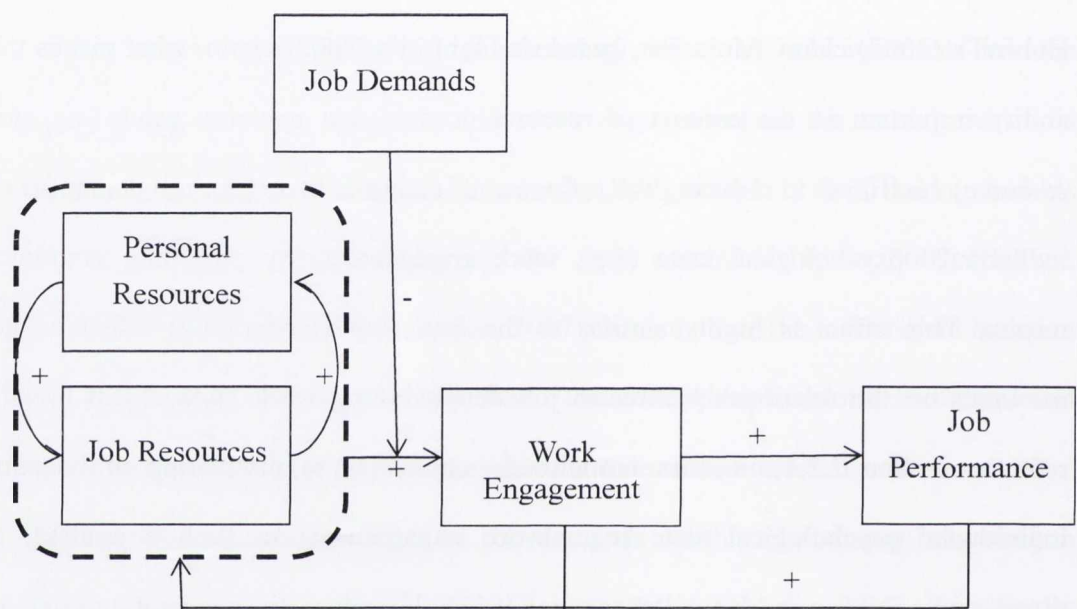


Fig. 1 The conceptual JD-R model of work engagement

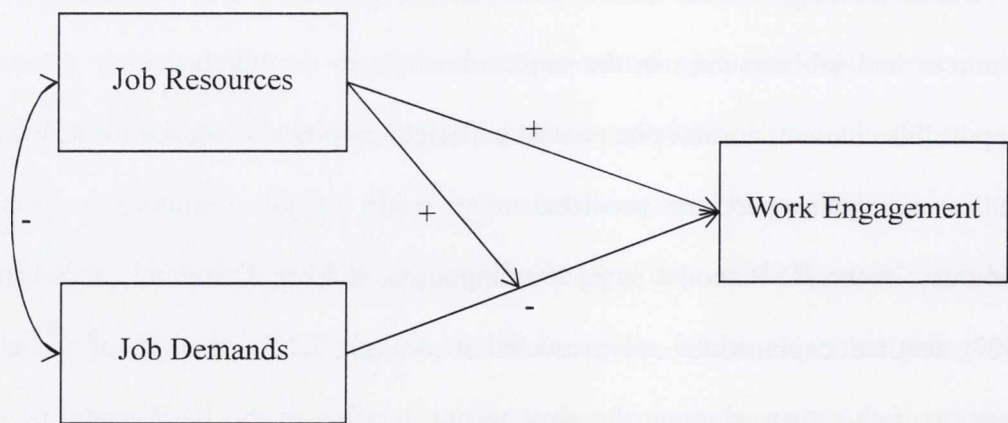


Fig. 2 The JD-R model of work engagement the researcher proposes to extend

Notes:

1. In this study, rather than being empirically tested as a part of the model extension, personal resources are treated as important theoretical explanations to illustrate how environmental (i.e., FHL) resources and demands influence work engagement (detailed explanations refer to 2.2.5). Therefore, the term personal resources is not included in the model the researcher proposes to extend.

2. In this study, the causal relationships between job and personal resources and work engagement are not examined as part of the model extension. Therefore, these relationships are not included in the model the researcher proposes to extend.

2.2.2 *Job demands and job resources*

The center of the JD-R model is the assumption that each organization has its own factors that affect employees' well-being and stress and that those factors can be summarized in two dimensions: job demands and job resources (Bakker et al., 2003). *Job demands* refers to the physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs (Demerouti et al., 2001). The JD-R model proposes that individuals may need to exert additional physical and psychological effort to reach work goals when job demands increase. Sustained physical and psychological efforts that are invested to cope with job demands may lead individuals to experience energetic exhaustion (Knardahl & Ursin, 1985). Examples of job demands may be role ambiguity and conflict and mental and emotional demands at work (e.g., Prieto, Soria, Martínez, & Schaufeli, 2008).

Job resources refers to the physical, psychological, social, or organizational aspects of the job that are functional for reaching work goals, reducing job demands and associated physiological and psychological costs, and/or promoting personal

growth, learning, and development (Schaufeli & Bakker, 2004). In this regard, job resources can alleviate job demands, contribute to the welfare of employees, or both. Examples of job resources may be job autonomy and manager/colleague social support (e.g., Balducci, Schaufeli, & Fraccaroli, 2011; Warr, 2007).

Based on the above, job demands and job resources in the model are negatively related (Bakker et al., 2004). In their study, Bakker, Demerouti, de Boer, and Schaufeli (2003) studied 214 nutrition production employees and found that job resources (e.g., job control and participation) and job demands (e.g., workload and reorganization) were negatively correlated. Bakker, van Veldhoven, and Xanthoutpoulou (2010) examined 12359 employees working for 148 large Dutch occupational health services providers and found that job resources (e.g., skill utilization, learning opportunities, and autonomy) and job demands (e.g., workload and emotional demands) were negatively correlated. Rothmann and Jordaan (2006) studied 471 academic staff members in three higher education institutions in South Africa and found that job resources (e.g., organizational support and growth opportunities) and job demands (e.g., overload) were negatively correlated.

2.2.3 Dual process of the development of work engagement

Two processes are proposed in the JD-R model for the development of work engagement: the health impairment process and the motivational process (Bakker & Demerouti, 2007). However, when referring to work engagement, most studies do not treat job demands as a predictor that may directly impact work engagement because work engagement is a motivational construct (Bakker, 2011). Therefore, whether the health impairment process of job demands exists in the JD-R model of work engagement remains subject to debate in contemporary research. This study argues

that job demands may serve as a predictor that affects work engagement directly; in other words, the health impairment process exists in the model. The reason is that the cause of health impairment originates from job stress and the production of job demands because job demands contribute to the loss of individuals' available resources (e.g., psychological and physical resources; Demerouti et al., 2001; Leiter, 1993) and increase their job stress, which may chronically impair their mental and physical health (Bakker et al., 2004). Because mental and physical health is one of the components that contributes to the development of work engagement (refer to the second assumption of work engagement in section 2.1.2), reduced mental and physical health may decrease individuals' work engagement level because they may not focus and dedicate all their skills and energy resources to their work (Bakker, 2011).

The claim that job demands hinder work engagement due to increased job stress has been supported in a number of empirical studies. In their research, Nahrgang, Morgeson, and Hofmann (2011) conducted a meta-analysis of 203 independent studies ($N = 186440$) and found support for a health impairment process by revealing that job demands (e.g., risks and hazards, physical demands, and complexity) may reduce work engagement. Hakanen, Bakker, and Demerouti (2005) surveyed 1919 Finnish dentists employed in the public sector and found that job demands (e.g., workload and physical environment) negatively predicted work engagement. Bosman, Rothmann, and Buitendach (2005) surveyed 297 employees in a government organization and showed that job demands (e.g., job insecurity) may reduce work engagement. Stander and Rothmann (2010) surveyed 442 employees in a government and manufacturing organization and found that job demands (e.g., affective job insecurity) hindered respondents' engagement at work.

The basis of the motivational process of job resources with regard to work engagement is that job resources have extrinsically and intrinsically motivational potential (Hakenen, Bakker, & Schaufeli, 2006; Llorens et al., 2006; Mauno et al., 2007; Xanthopoulou, Bakker, Demerouti, Schaufeli, 2007). Specifically, job resources may be an extrinsic motivator for individuals to improve work engagement because job resources may be beneficial for individuals to achieve work goals (Bakker & Demerouti, 2007). According to Bakker and his collaborators (2004), individuals tend to accomplish or even exceed goal accomplishment when they have ample resources. This may be explained by the effort-recovery model (E-R model; Meijman & Mulder, 1998). According to the E-R model, resources provided by work environments may promote employees' willingness to dedicate their efforts and abilities to their work. In this light, job resources may motivate individuals to dedicate themselves to work. Contemporary studies find that as an extrinsic motivator, job resources function to motivate employees to manage job demands and pursue work goals because they are willing to engage in their work (e.g., Bakker & Demerouti, 2007; Schaufeli & Taris, 2014).

In addition to dealing with job demands, job resources may benefit individuals' personal growth, learning, and development (Schaufeli & Bakker, 2004). Thus, they may be an intrinsic motivator by satisfying individuals' basic psychological needs (i.e., autonomy, relatedness, and competence; Baumeister & Leary, 1995; DeCharms, 1968; White, 1959). For example, flexible working hours may increase job autonomy (e.g., Costa, Sartori, & Akerstedt, 2006); social support may increase relatedness (e.g., Hagerty & Williams, 1999); and training opportunities at work may motivate individuals to learn (e.g., Maurer, 2001), which in turn may increase job competence (Schaufeli & Taris, 2014). Studies claim that by being either an extrinsic or an

intrinsic motivator, job resources may contribute to increased work engagement (e.g., Bakker & Demerouti, 2007).

Empirical studies support the contribution of job resources to work engagement. In their research, Nahrgang, Morgeson, and Hofmann (2011) conducted a meta-analysis of 203 independent studies ($N = 186440$) and found support for a motivational process by revealing that job resources (e.g., knowledge, autonomy, and social support) contribute to improved work engagement. Hakanen, Perhoniemi, and Toppinen-Tanner (2008) studied 2555 Finnish dentists and found that job resources (e.g., craftsmanship, pride in the profession, and direct and long-term results) led to work engagement. Rothmann and Joubert (2007) examined 310 management staff at a platinum mine in the North West Province and found that job resources (e.g., organizational support) may result in increased work engagement. Bakker and Bal (2010) surveyed 54 Dutch teachers and found that weekly levels of job resources (e.g., autonomy, exchange with the supervisor, and opportunities for development) were positively related to weekly engagement.

2.2.4 Buffering (moderating) effect of job resources on the link between job demands and work engagement

Job resources may reduce the negative impact of job demands (e.g., job stress) on work engagement (Bakker et al., 2007). This notion is derived from the demand–control model (DCM; Karasek, 1979). According to the DCM, control over the execution of tasks (e.g., job autonomy and job control) may reduce individuals' job stress, which is a response to work overload (Bakker, Demerouti, & Euwema, 2005). The JD-R model extends this logic by proposing that various job resources can reduce employees' job stress that develops in response to job demands (Bakker et al., 2005).

This proposition in the JD-R model can be supported by the buffering (moderating) hypothesis (Kahn & Byosserie, 1992). According to Kahn and Byosserie (1992), the buffering/moderation effect may be found between any pair of variables in the stress-related sequence. These authors suggest that “the buffering variable can reduce the tendency of organizational properties to generate specific stressors, alter the perceptions and cognitions evoked by such stressors, moderate responses that follow the appraisal process, or reduce the health-damaging consequences of such responses” (Kahn & Byosserie, 1992, p. 622). In light of the above, job resources contribute to weakening the negative relationship between job demands and work engagement (Bakker et al., 2007). In other words, work engagement may be improved by job resources in a demanding work environment.

In 2007, Bakker and Demerouti argued that job resources can increase work engagement, particularly when there is a high level of job demands (Bakker & Demerouti, 2007). This argument may be explained by the COR (Hobfoll, 1989), which proposes that individuals with fewer resources are more likely to experience future resource losses and that when they lose resources or are threatened by possible resource loss, their stress will increase (Hobfoll, 1989). However, individuals with more resources are less susceptible to experiencing future resource loss (Hobfoll, 1989). In this light, in demanding work conditions (e.g., high job demands), individuals with fewer resources are more likely to feel overtaxed with regard to their physical and psychological resources due to high job demands. They are therefore likely to experience higher job stress than individuals with more resources. This is because individuals with more resources have the requisite ability to reduce or counterbalance high job demands and can avoid being overtaxed by remaining job demands (Hobfoll & Shirom, 1993). In light of the above, in demanding work

conditions (e.g., high job demands), individuals with fewer resources are more likely to suffer from a significant reduction of work engagement due to high job stress than are those with more resources (Bakker et al., 2007; Caplan, Cobb, French, Van Harrison, & Pinneau, 1975).

In their research, Hakanen, Bakker, and Demerouti (2005) surveyed 1919 Finnish dentists employed in the public sector and found that job resources (e.g., variability in the required professional skills and peer contacts) were useful in coping with high job demands (e.g., workload and physical environment) in dentistry and helped dentists to remain engaged. Bakker, Hakanen, Demerouti, and Xanthopoulou (2007) surveyed 805 Finnish teachers working in elementary, secondary, and vocational schools and found that job resources (e.g., job control, supervisor support, information, organizational climate, innovativeness, and appreciation) particularly influenced work engagement when teachers were confronted with high levels of job demands (e.g., pupil misconduct).

2.2.5 Personal resources and their role in work engagement

Personal resources were first examined in the JD-R model in 2007 (e.g., self-efficacy, organizational-based self-esteem, and optimism; Xanthopoulou et al., 2007) and are relatively new to the model as the third variable for predicting work engagement. *Personal resources* refer to positive self-evaluations that are linked to resiliency and reflect individuals' sense of their ability to control and successfully affect their environment (Hobfoll, Johnson, Ennis, & Jackson, 2003). Empirical studies in relation to models other than the JD-R model have found a contribution of personal resources on individuals at work (e.g., job performance, job/life satisfaction, goal attainment, motivation, happiness, and work success; Bono, & Judge, 2003;

Judge, Erez, & Bono, 1998; Judge, Bono, Erez, & Locke, 2005; Judge, 2009; Piccolo, Judge, Takahashi, Watanabe, & Locke, 2005). Individuals with high personal resources believe they have the ability to solve challenges at work (Hewitt, 2009) and are intrinsically motivated to pursue work goals and optimal job performance (Judge et al., 2005; Sheldon & Elliot, 1999). Previous studies have produced similar findings by showing that individuals with high personal resources are more likely to achieve work success (e.g., Judge, 2009), experience positive emotions (Piccolo et al., 2005), and enjoy job/life satisfaction (Judge et al., 2005) than those with fewer personal resources.

Personal resources have been tested in the JD-R model to explain the development of work engagement. Specifically, some studies find that personal resources may be an independent predictor of work engagement (e.g., Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009b). For example, in their study of 163 employees, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009b) found that personal resources (e.g., self-efficacy, organizational-based self-esteem, and optimism) at time 1 predicted job resources and work engagement at time 2 with an average 18-month duration between the two measurements. Bakker, Gierveld, and Van Rijswijk (2006) surveyed female school principals and found that personal resources (e.g., resilience, self-efficacy, and optimism) predicted work engagement. The notion of personal resources as an independent predictor of work engagement may be explained by the idea that, as discussed in the previous paragraph of this section, individuals with personal resources tend to pursue work goals and optimal job performance (Judge et al., 2005; Sheldon & Elliot, 1999) and therefore would like to engage in their work (Hackman & Oldham, 1980).

However, a majority of studies find personal resources to be a mediator between

job resources and work engagement (e.g., Xanthopoulou et al., 2009b; Xanthopoulou et al., 2007). For example, Xanthopoulou, Bakker, Demerouti, Schaufeli (2009b) surveyed 42 employees working in three branches of a fast-food company using a diary booklet over 5 consecutive workdays. These authors found that day-level job resources affected work engagement through day-level personal resources (e.g., self-efficacy, self-esteem, and optimism). Karatepe and Olugbade (2009) surveyed 130 full-time-employed frontline employees of five- and four-star hotels in Abuja, the capital city of Nigeria. These authors found that personal resources (e.g., self-efficacy) mediated between job resources and work engagement. Salanova, Lorente, Chambel, and Martinez (2011) surveyed 17 supervisors who evaluated nurses' work engagement and extra-role performance and gathered data on a sample consisting of 280 dyads. They found that personal resources (e.g., self-efficacy) mediated between job resources and work engagement. Llorens, Schali, Bakker, and Salanova (2007) surveyed 110 Spanish university students and found that job resources predicted personal resources (e.g., self-efficacy) and work engagement.

The notion that personal resources are a mediator between job resources and work engagement is based on the idea that job resources may improve personal resources (Xanthopoulou et al., 2007). According to the COR (Hobfoll, 1989), resources tend to produce other resources, thus creating resource caravans that may lead to positive consequences, such as better coping and well-being (Hobfoll, 2002). Xanthopoulou and her collaborators (2007) found that job resources improved respondents' personal resources (e.g., self-efficacy, self-esteem, and optimism), making them feel capable of successfully managing and controlling work conditions (Luthans, Avey, Avolio, Norman, & Combs, 2006; Luthans, Norman, Avolio, & Avey, 2008). As a result, respondents become more confident and believed that their

work was meaningful, which consequently intrinsically motivated to engage in their work (Hackman & Oldham, 1980). In 2014, Schaufeli and Taris claimed that compared with disengaged workers, engaged workers seemed to possess a larger number of personal resources (e.g., optimism, self-efficacy, self-esteem, resilience, and an active coping style). Some empirical work has investigated the mediating effects of personal resources between job resources and work engagement but has failed to reach conclusive results (e.g., Xanthopoulou, Bakker, Heuven, Demerouti, & Schaufeli, 2008).

Few contemporary studies have investigated the role of personal resources on the relationship between job demands and work engagement in the JD-R model. Individuals' personal resources may be influenced by environmental stimuli (Bandura, 2000; Xanthopoulou et al., 2007). Personal resources may impact the way individuals react to the environment (Judge, Locke, & Durham, 1997; Xanthopoulou et al., 2007). This study argues that personal resources may be a mediator between job demands and work engagement. This concept may be explained by the COR (Hobfoll, 1989). According to the COR, initial resource losses may lead to future resource losses, which make individuals vulnerable to experiencing resource loss. In other words, job demands may make individuals experience future resource losses because they require individuals to invest sustained physical and psychological resources at work (Demerouti et al., 2001). Specifically, individuals may experience a reduction of personal resources (e.g., lower self-efficacy) because they may perceive that they cannot effectively control and affect their environment after becoming more vulnerable due to resource losses (Hobfoll et al., 2003). Empirical studies find that working conditions may affect individuals' personal resources (e.g., core self-evaluation) and that unfavorable working conditions (e.g., high job demands;

Bakker & Demerouti, 2007) may reduce individuals' personal resources (Kacmar, Collins, Harris, & Judge, 2009). Similarly, Gist and Mitchell (1992) claim that personal resources (e.g., self-efficacy) may be affected by the task itself. That is, demanding tasks at work may reduce individuals' personal resources. Reduced personal resources may make individuals uncertain about whether they are capable enough to control their work life or competent enough to be successful at work (Kacmar et al., 2009) or whether their efforts will be appreciated (Kamdar, McAllister, & Turban, 2006). Consequently, they may withhold their energy at work (Kacmar et al., 2009) and may be less engaged.

Although personal resources are the third variable in the JD-R model, their role in the model is still somewhat unclear (Schaufeli & Taris, 2014). Schaufeli and Taris (2014) claim that "there is no systematic study of the role of personal resources available that tested and compared different conceptualizations of the relations between personal and job resources, job demands, and outcomes.....findings may vary across different types and different combinations of personal resources, job resources, job demands, and outcomes" (p. 51). In addition, there is no widely recognized definition of personal resources. For example, Ten Brummelhuis and Bakker (2012a) claim that personal resources reflect an individual's physical energy. Fredrickson (2001) argues that personal resources may range from physical and intellectual resources to social and psychological resources. Thus, personal resources are not rooted simply in psychological resources but also reflect those resources received from the environment (e.g., work domain). For example, social resources may include social support (Cutrona, 1996), whereas intellectual resources may encompass knowledge and skills (Fu & Qian, 2006). In light of the above, it appears that the conceptualization and definition of personal resources and the role of personal

resources in the JD-R model require further consideration, discussion, and refinement. Given that personal resources may be a pivotal proximal factor to explain how environmental resources and demands influence work engagement, rather than examining this concept as part of the model extension, this study follows the lead of existing studies (e.g., Fredrickson, 2001; Ten Brummelhuis & Bakker, 2012a; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007) and conceptualizes personal resources in a more general way as the mental and pragmatic aspects individuals possess that may enable them to successfully control and impact their environment. Thus, personal resources as understood in this study may range from physical and intellectual resources to social and psychological resources. They are part of the theoretical explanation that articulates how family resources and demands can directly and indirectly influence individuals' work engagement in the extended JD-R model.

2.2.6 The reverse causal relationship between job/personal resources and work engagement

Work engagement may increase job and personal resources. The notion may be explained by the COR (Hobfoll, 1989) and the B&BT (Fredrickson, 2001). According to the COR, when there is no threat of resource loss, individuals are intrinsically motivated to develop resources. Because engaged individuals are intrinsically motivated to work and to pursue work goals (Xanthopoulou et al., 2009a), they may develop more job resources to allow them to accomplish those goals. According to the B&BT (Fredrickson, 2001), "experiences of positive emotions broaden people's momentary thought-action repertoires, which in turn serves to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources" (p. 218). Engaged individuals frequently experience positive

emotion (Bindl & Parker, 2010) and thus may proactively build or develop their personal resources at work. Schaufeli, Taris, and Bakker (2006) found that engaged individuals are more likely to accomplish work goals than those who are less engaged. The accomplishment of work goals may increase individuals' sense of ability to control and impact their work environment (i.e., personal resources). Thus, engaged individuals may develop personal resources (e.g., self-efficacy; Xanthopoulou et al., 2009a) by accomplishing work goals. The vicious and virtuous cycles in relation to the reciprocal relationship between resources and work engagement may be explained by the job crafting of work engagement. Engaged individuals may proactively craft their job (i.e., job crafting; Demerouti & Cropanzano, 2010). Tim, Bakker, and Derks (2012) found that job crafting is a specific form of proactive behavior in which employees initiate changes to increase the level of resources available to them at work. In other words, when resources (e.g., job and personal resources) allow individuals to be more engaged in their work, those individuals may tend to craft their jobs and in turn may become more proactive to obtain additional resources at work (i.e., a virtuous cycle between resources and work engagement). However, when individuals lose resources that reduce their engagement at work, they may tend not to craft their jobs and in turn may be less engaged in obtaining resources at work (i.e., a vicious cycle between resources and work engagement). In light of the above, there may be reciprocal relationships between job and personal resources and work engagement.

A number of existing studies have produced supportive findings. In their research, Hakanen, Perhoniemi, and Toppinen-Tanner (2008) used a 2-wave, 3-year panel design with 2555 Finnish dentists and found that work engagement may increase task resources (e.g., craftsmanship, pride in the profession, and direct and long-term results) and personal resources (e.g., self-efficacy). Xanthopoulou, Bakker,

Demerouti, and Schaufeli (2009a) surveyed 163 employees and found that work engagement may lead to an increase in personal resources (e.g., self-efficacy, organizational-based self-esteem, and optimism) and job resources (e.g., autonomy, supervisory coaching, performance feedback, and opportunities for professional development). Sonnentag (2003) surveyed 147 employees using a questionnaire and a daily survey over a period of 5 consecutive work days. They found that day-level work engagement predicted day-level personal initiative and pursuit of learning. Weigl, Hornung, Parker, Petru, Glaser, and Angerer (2010) conducted a three-wave panel ($N = 416$) of hospital physicians with measurement intervals of 14 and 19 months and found that work engagement may help to increase respondents' task, social, and personal resources at work.

2.3 The cross-domain impact of resources and demands

This section discusses the notion of the cross-domain influences of resources and demands. It provides explanations for the ways in which resources from one domain may improve individuals' effective functioning in another. It considers family-work enrichment theory as a useful framework to explain how resources drawn from the FHL domain may improve individuals' effective functioning at work. This understanding forms a critical theoretical foundation for the hypothesis development, which will be discussed in detail in Chapter 3. This section also discusses how demands from one domain may hinder individuals' effective functioning in another domain. In this context, it presents and discusses family-work conflict theory, which provides the theoretical framework for explaining how demands from the FHL domain can hinder individuals' effective functioning at work. This discussion will

provide the theoretical foundation for the development of hypotheses on negative cross-domain influences presented in Chapter 3.

2.3.1 Resources aspect

The way that the resources of a domain may affect individuals' functioning in another domain has been explained by the expansion hypothesis (Marks, 1977). According to the expansion hypothesis (Marks, 1977), involvement in one domain may establish resources that may improve performance or involvement in another domain (Greenhaus & Powell, 2006). In other words, resources may originate in one domain and be deployed in another domain to improve effective functioning in the latter domain without resulting in a resource loss in the former domain. Using such resources, individuals may achieve the role requirements for the latter domain more efficiently, which may help them save overall resource and energy use (Demerouti et al. 2001, Peeters, Montgomery, Bakker, & Schaufeli, 2005). With this saved energy, they may then be able to effectively cope with the demands experienced in the latter domain, which benefits them in accomplishing their role requirements (Demerouti et al. 2001, Peeters et al. 2005).

Brough, O'Driscoll, and Kalliath (2005) studied 398 employees from 23 large organizations in New Zealand and discovered that resources originating from work (e.g., flexible working hours, job sharing, and general support that meets family needs) increased respondents' satisfaction at home because they were able to fulfill family commitments or responsibilities. Similarly, those resources that originate from the family domain (e.g., sharing of household chores and the ability to relinquish the traditional domestic role) could increase participants' satisfaction at work because they were able to fulfill job commitments or responsibilities.

2.3.2 Family-work enrichment

Family-work enrichment (FWE; Greenhaus & Powell, 2006) originated from the expansion hypothesis (Marks, 1977) and suggests that individuals' family domains can enrich their work domains when resources generated and gained in the family domain (i.e., family resources) benefit job performance and/or improve positive affect (also called positive emotion; Cohen & Pressman, 2006) in the work domain. Family resources may be transferred via two paths (Greenhaus & Powell, 2006): the affective path and the instrumental path. The *affective path* reflects family resources that produce individuals' positive emotion in the family domain, which in turn improves individuals' effective functioning at work. *Positive emotion* reflects the extent to which individuals feel positive and energetic moods (Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001). The *instrumental path* reflects family resources such as skills, tangible support, knowledge and information, and perspectives that can directly improve individuals' performance at work. Empirical studies have considered numerous family resources (e.g., Aryee, Luk, Leung, & Lo, 1999) and have found that family can contribute to individuals' effective functioning at work (as summarized in Appendix 1).

2.3.3 Demands aspect

The way that demands in one domain may affect individuals' functioning in another domain may be explained by the resource scarcity perspective (Goode, 1960). This perspective suggests that when demands in one domain deplete individuals' available resources, this may lead to individuals having fewer resources available to accomplish their role requirements in another domain (Demerouti et al. 2001, Peeters

et al. 2005). Therefore, it is necessary for these individuals to find or create additional resources (e.g., psychological and physical resources) to compensate for the resource drain that originates in another domain, which may further deplete their energy. The depletion of energy may hinder their ability to cope with demands of the latter domain and, consequently, may prevent them from accomplishing the role requirement of that domain (Demerouti et al. 2001, Peeters et al. 2005).

For example, in their research with 76 single, employed women, Goldberg, Greenberger, Hamill, and O'Neil (1992) reported that respondents who invested more time and energy at work experienced increased role strain because they did not have sufficient time and energy for their family life. Similarly, based on a sample of university students, Home (1997) reported that those who possessed multiple roles faced time and resource constraints that made them more vulnerable to role strain and made it more difficult to achieve their role requirements (e.g., school work) compared with students who did not possess multiple roles. Cooke and Rousseau (1984) used questionnaire and interview data from a random sample of Michigan teachers ($N=200$) and found that when workload increased, respondents experienced increased strain at home because they could not meet their expectations of family role requirements.

2.3.4 Family-work conflict

Family-work conflict (FWC; Greenhaus & Beutell, 1985) originated from the resource scarcity perspective (Goode, 1960) and suggests that demands in the family domain (i.e., family demands) may hinder individuals' ability to carry out their work role (Frone, Russell, & Cooper, 1992; Greenhaus, Allen, & Spector, 2006), which typically requires sustained physical and/or psychological effort (i.e., personal resources) at work (Demerouti et al. 2001, Peeters et al. 2005).

Unlike FWE, FWC does not distinguish between affective and instrumental paths to describe the impact of resources. FWE and FWC are recognized as distinct, independent constructs (Frone, 2003) and, as such, may operate differently (McNall, Nicklin, & Masuda, 2010). However, similar to FWE, FWC may work through an affective path. Existing studies find that both physical and emotional demands may eventually cause emotional drain (e.g., Bakker et al., 2003; Lee & Ashforth, 1990). To prevent such emotional drain, individuals need to invest personal resources to address these demands. According to FWC theory, individuals' personal resources that could have been used for job demands are deployed to address the demands of the family domain, leaving existing job demands unsolved and/or potential/future job demands unsolvable due to the unavailability of sufficient personal resources. In turn, the work domain may become demanding, and individuals may need to use additional personal resources (e.g., physical and psychological resources) to address unresolved job demands. In other words, unlike family resources, which motivate individuals to develop personal resources at work, family demands tax and deplete employees' personal resources at work. A number of empirical studies show that family can hinder individuals' effective functioning at work (as summarized in Appendix 1).

2.4 Brief summary

Although the JD-R model is widely recognized as the predominant framework for explaining work engagement, its exclusive focus on demands and resources arising in the work environment limits its explanatory power and scope. In addition to being affected by factors in the work environment, employees are also involved in non-work environment such as family or home which can also affect their work engagement, well-being and performance at work. This is a clear limitation of all

current iterations of the JD-R model and a gap in the literature on this model and on work engagement more generally. Based on family-work enrichment and conflict theories, family and home life influences do play an important role in affecting employees' motivation and well-being at work. In this regard, this study extends the current boundaries of the JD-R model of work engagement by theoretically integrating FHL antecedents (i.e., FHL resources and FHL demands) of work engagement and empirically investigating these additional model elements and their links to work engagement. The next chapter explicitly articulates how FHL resources/demands directly and indirectly (through job demands/resources) influence work engagement.

Chapter 3 Extending the JD-R Model

This study aims to extend the current boundaries of the JD-R model of work engagement by theoretically integrating FHL antecedents of work engagement and empirically investigating these additional model elements and their links to work engagement. Specifically, this chapter discusses empirical evidence and theoretical contributions drawn from work on family and home life, and - as discussed in section 1 - adopts a broad conception of the family domain (i.e., FHL) as addressed in Chapter 1.

3.1 FHL resources and work engagement

The way that FHL resources can affect an individual's work engagement may be illustrated through an explanation that combines the perspectives of family-work enrichment (FWE; Greenhaus & Powell, 2006), the positive spillover perspective (Crouter, 1984), the broaden-and-build theory of positive emotions (B&BT; Fredrickson, 2001), and the conservation of resources theory (COR; Hobfoll, 1989).

Although there may well be some merit in the proposition advanced by FWE that family resources may directly benefit work and work performance through instrumental effects (the instrumental path), the justification provided in the FWE literature does not sufficiently support this assertion because the causal nature of this effect has not been justified. Specifically, resources that are transferred through the instrumental path (e.g., knowledge and skills) may initially increase personal resources (e.g., self-efficacy) and may make individuals feel more capable of managing their work environment (Luthans et al., 2006; Xanthopoulou et al., 2007).

Consequently, these individuals may experience improved positive affect at work (Caprara, Steca, Gerbino, Paciello, & Vecchio, 2006) and increased intrinsic motivation to utilize their abilities at work (Meijman & Mulder, 1998) because they perceive that they may be able to achieve high job performance (Hackman & Oldham, 1980; Xanthopoulou et al., 2007). In other words, family resources that transfer through an instrumental path may initially influence individuals' psychological state (e.g., positive emotion) rather than directly influencing job performance. Empirical studies also support the notion that rather than directly improving job performance, family resources that contribute through an instrumental path may initially improve individuals' work engagement (e.g., Siu, Lu, Brough, Lu, Bakker, Kalliath, O'Driscoll, Phillips, Chen, Lo, Sit, & Shu, 2010), an element that is not included in the original formulation of FWE.

In light of the arguments presented above, both FHL resources that may simply improve individuals' positive emotion in the FHL domain (i.e., resources that are affective oriented) and those that directly aid individuals in better functioning at work (i.e., resources that are instrumental oriented) may have an effect on the work domain through the affective path. To fully understand the considerations underlying research on work engagement and the JD-R model, this study renames what FWE theory calls the affective path as the *cognitive-affective path* because this name more explicitly reflects an information-processing view and conveys the role of *cognition* in explaining individuals' psychological states in relation to knowledge, problem solving and performance (Barbara, 1996; Sternberg & Sternberg, 2009). The reason for renaming the affective path is that FHL resources may not only improve individuals' positive emotion in the FHL domain and at work but may also improve their effective functioning at work through cognitive processes that are affected by this positive

emotion. Thus, the term cognitive-affective path appears more suitable to fully reflect the way in which FHL resources impact individuals' work engagement. Summarizing the above considerations, this study claims that FHL resources may have affective and/or instrumental effects and that both may induce FWE and thus affect work engagement through the cognitive-affective effects summarized in the cognitive-affective path.

The cognitive-affective path explains how FHL resources can improve individuals' positive emotion at home and is based on the positive spillover perspective. *Positive spillover* was initially proposed in the early 1980s (Crouter, 1984) and refers to a within-person cross-domain transmission of positive emotion and consequent well-being from one domain to another (Repetti, 1987). In other words, individuals' positive emotions that arise in one domain translate to other domains. In their study, Edwards and Rothbard (2000) claimed that positive spillover from family to work may occur in the form of positive emotion and values. Both affective and instrumental FHL resources may improve individuals' positive emotion at work. According to the B&BT (Fredrickson, 2001), "experiences of positive emotions broaden individuals' momentary thought-action repertoires, which in turn serves to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources" (p. 218). In this light, when individuals experience positive emotion at work due to FHL resources, they may actively build their personal resources (e.g., physical and psychological resources) at work by developing increased confidence and self-efficacy regarding their work, seeking more job resources to strengthen their actual abilities at work, or both.

A number of empirical studies support the contribution of positive emotion to resource building. In their study of 139 working adults, Fredrickson, Cohn, Coffey,

Pek, and Finkel (2008) found that daily experiences of positive emotions over time predicted the production of personal resources (e.g., social support). Cohn, Fredrickson, Brown, Mikels, and Conway (2009) surveyed 86 students and evaluated their daily emotions over a month. They found that positive emotion predicted resource generation (e.g., resilience). Similarly, using a qualitative approach, Tugade and Fredrickson (2007) found that positive emotions predicted the increase of personal resources (e.g., resilience).

According to the COR (Hobfoll, 1989), increased personal resources improve individuals' well-being (Hobfoll, 2002). In this light, with increased personal resources at work, individuals may experience an improvement in their well-being. Empirical studies find that individuals with increased personal resources and improved well-being are more likely to take advantage of opportunities at work, to effectively achieve their work challenges and to be more energetic and happy at work (e.g., Ouwenel et al., 2012), which will improve their work engagement (e.g., Xanthopoulou et al., 2007).

Existing empirical studies have reached the same conclusion. In their research with 274 secondary school teachers, Salanova, Llorens, and Schaufeli (2011) found that positive emotion predicts work engagement through ongoing resource gains. Using a two-wave questionnaire study with a 4-week interval among 391 Dutch university students, Ouwenel, Le Blanc, and Schaufeli (2011) found that positive emotion predicts future resource gains and subsequent study engagement.

In general, previous research has provided support for the relationship between family resources and work engagement (see Appendix 1). For example, Bakker, Demerouti, and Schaufeli (2005) surveyed 323 couples working in a variety of occupations and found that family autonomy and family social support can increase

vigor. Siu, Brough, Lu, Bakker, Kalliath, and their collaborators (2010) surveyed a matched sample of 786 employees in China and found that family support was associated with work engagement. Lu, Siu, Chen, and Wang (2011) surveyed a sample of 279 Chinese female nurses and revealed that resources generated in families (e.g., family mastery) could help individuals stay engaged in the workplace, particularly under stressful working conditions. Bakker and Demerouti (2009) surveyed 175 Dutch women and their partners working in different occupational sectors as well as 175 colleagues of the male participants. They found that spousal empathy was related to work engagement.

Thus, due to the positive effects of FHL resources on work engagement through the cognitive-affective path, which includes positive effects on personal resources and on positive emotion at work, the researcher proposes the following hypothesis (H1):

Hypothesis 1 (H1): FHL resources positively predict work engagement.

3.2 The moderating role of FHL resources on the link between job demands and work engagement

Because FHL resources may improve individuals' positive emotion (Edwards & Rothbard, 2000) and further motivate individuals to develop personal resources they can deploy at work, FHL resources may influence how effective individuals are in dealing with job demands by mobilizing individuals' positive emotion. Specifically, high FHL resources may increase positive emotion and may motivate individuals to proactively develop their personal resources at work. Consequently, those individuals may have increased levels of personal resources to address job demands. Their work engagement may be less negatively impacted by job demands because their higher

levels of positive emotions and subsequently higher levels of personal resources counter the negative impact of such job demands. In contrast, lower levels of FHL resources may not increase positive emotion and therefore may not contribute to individuals' development of their personal resources at work. Consequently, those individuals may be more affected by job demands, which may be reflected in lower levels of work engagement and subsequent job performance.

Thus, in demanding work environments, individuals with lower levels of personal resources may show greater reductions in work engagement. This phenomenon may be explained by the COR (Hobfoll, 1989), which claims that individuals with fewer resources are more likely to experience additional resource losses. When individuals with lower levels of personal resources work in highly demanding conditions, they may be at risk of investing remaining personal resources due to potential shortage of available resources. Therefore, they may be likely to experience increased job stress that negatively affects their work engagement. In contrast, individuals with abundant personal resources may be likely to deploy their personal resources to reduce or counterbalance high job demands and therefore may be at a lower risk of investing resources they already have. Consequently, they may remain at the same level or reduce their work engagement level under high job demand conditions.

Some available empirical evidence may provide support for the ideas outlined and discussed above. For example, Cobb (1976) claimed that social support is a moderator of life stress, which includes job and personal stress (Brief, Burke, George, Robinson, & Webster, 1988). Taking Cobb's (1976) and Brief and collaborators' (1988) findings into account and given that family social support may help individuals to reduce job stress (Bakker et al., 2005), which implies the fact that it plays a role in

individuals' work life, family social support (i.e., family resources) may be a moderator of job stress.

In light of the above, FHL resources may increase individuals' positive emotion and motivate them to build and extend personal resources at work that could further be deployed to successfully address and cope with job demands. This situation would reduce the negative effects of job demands on their work engagement. Therefore, the researcher proposes the following hypothesis (H2):

Hypothesis 2 (H2): FHL resources moderate the link between job demands and work engagement.

3.3 FHL demands and work engagement

The way that FHL demands affect a person's work engagement and job performance may be illustrated by using elements of FWC (Greenhaus & Beutell, 1985) and the COR (Hobfoll, 1989). As addressed in section 2.3.4, based on FWC theory (Greenhaus & Beutell, 1985), family demands tax individuals' available personal resources that could have been deployed to deal with job demands. Therefore, individuals may need to deploy additional personal resources (e.g., physical and psychological resources) at work to address unresolved job demands.

According to the COR (Hobfoll, 1989), resource loss increases stress (Hobfoll, 2002). In this light, with decreased personal resources at work, individuals may experience an increase in job stress. Empirical studies find that when individuals experience reduced personal resources and increased job stress, they are less likely to take advantage of opportunities at work and to achieve work objectives and are more likely to be exhausted at work (e.g., Hakanen et al., 2006; Ouweneel et al., 2012),

which may lower work engagement (e.g., Hakanen et al., 2006).

Existing studies have reached similar findings that support the negative relationship between FHL demands and work engagement (see Appendix 1). For example, in a study of 323 couples, Bakker, Demerouti, and Schaufeli (2005) found that home overload, emotional demands, and cognitive demands were negatively related to vigor. Fu and Shaffer (2001) surveyed a Hong Kong university sample (including both academic and non-academic staff) and showed that parental demands and hours spent on household work were related to increased job stress due to FWC. Lu, Chang, Kao, and Cooper (2015) surveyed 409 Chinese employees and found that family conflict contributed to increased job stress because of FWC.

In summary, FHL demands reduce the personal resources that individuals have available to address and cope with work demands. This situation leads individuals to experience increased job stress, which consequently reduces their level of work engagement. In this light, the researcher proposes the following hypothesis (H3):

Hypothesis 3 (H3): FHL demands negatively predict work engagement.

3.4 The moderating role of job resources on the link between FHL demands and work engagement

As addressed in section 3.3, FHL demands may tax individuals' available personal resources that could have been deployed to address job demands (Greenhaus & Beutell, 1985), leaving job demands partially or fully unresolved or unresolvable. Therefore, individuals may need to invest additional personal resources to address these job demands and may experience increased stress at work (Hobfoll, 1989) that reduces their work engagement (Hakanen et al., 2006). In this regard, available job

resources may influence how individuals deal with difficulties that arise from job demands that are compounded by high levels of FHL demands. Specifically, if abundant job resources are available, individuals may avoid being overtaxed with regard to their personal resources to address unresolved or unresolvable job demands. In turn, they may experience a reduction of job stress, which may improve their work engagement. By contrast, although few job resources may be used to address those unresolved or unresolvable job demands, individuals may be at risk of being overtaxed with regard to their personal resources to address those job demands. According to the COR (Hobfoll, 1989), any potential loss of resources may generate stress in individuals. Thus, although low levels of available job resources may help individuals deal with job demands, this contribution may be limited. Consequently, individuals who receive few job resources may be more affected by job demands in the presence of additional high levels of FHL demands. In other words, these individuals' work engagement may be at a greater risk of being negatively impacted by high levels of job demands.

Based on the above logic, individuals with low levels of job resources may be more exposed to a significant reduction of work engagement as a result of high FHL demands compared to those with abundant job resources. According to the COR (Hobfoll, 1989), individuals with fewer resources are generally more likely to experience resource losses. Therefore, individuals with fewer job resources may be at greater risk of being overtaxed with regard to their available personal resources and thus may be less likely to successfully address job demands, especially in light of simultaneously high levels of FHL demands. Their low levels of available job resources do not suffice to counterbalance these demands. Therefore, they may be more likely to experience increased job stress, which limits their work engagement.

By contrast, individuals with abundant job resources may be more able to deploy their available job resources to reduce or counterbalance high job demands that are exacerbated by high levels of FHL demands. Thus, such individuals will be less likely to be overtaxed in their personal resources. Consequently, they will be able to utilize their high levels of job resources to successfully deal with the simultaneous challenge of high levels of both FHL and job demands.

When FWC happens, individuals lack resources that could help them address job demands because their personal resources that could have been deployed to address job demands are already taxed by the need to address family demands. However, no known FWC-related study to date has considered how job resources reduce the impact of family demands on work engagement in this way. This aspect is an important part of the novel contribution of this study. Some empirical evidence exists that may provide indirect support for these propositions. For example, Fu and Shaffer (2001) surveyed a Hong Kong university sample (including both academic and non-academic staff) and showed that domestic social support (e.g., supervisor and coworker) moderated the relationship between parental demands and family-to-work conflict. In their research, Casper, Martin, Buffardi, and Erdwins (2002) surveyed 143 professional employed mothers with at least 1 preschool-age child and found that perceived organizational support moderated the relationship between family-to-work conflict and continuous job commitment. According to the above findings, job resources may moderate the relationship between family stressors and family-to-work conflict and between family-to-work conflict and work engagement-related components (e.g., job commitment), which may imply that job resources may reduce the impact of family demands on work engagement-related components (e.g., job commitment).

In summary, FHL demands tax individuals' personal resources and reduce the personal resources available for work. Individuals thus invest a higher proportion of their remaining personal resources at work, which reduces their work engagement. In this context, high levels of job resources help individuals cope with job demands and reduce the drain on their remaining personal resources at work. In other words, job resources may reduce the hindering effect of individuals' FHL demands on their work engagement level. Therefore, the researcher proposes the following hypothesis (H4):

Hypothesis 4 (H4): Job resources moderate the link between FHL demands and work engagement.

3.5 Additional propositions

The main focus of the present study is the impact of FHL factors on employee work engagement. Research using the JD-R model of work engagement has long since presented claims that work engagement is an important factor that determines work performance (Salanova, Agut, & Peiró, 2005). As the present study did not provide the opportunity to investigate such linkages to performance due to the inability to collect objective individual performance data in the study sample and settings, these elements were not explicitly included in the hypotheses used to empirically assess the proposed model extension. However, the researcher has chosen to present the theoretical arguments for linkages of FHL factors to job performance as additional propositions, and uses the available self-report data on job performance to provide supplemental analysis (see Chapter 5/Section 5.6) to consider what preliminary insights into the impact of FHL resources and demands may have on

performance. Clearly, these linkages must be investigated by future research that utilized more robust measures of job performance. In short, the researcher has excluded job performance from the model evaluation but below develops and presents a set of additional, theoretically derived propositions regarding the role of job performance in an extended JD-R model, and subsequently also presents a preliminary assessment of these propositions based on self-reported performance measures collected from the study sample. The following sections (3.5.1 and 3.5.2) present the theoretical notions and existing empirical evidence for the role of job performance in the proposed extended JD-R model of work engagement.

3.5.1 The mediation of the link between FHL resources and job performance through work engagement

When work engagement is high, job performance tends to increase because engaged individuals frequently experience positive emotion, have better physical and psychological health, and transfer their engagement to their colleagues, which further improves their colleagues' engagement level (Bakker, 2011; Bakker & Xanthopoulou, 2009). *Job performance* refers to measureable actions, behaviors, and outcomes that employees engage in or bring about during their work activities that are linked with and contribute to organizational goals (Viswesvaran & Ones, 2000).

As illustrated in the literature section 2.1.2, studies on work engagement have shown that engaged employees normally experience positive emotion, including happiness, joy, and enthusiasm (Bindl & Parker, 2010). According to the B&BT (Fredrickson, 2001), positive emotion induces individuals to create more personal resources at work. Thus, engaged individuals can be expected to build and extend their personal resources at work, which help them to achieve higher job performance

(Bakker, 2011; Judge et al., 2005).

Empirical studies reveal support for this assertion. Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009b) studied 163 employees from three divisions (Human Resources, Industry, Commercial and Economic Management) of a company in the Netherlands and reported that time 1 work engagement predicted time 2 personal resources. The average duration between the two measurements was $M = 18$ months ($SD = 2$; range 13–19 months). This is because engaged employees believe they are capable enough to manage their work well and may satisfy their needs by participating in roles in their organization (Bakker, 2011). In a study of 104 Italian schoolteachers, Simbula, Guglielmi, and Schaufeli (2011) found that work engagement had a short- and long-term lagged effect on personal resources (e.g., self-efficacy). Kati, Katariina, and Jari-Erik (2009) reported that among 614 17-year-old upper secondary school students, those that engaged more in goal pursuit invested more effort and performed better in their educational transition after upper secondary school. Salanova and Schaufeli (2008) surveyed two independent samples from Spain ($N = 386$ technology employees) and the Netherlands ($N = 338$ telecom managers) and found that work engagement positively predicted proactive behavior (e.g., looking for challenging goals and actively finding solutions when something goes wrong at work).

Positive emotion may play a protective role against the development of illnesses (Richman et al., 2005). Therefore, work engagement may help individuals to gain more physical resources to maintain their health. In turn, individuals may focus and dedicate their skills and energy resources to their work (Bakker, 2011). Empirical studies find that engaged employees have relatively few psychosomatic complaints compared with their less engaged counterparts (e.g., Demerouti, Bakker, De Jonge,

Janssen, & Schaufeli, 2001; Hakanen et al., 2006; Schaufeli et al., 2008).

Schaufeli, Bakker, and van Rhenen (2009) surveyed 201 telecom managers and found that work engagement predicted shorter registered sickness duration. In their study, Shimazu and Schaufeli (2009) surveyed a sample of 776 Japanese employees and found that work engagement was negatively associated with ill health and was positively associated with job performance. Shimazu, Schaufeli, Kubota, and Kawakami (2012) surveyed 1967 Japanese employees from various occupations and found that work engagement was positively related to decreased ill health and to increased job performance.

Some job performance arises from collaborative efforts, and engaged workers may increase the intensity of the interaction and connection with colleagues to pursue job performance (Ashforth & Humphrey, 1995). In doing so, they may actively help colleagues with difficulties (Cropanzano & Wright, 2001) and transmit positive emotion to colleagues to improve their engagement and performance at work (Bakker & Xanthopoulou, 2009).

Empirical studies support the transmission of positive emotion and/or work engagement from one person to another to improve the work engagement of the latter. In their study, Bakker, Demerouti, and Schaufeli (2005) surveyed 323 couples working in a variety of occupations and found that respondents' positive emotion may be transmitted to their partners and further influence their partners' engagement at work. Bakker, van Emmeril, and Euwema (2006) surveyed 2229 Royal Dutch constabulary officers working in one of 85 teams and found that each team member's work engagement could determine team-level work engagement. Bakker and Xanthopoulou (2009) surveyed 124 employees and found that respondents' work engagement, especially vigor, had a positive indirect relationship with their

co-workers' performance through co-workers' work engagement.

In general, a number of studies support the positive relationship between work engagement and job performance (as shown in Table 1). Empirical studies find that in comparison with non-engaged individuals, engaged individuals experience more personal success at work (e.g., Bakker & Xanthopoulou, 2009; Langelaan, Bakker, van Doornen, & Schaufeli, 2006), possess a sense of effective connection with their work-related activities (e.g., Halbesleben, 2010b; Schaufeli & Salanova, 2006), are more productive at work (e.g., Bakker, 2011; Xanthopoulou et al., 2009a), are happy to help colleagues to achieve job performance (e.g., Halbesleben & Wheeler, 2008), and exhibit improved job performance (e.g., Barkhuizen & Rothmann, 2006). Halbesleben and Wheeler (2008) surveyed a sample of American employees from a wide variety of industries and occupations and showed that work engagement made a unique contribution to explaining variance in job performance. Salanova, Agut, and Peiro (2005) surveyed 342 contact employees from 58 hotel front desks and 56 restaurants and found that work engagement predicted employees' job performance. In their research with 54 Dutch teachers, Bakker and Bal (2010) revealed that weekly work engagement predicted weekly job performance. Bakker, Demerouti, and ten Brummelhuis (2012) surveyed 144 employees from several occupations and found that work engagement was positively associated with job performance.

In light of the above, abundant FHL resources contribute to higher levels of work engagement (see H1) and motivate individuals to build and extend their personal resources at work, to deploy their abilities at work more fully due to physical as well as psychological health benefits and to positively impact co-workers' work engagement levels. All of these effects have a positive effect on job performance. Therefore, the researcher proposes the following proposition (P1):

Proposition 1 (P1): Work engagement fully mediates the positive relationship between FHL resources and job performance.

Table 1. Work engagement and job performance

Author (Year)	Title	Sample Characteristics	Analysis	Findings
Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002).	Business	(N=7,939) units in 36	Meta-Analysis	Employees' levels of
Business-unit-level relationship between employee companies				engagement predict
satisfaction, employee engagement, and business				business-unit
outcomes: A meta-analysis. <i>Journal of Applied</i>				performance
<i>Psychology</i> , 87, 268-279.				
Salanova, M., Agut, S., & Peiro, J. M. (2005).	Contact employees	(N=342) from 114	Structural	Work engagement
organizational resources and work engagement to service units (58 hotel front desks and 56			Equation	predicts service
employee performance and customer loyalty: The restaurants)			Modeling (SEM)	climate and predicts
mediation of service climate. <i>Journal of Applied</i> Customers (N=1140) from these units				employees' performance
<i>Psychology</i> , 90(6), 1217-1227.				
Halbesleben, J. R. B., & Wheeler, A. R. (2008).	The US employees from a wide variety of		Confirmatory	Work engagement
relative roles of engagement and embeddedness in industries and occupations (N=587)			Factor	predicts in-role
predicting job performance and intention to leave. <i>Work</i>			Analysis (CFA)	performance

Xanthopoulou, D., Baker, A. B., Heuven, E.,	Flight attendants (N=222) from European	multi-level	Work	engagement
Demerouti, E., & Schaufeli, W. B. (2008). Working in	airline company.	analyses		predicts in- and extra-
the sky: a diary study on work engagement among	Consecutive	(3		role performance
flight attendants. <i>Journal of Occupational Health</i>	destinations)			
<i>Psychology</i> , 13(4), 345-356.				
Bakker, A. B., & Demerouti, E. (2009). The crossover	Dutch couples of dual-earner	parents	Work	engagement
of work engagement between working couples: A	(N=175)			predicts in- and extra-
closer look at the role of empathy. <i>Journal of</i>				role performance
<i>Managerial Psychology</i> , 24(3), 220-236.				
Xanthopoulou, D., Bakker, A. B., Demerouti, E., &	Employees (N=42) working in three	Multi-level	Day-level	work
Schaufeli, W. B. (2009a). Work engagement and	branches of a fast-food company	analyses		engagement predicts
financial returns: A diary study on the role of job and	Consecutive (5 days)			daily financial returns
personal resources. <i>Journal of Occupational and</i>				
<i>Organizational Psychology</i> , 82(1), 183-200.				

Bakker, A. B., & Bal, M. P. (2010). Weekly work engagement and performance: A study among starting teachers. <i>Journal of Occupational and Organizational Psychology</i> , 83(1), 189-206.	Dutch teachers (N=54)	Multi-level analyses	Weekly engagement predicts weekly performance
Rich, B. L., LePine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. <i>Academy of Management Journal</i> , 53, 617-635.	Firefighters and their supervisors (N=245)	SEM	Work engagement predicts task (i.e., in-role performance) performances
Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. <i>Personnel Psychology</i> , 64(1), 89-136.	Databases from 1990 to April of 2010. RBNL Databases utilized in the search included ABl/Inform, EBSCO, ProQuest, PsycInfo, JSTOR, Google Scholar, Social Sciences Citation Index, and Web of Science	meta-analysis procedure	Work engagement predicts in- and extra-role performances
Salanova, M., Lorente, L., Chambel, M. J., & Martinez,	Nurses (N=280) and their supervisors	SEM	Work engagement

I. M. (2011). Linking transformational leadership to (N=17) nurses' extra-role performance: the mediating role of self-efficacy and work engagement. <i>Journal of Advanced Nursing</i> , 67(10), 2256-2266.	predicts extra-role performances
Bakker, A. B., Demerouti, E., & ten Brummelhuis, L. (2012). Work engagement, performance, and active learning: The role of conscientiousness. <i>Journal of Vocational Behavior</i> , 80, 555–564.	Work engagement predicts task and contextual performances
Torrente, P., Salanova, M., Llorens, S., & Schaufeli, W. B. (2012). Teams make it work: How team work engagement mediates between social resources and performance in teams. <i>Psicothema</i> , 24(1), 106-112.	Team engagement is a predictor of team performance
Karatepe, O. M. (2013). High-performance work practices and hotel employee performance: The mediation of work engagement. <i>International Journal</i>	Work engagement predicts job performance and

3.5.2 The mediation of the link between FHL demands and job performance through work engagement

When individuals disengage from work, their job performance suffers. The rationale for this may be explained by the regulation model of compensatory control (Hockey, 1997), which argues that demanding work conditions induce individuals to save energy at the expense of pursuing job performance. Specifically, disengaged individuals may withhold three particular contributions to their work: physical energy, cognitive energy, and emotional energy (Rich, Lepine, & Crawford, 2010). Thus, lower work engagement leads to lower physical effort at work over extended periods of time (physical energy; Kahn, 1990, 1992). It also results in workers being less vigilant, attentive, and focused (i.e., cognitive energy; Kahn, 1990). Finally, it reduces the intensity of the interaction and connection with coworkers in the pursuit of work goals (i.e., emotional energy; Ashforth & Humphrey, 1995).

Empirical studies find that individuals who reserve their physical, cognitive, and emotional energies during their work activities are typically more robotic and passive at work and exhibit lower commitment to the organization (e.g., Kahn, 1990; Rathmann & Jordaan, 2006). Moreover, they can appear disconnected from their jobs and careless about their job performance (e.g., Rathmann & Jordaan, 2006). Kahn (1990) claims that family influences may play a role in reducing individuals' job performance, particularly in service-related jobs, because the resources necessary for successful service encounters are the same resources that are demanded in family interactions. Thus, when individuals disengage in work due to their family demands, their job performance may be hindered.

In light of the above, higher levels of FHL demands lead to lower levels of work engagement (see H3), which leads individuals to withhold their energies at work and

consequently to reduce their job performance. Therefore, the researcher proposes the following proposition (P2):

Proposition 2 (P2): Work engagement fully mediates the negative relationship between FHL demands and job performance.

3.6 Brief summary

This study aims to extend the scope of the JD-R model of work engagement by integrating FHL antecedents of work engagement and empirically investigating these additional model elements and their relationships with model elements, especially with work engagement. The researcher uses the FHL domain as conceptualized and defined in Chapter 1. The sections below provide the theoretical model that extends the JD-R model and present the study hypotheses and propositions. The researcher does not include the modeled relationships between job resources and job demands with work engagement because these relationships are already well-established parts of the JD-R model (i.e., dual process, Bakker & Demerouti, 2007). However, this study incorporates the two links in the analysis to examine the proposed hypotheses and the overall model extension.

Chapter 4 Methodology

This chapter briefly summarizes the proposed hypotheses and propositions and depicts the research model. It then introduces the study design with information on the operationalization of focal measures (i.e., job demands, job resources, FHL demands, FHL resources, work engagement, and job performance), sample, procedures, and instrumentation. It discusses the appropriateness of the diary design used in the study and outlines the analytical strategy to test the hypotheses and the overall extended JD-R model.

4.1 Hypotheses, propositions, and research model

The extension of the JD-R model discussed in Chapter 3 leads to the development of four central study hypotheses that specify the predicted relationships between the traditional model variables, and the added elements of FHL demands and resources. The researcher will also present two propositions regarding the linkages between FHL factors and job performance through work engagement. First, the researcher posits that FHL resources positively predict work engagement (H1) and justifies this prediction in section 3.1. Second, the researcher predicts that FHL resources moderate the link between job demands and work engagement (H2) and explains the reasons for this in section 3.2. Third, the researcher states that FHL demands negatively predict work engagement (H3) and presents supporting arguments in section 3.3. Fourth, the researcher posits that job resources moderate the link between FHL demands and work engagement (H4) and discusses the reasoning behind this in section 3.4. In addition to presenting and justifying these core study

hypotheses the researcher also presents two propositions related to work performance. The first of these propositions argues that the positive relationship between FHL resources and job performance (P1) is mediated by work engagement which is discussed in section 3.5.1. The second proposition states that work engagement fully mediates the negative relationship between FHL demands and job performance (P2) which is further explained in section 3.5.2. According to the hypotheses and propositions, the full hypothetical model of this study is depicted in Figure 3.

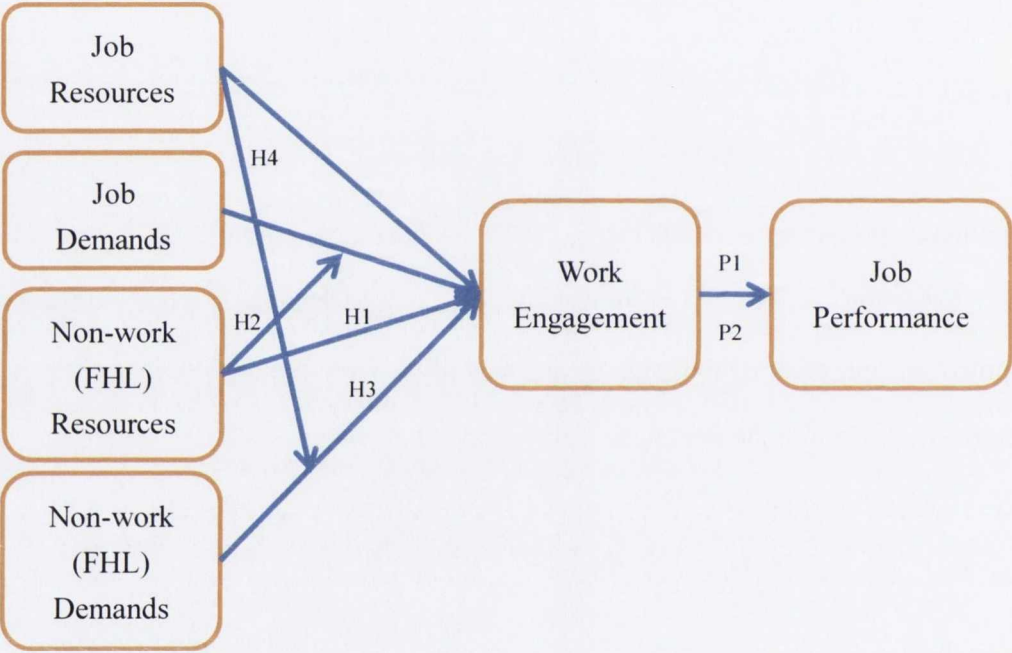


Fig. 3 Hypothetical model

Notes:

- H1. FHL resources positively predict work engagement.
- H2. FHL resources moderate the link between job demands and work engagement.
- H3. FHL demands negatively predict work engagement.
- H4. Job resources moderate the link between FHL demands and work engagement.

P1. Work engagement fully mediates the positive relationship between FHL resources and job performance.

P2. Work engagement fully mediates the negative relationship between FHL demands and job performance.

4.2 Operationalization

The particular resources and demands from jobs and FHL as well as in- and extra-role job performance that are used for the survey are introduced as follows. Job resources are measured by daily team climate (e.g., Xanthopoulou et al., 2009a) and daily colleague/manager social support (e.g., Schaufeli & Bakker, 2004) because they are identified as predictive job resources for improving work engagement. Job demands are measured by daily negative customer contact (e.g., Consiglio, Borgogni, Alessandri, Schaufeli, 2013) and the intensity and amount of work (e.g., Demerouti, Mostert, & Bakker, 2010) because they are identified as predictive job demands that may reduce work engagement or increase job stress. FHL resources are measured by daily personal life resources (e.g., Wayne, Randel, & Stevens, 2006) and daily family/home social support (e.g., Adams, King, & King, 1996; Hakanen et al., 2008) because they are identified as predictive resources from the family/home that contribute to well-being and work engagement. FHL demands are measured by daily personal life demands (e.g., Gutek, Searles, & Klepa, 1991) and daily family/home demands (e.g., Schuster, Kessler, & Aseltine, 1990) because they are identified as influences from the family/home that may contribute to stress at work.

In terms of work engagement, as addressed in section 2.1.1. Schaufeli and his collaborators (2002) developed an instrument (i.e., the UWES) that attempts to directly assess individuals' vigor, dedication, and absorption for the evaluation of

work engagement. This instrument will be adopted in this research. In terms of in-role and extra-role job performance, such evaluations should preferably be based on objective and quantifiable performance measures or at least on performance evaluations made by third parties to avoid self-serving or social desirability biases that may be found in self-report-based performance measures. However, due to the sample characteristics of this research, it was not possible for the researcher to conduct such an objective and quantifiable evaluation. Therefore, self-reports were used for the evaluation of in-role and extra-role job performance.

4.3 Participants and procedure

This section presents the background of the participants studied in this research and explains the procedures used to access the field sites and collect the study data.

4.3.1 *Participants*

This study aims to extend the JD-R model of work engagement by theoretically integrating an important non-work domain and the resources and demands it contains. Additionally, this study empirically examines how these resources and demands directly and indirectly influence work engagement. The FHL domain is used to represent the non-work environment in this study because family issues are one of the most problematic issues across companies globally (EAPA, 1996) and are among the key occupational influences that may impact employees' well-being (e.g., Li, Shaffer, & Bagger, 2015), job stress (e.g., Moen, Kaduk, Kossek, Hammer, Buxton, O'Donnell, ... & Casper, 2015), and job performance (e.g., Zhao, Mattila, & Ngan, 2014). The study sample was based on employees from international coffee chains in

Ireland. Data were collected from 7 branches of such coffee chains between March and May 2014. Each branch operated 7 days per week. The researcher approached the store managers of each branch by directly visiting the stores prior to the beginning of the survey and requesting permission to survey the employees. A total of 56 employees were invited to participate in the voluntary diary study over four weeks, and 46 agreed to participate in the survey (for a response rate of 82.1%). At the later stage of the survey, one participant left employment and did not complete sufficient diary surveys; this participant was therefore not included in the subsequent analyses, resulting in an effective response rate of 80.4%. A total of 45 completed survey packages were returned ($N=45$ for the baseline questionnaire; $N=360$ for the daily questionnaire).

The demographics of the participants are summarized in Table 2. Among the 45 participating employees, 25 (55.6%) respondents were female and 20 (44.4%) respondents were male. In terms of age, one respondent (2.2%) was between 46 and 50 years old, three respondents were between 36 and 40 years old (6.7%), seven respondents were between 31 and 35 years old (15.6%), 18 respondents were between 26 and 30 years old (40%), 13 respondents were between 21 and 25 years old (28.9%), and three respondents were under 20 years old (6.7%).

With regard to the educational attainment of the participants, five respondents (11.1%) had completed a postgraduate degree, and one (2.2%) had completed some postgraduate studies. Most of the respondents (40%) possessed a bachelor's degree ($N=18$). Thirteen respondents (28.9%) had completed secondary school, and one respondent (2.2%) had attended some secondary school.

In terms of cohabitation, most (28.9%) of the respondents lived with roommates/friends ($N=13$). Nine respondents lived with their parents (20%), and 9

lived with a husband or wife (20%). Seven respondents lived with others (15.6%) but did not indicate the type of person with whom they lived. Three respondents lived alone (6.7%), 3 lived with their siblings (6.7%), and 1 lived with relatives (2.2%). Their FHL thus shows significant variation that is covered by the FHL domain as conceptualized in this study (see Chapter 1 for details).

With respect to tenure in their present employment in the coffee shop, 10 respondents had worked for more than five years (22.2%), five had worked for 2-5 years (11.1%), 10 had worked for 1-2 years (22.2%), 10 had worked for 6 months-1 year (22.2%), and 10 had worked for 1-6 months (22.2%). Most of the respondents (77.8%) did not have other jobs ($N=35$), whereas the remaining 10 respondents did have other jobs (22.2%). Regarding working hours in a typical working day, 6 respondents worked for more than 8 hours (15.6%), 29 respondents worked for 6-8 hours (64.4%), 7 respondents worked for 4-6 hours (15.6%), and 3 respondents worked for more than 2-4 hours (6.7%). With regard to non-work activities, 35 (77.8%) respondents did not have another job or course of study or any leisure activities that took a considerable amount of time each working day, whereas 10 (22.2%) respondents did.

Table 2. The demographics of the research sample

Variables	Items	Number	Percentage	Variables	Items	Number	Percentage
Sex	(1) Male	20	44.4%	Working hours in a typical working day	(1) 2-4	3	6.7%
	(2) Female	25	55.6%		(2) 4-6	7	15.6%
Age	(1) Under 20	3	6.7%		(3) 6-8	29	64.4%
	(2) 21-25	13	28.9%	Cohabitation	(4) More than 8	6	13.3%
	(3) 26-30	18	40%		(1) Live alone	3	6%
	(4) 31-35	7	15.6%		(2) Parents	9	20%
	(5) 36-40	3	6.7%		(3) Husband/Wife	9	20%
	(6) 46-45	1	2.2%		(4) Siblings	3	6%
Tenure in the present coffee shop	(1) 1-6 months	10	22.2%		(5) Roommates/Friends	13	28.9%
	(2) 6 months-1 year	10	22.2%		(6) Relatives	1	2.2%
	(3) 1-2 years	10	22.2%	Other jobs/courses taken	(7) Others	7	15.6%
	(4) 2-5 years	5	11.1%		(1) No	35	77.8%
					(2) Yes	10	22.2%

	(5) More than 5 years	10	22.2%				
Educational background	(1) Some secondary school	1	2.2%	Educational	(4) Bachelor's degree	18	40%
	(2) Secondary school completed	7	15.6%	background (con.)	(5) Some postgraduate studies	1	2.2%
	(3) Some college	13	28.9%		(6) Postgraduate degree completed	5	11.1%

4.3.2 Procedure

The procedure for this study included several steps. The store managers of the seven branches were initially contacted between October and November 2013 and were informed of the purpose of the study, assured that the data would be confidential, and asked for permission to conduct the survey. Agreements were reached by the end of November 2013 under the premise that the questionnaires needed to be reviewed and confirmed prior to distribution for the survey and that the questionnaires needed to be distributed by the store manager. The store manager reviewed and approved the questionnaires by the end of February 2014. Data collection commenced at slightly different times in different coffee shop branches between the beginning of March and April 2014. All data collection was completed by late June 2014.

Two questionnaires were designed and used. The baseline questionnaire included demographics and general (trait-based) work engagement. The diary questionnaire included daily work engagement, state in- and extra-role performance, FHL demands such as personal life demands and family/home demands, FHL resources such as personal life resources and daily family social support, job demands such as negative customer contact and work intensity as well as amount of work, and job resources such as daily colleague/manager social support and day-level team climate.

Bakker (2009) found that work engagement, when evaluated as a general factor, was positively related to a person's job performance. Studies suggest the importance of including general work engagement as a control variable for hypotheses testing in diary studies that consider links between antecedents and daily work engagement fluctuations. Examples include Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009a), who found a relationship between daily job resources (e.g., autonomy, coaching, and team climate) and daily work engagement after controlling for

respondents' general work engagement. Similarly, Xanthopoulou, Baker, Heuven, Demerouti, and Schaufeli (2008) identified the impact of state colleague support on state work engagement and on daily job performance (e.g., state in-role and extra-role performances) after controlling for general work engagement. In light of the above examples and to control for the influence of general (trait-based) work engagement, this variable was included as a control variable.

The baseline questionnaire was used at the start of the data collection, and the diary questionnaire was distributed two times per week for four weeks. The reason for this diary design (i.e., two times a week for four weeks) was to prevent biased data influenced by a learning effect (compared to the general day-to-day survey) and/or incomplete data and/or a low response rate due to high workload (compared to a survey every day for one week). Each week, the manager of each participating coffee shop received a survey package including a detailed survey distribution instruction sheet, sets of questionnaires with envelopes, and a larger collection envelope. The information sheet was designed for store managers to explain how and when to distribute and collect the surveys. It also indicated the collection times at which the researcher would collect the returned questionnaires in their sealed envelopes and at which the survey package for the next week would be delivered. The researcher's contact information was also included in the event of problems during the survey distribution and collection.

To collect the baseline data, the store managers distributed the questionnaires to their employees at the end of their shifts before they left the store. Each employee then took approximately five minutes to complete the questionnaire unsupervised, placed it into the return envelope, sealed the envelope and returned it to the large collection envelope before he or she left the store. The researcher collected the

completed baseline questionnaires one week after the data collection was initiated. This allowed all store employees to participate because different employees had different shifts and not all employees worked on the same day or ended their shifts at the same time.

A similar approach was used for the bi-weekly diary survey data collection. Store managers distributed the short diary questionnaires to store employees at the end of their shifts before they left the store. As agreed in prior consultation with the researcher, the store managers had a list of working days and hours for their employees that indicated two non-consecutive days for each employee, during which time the diary survey would be distributed to each employee that chose to participate. When the store managers were not in the store at the scheduled data collection times, the team leaders who replaced them were in charge of the data distribution. These team leaders were briefed on the data collection modalities and distributed and collected completed the questionnaires following the same approach. Overall, the survey distribution and collection following these arrangements worked well in the seven branches, with none of the store managers or team leaders reporting any significant problems.

The study participants usually took less than five minutes to complete the diary survey and return it in the sealed envelope. The researcher collected the completed questionnaires weekly on the specific date indicated by the store managers. The daily diary measure questionnaire was designed for bi-weekly use by providing different codes (e.g., (1) for week 1) as footnotes to cover employee shifts for a particular week and as a track record for the researcher to identify whether the participants completed the questionnaires as requested. Each week, the store managers received new survey packages for use during the next week on the date they indicated on the information

sheet.

For both the general and daily diary measure questionnaires, the participants were asked to create their own anonymous research ID (i.e., self-created anonymous research ID). The self-created anonymous research ID had to be easily remembered and repeatedly used by the respondents. The ID ensured their complete anonymity during the survey. The ID also allowed the researcher to link the diary survey responses from different weeks to the baseline questionnaire from the same participant.

To increase the participation rate and gain more usable returned data with full participation, a lottery of \$50 euro was offered to all participating employees with the condition that only those who fully participated in the survey (i.e., provided the necessary number of completed baseline and diary surveys) would be eligible to win. Respondents interested in the lottery were asked to provide their self-created anonymous research ID to confirm their full participation. Interestingly, only two of the respondents entered this survey, indicating that most respondents likely did not have faith that they would win the lottery and therefore preferred to invest their non-work resources (e.g., time) in enjoying their personal life after work than in completing the procedure of entering the lottery. Two respondents registered for the lottery after the survey and were informed of their participation eligibility on July 30, 2015. The winner was informed on July 31, 2015 and rewarded on August 6, 2015.

4.4 Measurement instruments

This section introduces the instruments used to collect data for the study variables. It discusses the instruments for general (trait-based) work engagement and

relevant demographic variables collected as part of the baseline questionnaire that were used as control variables. It then presents the instruments used to collect data on the two job resources (i.e., daily team climate and daily colleague/manager social support), two job demands (i.e., daily negative customer contact and intensity and amount of work), two FHL resources (e.g., daily personal life resources and daily family/home social support), two FHL demands (e.g., daily personal life demands and daily family/home demands), daily work engagement, and self-reported job performance (e.g., state in-role and state extra-role job performance).

4.4.1 *General measures*

General (trait-based) work engagement was evaluated by adopting the short-version (6-item) of the Utrecht Work Engagement Scale (UWES) (Schaufeli et al., 2002, see Appendix 2 for details). The inventory contains 2 sub-scales (i.e., vigor and dedication). *Vigor* was measured with three items, including "At work, I feel that I am bursting with energy". *Dedication* was appraised with three items, including "I am enthusiastic about my job". The original inventory contained 3 sub-scales with 9 items; however, this study did not evaluate *Absorption*. There is a dual rationale for its exclusion. First, due to the nature of diary studies that use the same questionnaire repeatedly, short scales are imperative to avoid participant attrition. Second, Schaufeli and Bakker (2001) report that they only found Absorption to be a relevant aspect of engagement after 30 in-depth interviews, and some recent studies have not included its subscale when measuring work engagement (e.g., Gonzalez-Roma et al., 2006). Thus, the 3 items for the Absorption subscale were not included, which is a common feature of many work engagement studies that measure what is sometimes referred to as "core work-engagement" (Freeney & Fellenz, 2013). All measurement items for

this scale were scored on a 5-point scale ranging from 1 (*Never*) to 5 (*Always*).

When using the short-version of the UWES, Schaufeli and his collaborators (2002) suggested measuring work engagement as a single-factor model because, first, it fits reasonably well with their data ($N=1,4521$ from 10 nations including Australia, Belgium, Canada, Finland, France, Germany, the Netherlands, Norway, South Africa, and Spain), with three of four model fit indices (e.g., comparative fit index, CFI; normed fit index, NFI; root mean square error of approximation, RMSEA) reaching their criterion and the remaining index (non-normed fit index, NNFI) (.89) close to its criterion (.90). Second, correlations among the latent *Vigor*, *Dedication*, and *Absorption* factors are very high across the national samples (medians $> .90$). Third, the internal consistency of the scores of the short-version of the UWES (i.e., the total nine items) across all national samples is very high (medians $> .90$). Lastly, rather than considering three different scores (i.e., *Vigor*, *Dedication*, and *Absorption*), multicollinearity issues may be avoided when these factors are considered together for analysis. In this context, this study follows Schaufeli and his collaborators' (2002) recommendation by treating the six items from the *Vigor* and *Dedication* subscales as a single predictor of work engagement and computes an overall work engagement factor score of the UWES for further analysis.

Demographic variables such as age, gender, types of cohabitation, educational background, tenure in the present coffee shop, working hours in a typical working day, and whether the respondents participated in any additional job/course of study/leisure activities on each working day were also measured. This is because empirical studies find that age (e.g., Schaufeli et al., 2006), gender (e.g., Rothbard, 2001), type of cohabitation (e.g., De Cuyper, & De Witte, 2005), educational background (e.g., Mauno et al., 2007), tenure (e.g., Bakker et al., 2005), working hours (e.g., Truss,

Soane, Edwards, Wisdom, Croll, & Burnett, 2006), and additional job/course of study/leisure activities (e.g., Barling, Rogers, & Kelloway, 1995) may influence individuals' well-being, job stress, or engagement at work. The control variables were used to reduce the biases potentially caused by demographic differences in the predictor and outcome variables.

4.4.2 Daily diary measures

Job resources were measured by using daily team climate and daily colleague/manager social support. Daily team climate was measured by applying a 2-item scale developed by Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009a) (see the Appendix 2 for details). The inventory was a single-dimensional scale. The sample item was "Today, during the shift, there was a very good working atmosphere". All measurement items were scored on a 4-point scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*).

Daily colleague/manager social support was measured by using and revising a 4-item scale developed by Peeters, Buunk, and Schaufeli (1995) (see Appendix 2 for details). The inventory was a single-dimensional scale incorporating four types of social support (i.e., emotional support, appraisal support, informational support, and instrumental support), each of which was assessed with a single item. To adjust this scale for use in a diary study, the researcher revised the original items by adding "Today" in front of each item. *Emotional support* was measured with 1 item: "Today, my colleagues/manager(s) paid attention to my feelings and problems". *Appraisal support* was evaluated with 1 item: "Today, my colleagues/manager(s) showed that they appreciate the way I do my job". *Informational support* was appraised with 1 item: "Today, my colleagues/manager(s) gave me advice on how to handle things".

Instrumental support was measured with 1 item: "Today, my colleagues/manager(s) helped me with a certain task". All measurement items were scored on a 5-point scale ranging from 1 (*Never*) to 5 (*Always*).

Job demands were appraised by using daily negative customer contact as well as the intensity and amount of work. Daily negative customer contact was measured by adopting and revising a 3-item scale developed by Consiglio, Borgogni, Alessandri, and Schaufeli (2013) (see Appendix 2 for details). The inventory was a single-dimensional scale. To adapt this scale for use in a diary study, the researcher revised the original items by including "Today" in front of each item. The sample item was "Today, customers were patient and understanding when they had to wait longer than expected". All measurement items were scored on a 4-point scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*).

Intensity and amount of work were evaluated by a 4-item scale from the job content questionnaire (JCQ) (Karasek, 1985, see Appendix 2 for details). The inventory was a single-dimensional scale. To accommodate diary study usage, the researcher revised the original items by including "Today" in front of each item. The sample item was "Today, I was not asked to do an excessive amount of work". All measurement items were scored on a 4-point scale ranging from 1 (*Strongly disagree*) to 4 (*Strongly agree*).

FHL resources were appraised by using daily personal life resources and daily family/home social support. Personal life resources were measured by adopting and revising a 3-item scale developed by Wayne, Randel, and Stevens (2006) (see Appendix 2 for details). The inventory was a single-dimensional scale. Because the original items of the scale were intended for general measures and aimed to investigate family-to-work enrichment, the researcher revised the original items by

including “Yesterday” in front of each item and removing the impact of family on work to accommodate daily use. For instance, the researcher revised the original item “Having a good day at home makes me a better employee when I get to work” to read “Yesterday, I had a good/happy day at home”. All measurement items were scored on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Daily family/home social support was measured by using and revising the same scale used for the measures of daily colleague/manager social support (see Appendix 2 for details). To accommodate daily use and to measure FHL experiences, the researcher revised the original items by including “Yesterday” in front of each item and replacing “colleagues/manager(s)” with “family members/people I live with”. Thus, *emotional support* was measured with 1 item: “Yesterday, family members/people I live with paid attention to my feelings and problems”. *Appraisal support* was evaluated with 1 item: “Yesterday, family members/people I live with showed that they appreciate the way I do my job”. *Informational support* was appraised with 1 item: “Yesterday, family members/people I live with gave me advice on how to handle things”. *Instrumental support* was measured with 1 item: “Yesterday, family members/people I live with helped me with a certain task”. All measurement items were scored on a 5-point scale ranging from 1 (*Never*) to 5 (*Always*).

FHL demands were appraised by using daily personal life demands and daily family/home demands. Personal life demands were measured by adopting and revising a 4-item scale developed by Gutek, Searles, and Klepa (1991) (see Appendix 2 for details). The inventory was a single-dimensional scale. Because the original items of the scale were intended for general measures and aimed to investigate family-to-work conflicts, the researcher revised the original items by including “Yesterday” in front of each item and removing the impact of family on work to

accommodate daily use. For instance, the researcher revised the original item "I'm often too tired at work because of the things I have to do at home" to read "Yesterday, I had lots of things to do at home". All measurement items were scored on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Family/home demands are measured by revising a 4-item scale developed by Schuster, Kessler, and Aseltine (1990) (see Appendix 2 for details). The inventory is a single-dimensional scale. Because the original items of the scale are not for daily measures, to accommodate daily usage, the researcher revised original items by including "Yesterday" in front of each item. In addition, the original items of the scale mainly focus on family members, even though some respondents may live with individuals other than family members (e.g., roommates). The researcher revised the original items by including "people you live with". For instance, the researcher revised the original item "How often do your family members criticize you?" to read, "Yesterday, how often did family members/people you live with criticize you?" All measurement items were scored on a 5-point scale ranging from 1 (*Never*) to 5 (*Always*).

Daily work engagement was evaluated by adopting the daily version (6-item) of the UWES (Breevaart, Bakker, Demerouti, & Hetland, 2012, see Appendix 2 for details). The inventory contains 2 sub-scales (i.e., daily vigor, daily dedication, and daily absorption). *Daily vigor* is measured with 3 items, including "Today, I felt that I was bursting with energy". *Daily dedication* is appraised with 3 items, including "Today, I was enthusiastic about my job". However, the original inventory contains 3 sub-scales with 9 items. This study does not evaluate *Daily absorption*. The rationale for not including it is the same as for the measure of *General work engagement*. Therefore, the 3 items for Absorption were not included. All measurement items were

scored on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). This study treated the 6 items for *Vigor* and *Dedication* as a predictor of work engagement and computed an overall work engagement factor score of the UWES for further analysis. The rationale was as the same as for *General work engagement*.

State in-role performance was measured by utilizing a 2-item scale developed by Goodman and Svyantek (1999) (see Appendix 2 for details). The inventory is a single-dimensional scale. A sample item is "Today, I fulfilled all the requirements of my job". All measurement items were scored on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). *State extra-role performance* was evaluated by utilizing a 2-item scale used by Xanthopoulou, Bakker, Heuven, Demerouti, and Schaufeli (2008) (see Appendix 2 for details). The inventory is a single-dimensional scale. A sample item is "Today, I voluntarily did more than was required of me". All measurement items were scored on a 5-point scale ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

4.5 The rationale for using the diary study

Cross-sectional designs that utilize self-report questionnaires have been widely adopted in organizational research (e.g., job attitudes, personality). The unit of analysis typically ranges from the person and the team to the organization. Thus, the statistical approach is mainly rooted in the variation between individuals, which implies that the frameworks of such research may be regarded as stable across time. Unfortunately, if the frameworks are unstable (e.g., behaviors are impacted by external/environmental factors), the results generated by the cross-sectional design may be unreliable, and it may not be possible to take the fluctuation into consideration.

A diary design, however, may resolve this issue by allowing studies to use means of fluctuating data during analysis and to analyze the short period of fluctuation experienced within persons (Ebner-Priemer & Kubiak, 2007; Zapf, Dormann, & Frese, 1996). This is because diary designs consider a person's thoughts, feelings, and behaviors as they occur in real life or in an environment that contains particular features that may change over time (e.g., on a daily basis) during the survey (Bolger, Davis, & Rafaeli, 2003). This design involves different approaches to collecting data (e.g., hourly/daily/weekly diary). Although each approach has its own specific data collection method (Bolger et al., 2003; Reis & Gable, 2000), the diary design is mainly intended for daily use or use multiple times per day across a specific time frame by the same participants.

The concepts of work engagement, job demands/resources, and FHL demands/resources in this study were constructed on a daily basis (e.g., Xanthopoulou et al., 2009a), which means that these variables may change or fluctuate from day to day. Such fluctuations may impact an employee's in- and extra-role performance and may create variations in these dependent variables (Binnewies, Sonnentag, & Mojza, 2010; Fuller, Stanton, Fisher, Spitzmueller, Russell, & Smith, 2003). Hence, the use of the diary design is appropriate in this research.

Another benefit of diary study designs is that this design can reduce potential *retrospective bias*, which may arise when respondents are asked to report on matters that are in their past (Bolger et al., 2003; Reis & Gable, 2000). The more variables of interest fluctuate over time and the more time that has passed, the more likely it is that retrospective bias may occur. Countering the likelihood of retrospective bias can help to improve the validity of survey measures. To reduce retrospective bias, the time frame for the survey may need to be as short and/or close to the event as possible

(Ohly, Sonnentag, Niessen, & Zapf, 2010). The diary design can achieve this goal by minimizing the amount of time that elapses between a specific experience and the account of this experience (Bolger et al., 2003). Therefore, respondents do not need to recall past experiences when completing the survey. Thus, respondents may provide more valid and reliable data about their well-being or stress than they would in traditional research designs (e.g., cross-sectional design) (Bolger et al., 2003). Another advantage of the diary design is that the impact of situational/environmental elements can be considered when investigating a person's feelings, cognition, and behavior (Ohly et al., 2010; Reis & Gable, 2000).

The diary design typically involves three specific types of research topics: changes in one variable, links between transient state experiences and behaviors, and links between stable variables (personal elements) and transient states, experiences, or behaviors. The first research topic refers to systematic changes in one variable across time (e.g., changes in daily performance over a specific time frame). The second research topic refers to the association among fluctuating states, experiences, and behaviors (e.g., the impact of daily experiences on daily state and daily behavior). The third research topic refers to the impact of stable elements on transient states, experiences, or behaviors and *vice versa*. In other words, diary design studies may facilitate the observation of those elements that are within and between persons and their influences on job performance during relatively short time frames (Dormann & Zapf, 2004; Ohly et al., 2010). This study reflects the second type of research topic described above because in- and extra-role performance, work engagement, job demands/resources, and FHL demands/resources in this study were conceptualized as potentially fluctuating on a daily basis. Specifically, this study evaluated the impact of employees' daily job demands/resources and FHL demands/resources on their daily

work engagement and on their state in- and extra-role performances. Taking the above into account, a diary design was deemed particularly appropriate for use in this study.

4.6 Analytical strategy

Upon completion of the data collection, the researcher conducted relevant psychometric checks on the survey instruments to confirm the appropriateness of the selected measures, the selected diary design (i.e., daily diary surveys), and the data collection devices (i.e., paper-and-pencil daily diary surveys). The researcher used the IBM SPSS Statistics package to perform the reliability analysis of the selected survey instruments and then used the IBM SPSS AMOS package to perform the confirmation factor analysis (CFA) to consider the construct validity.

A number of model fit indices for the CFA were considered. This study adopts maximum-likelihood estimation and reports fit indices that are least influenced by sample size (i.e., the Root-Mean-Square Error of Approximation –RMSEA) and the estimation method (i.e., the Goodness-of-Fit Index – GFI, and the Adjusted Goodness-of-Fit Index – AGFI) (Fan, Thompson, & Wang, 1999). RMSEA values smaller than .08 represent good model fit, and values larger than .10 represent an unacceptably low fit of the model to the data (Browne & Cudeck, 1993). Two relative goodness-of-fit indices suggested by Marsh, Balla, and Hau (1996), namely, the Normed Fit Index (NFI) and the Comparative Fit Index (CFI) were also used. Values greater than .90 for both NFI and CFI represent acceptable fits (Hoyle, 1995). Additionally, the chi-square index was used to measure the models and to estimate the statistical significance of differences among the models (Weston & Gore, 2006). Because the chi-square index may be affected and altered by sample size (Bagozzi & Yi, 1988), the normed chi-square index is provided. The root mean square residual

(RMR) is provided and needs to be as low as possible (Byrne, 2001). Because there is no specific criterion for the RMR, this study also identified the standardized RMR (SRMR). The value for the SRMR needs to be less than .05 (Byrne, 2001).

Because the sample size of this study was relatively small and a large number of predictors were used, this study follows the suggestion of Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009b) to minimize the complexity of the hypothesized theoretical model (i.e., the amount of freely estimated parameters) before testing the proposed hypotheses and to adopt manifest variables (Jöreskog & Sörbom, 1993) that could prevent this study from losing information (Xanthopoulou et al., 2009b). To use scores for manifest variables (i.e., job/FHL demands/resources and job performance), their weighted factor scores were analyzed (Xanthopoulou et al., 2009b). This study performed a second-order principle axis factoring (PAF) analysis with varimax rotation on the two job resources, job demands, FHL resources, FHL demands, and job performances. This method not only considers the factor loadings of each sub-dimension but also calculates the factor score. Based on the second-order PAF result, this study then conducted a second-order CFA for each manifest variable and used a chi-square difference test to compare the results with the first-order CFA (Luthans, Avolio, Avey, & Norman, 2007) to determine whether the operationalization of manifest variables is better than that of the original measures.

The common method variance (CMV), Pearson correlation analysis, and collinearity statistics were also initially examined for this study prior to the examination of the study hypotheses. The rationale for examining CMV is that this study used self-reports for the survey. This study attempted to minimize the CMV issue during the research design (e.g., item re-ordering, reverse item insertion, survey anonymity, and survey time-point diversity). However, it is necessary to empirically

verify whether CMV may be a detrimental issue that could confound the interpretations of the results of this study (Orgambídez-Ramos, Borrego-Alés, & Mendoza-Sierra, 2014).

The researcher followed the suggestions of Podsakoff, MacKenzie, Lee, and Podsakoff (2003) by performing Harman's single-factor test (Podsakoff et al. 2003), and followed the suggestions of related studies (e.g., Iverson & Maguire 2000) by performing CFA for the measures. Podsakoff and colleagues (2003) suggest using all measurement items as inputs for an exploratory factor analysis (EFA) with an unrotated method to identify the number of factors necessary to explain the observed variances. CMV occurs when only one factor is extracted or one general factor can explain a large portion of the common variance among measurements (i.e., the variance explanation exceeds .50 [50%]; Podsakoff et al., 2003). Related studies (e.g., Iverson & Maguire 2000) have suggested using CFA to determine whether dependent and independent variables originate from a single factor by entering all measurement items into the same model. CMV occurs when a good model fit is revealed as a result of this analysis.

Collinearity statistics were also checked to determine whether any specific predictors were linearly related to other predictors, which can lead to inappropriate results within the hypothesized theoretical model. Two criteria were used to distinguish whether certain predictors had collinearity problems: tolerance and the variance inflation factor (VIF). Two other criteria were used to distinguish whether a certain predictor is at risk of collinearity: the eigenvalue and condition index (CI). Collinearity problems arise when the tolerance value is less than .10 and/or the VIF value exceeds 10 (Bowerman & O'Connell, 1990; Myers, 1990). A predictor may be at risk of collinearity when its eigenvalue is less than .001 and its CI value exceeds 30

(Ghosh, Schucany, & Smith, 1996; Schabenberger & Pierce, 2002).

Except for control variables (e.g., general [trait-based] work engagement), all measures (e.g., job/FHL resources and demands, and daily work engagement, and job performance) were collected at the same level (i.e., daily level). When controlling for general [trait-based] work engagement in the analysis, data collected using the diary design can be treated as multilevel data, with repeated measurements nested within individuals (Hox, 2002; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2012). Data at the sample level are relatively stable over time (e.g., general [trait-based] work engagement), whereas data at the daily level may change over time (e.g., daily work engagement and job resources). This method results in a two-level model in which the repeated measurements are at the first (i.e., daily) level and the individual respondents are at the second (i.e., sample) level. In this context, this study applies hierarchical linear modeling (HLM) to examine the proposed hypotheses and two additional propositions using the Hierarchical Linear and Nonlinear Modeling 7 (HLM 7) package. Following the approach adopted in other diary studies (e.g., Xanthopoulou et al., 2009b), the first-level (i.e., daily) variables (e.g., job resources) were centered on the respective person mean, and the second-level (i.e., sample) variables (e.g., general work engagement) were centered on the sample mean before testing the proposed hypotheses and propositions. Prior to the examination of proposed hypotheses and propositions, the researcher first produced statistical evidence that supported the use of multilevel modeling (Tims, Bakker, & Xanthopoulou, 2011) by calculating the intra-class correlation (ρ) based on the intercept-only model for all daily variables (i.e., daily work engagement, job demands, job resources, FHL demands, and FHL resources, and self-report job performance). When testing the mediation for the propositions, the researcher followed Baron and Kenny's (1986) suggestion to test

three required conditions: (1) the predictor must associated with the mediator; (2) the mediator must associated with the outcome; and (3) the predictor–outcome relationship becomes non-significant (full mediation) or becomes significantly weaker (partial mediation) after the inclusion of the mediator. The Sobel test (Sobel, 1982) is then used to evaluate the significance of the proposed indirect effects (i.e., the mediating effects of daily work engagement on the links between FHL resources/demands and self-report job performance).

In addition to the examination of each proposed hypothesis and proposition, models with and without the inclusion of the interaction influences between FHL/job demands and job/FHL resources on daily work engagement were further tested and compared for their explanatory power with regard to work engagement. The conventional JD-R model and the extended JD-R model were also compared in terms of their explanatory power for work engagement. Finally, the overall theoretical model was tested for fit with the study data.

Chapter 5 Results

This section reports on the results of the data analysis. It provides information on the reliability and construct validity of all measures and then describes how the study variables are used to create manifest variables used in the analyses through a number of steps. This section discusses the issue of common method variance (CMV) and reports on CMV tests that aim to establish whether and to what degree CMV may pose a problem in this study. Similarly, it reports on the consideration of a correlation analysis of all measures and of relevant collinearity statistics in consideration of the significant correlation between predictors (i.e., job resources, job demands, FHL resources, and FHL demands) as well as one of the control variables (i.e., general [trait-based] work engagement) and outcome measures (i.e., daily work engagement and job performance). Finally, it reports on the analyses used to test the study hypotheses and propositions and provides information on the model comparisons of the traditional JD-R model with the extended JD-R model in terms of their respective explanatory ability with regard to work engagement. It also reports on overall tests of the fit of the proposed theoretical model to the study data.

5.1 Reliability and construct validity

The reliability and construct validity of the survey instruments were analyzed, and the results are summarized in Table 3. In Table 4, factor loadings for each measure are provided. A cut-off value of .70 (Hulland, 1999) was applied as a criterion for factor loadings. Factor loadings that exceed the cut-off value indicate that the items used as indicators of the latent constructs are theoretically valid; otherwise,

the theory that will be tested will not be empirically supported.

Based on Nunnally (1978), Cronbach's α ranging from .70 to .80 represents acceptable reliability, from .80 to .90 represents high reliability, and above .90 represents very high reliability. However, Nunnally (1978) suggests that to prove that a survey instrument is sufficiently reliable, its reliability should range from .70 to .90. A number of absolute fit indices and incremental fit indices for CFA for examining construct validity were used; these were discussed in section 2.4.

The measure of general work engagement revealed high reliability ($\alpha=.846$). The measure of daily work engagement revealed high reliability across all time points ($\alpha=.880-.919$) and acceptable construct validity ($X^2/df=7.984$; GFI=.920; AGFI=.913; RMR=.045; SRMR=.042; RMSEA=.159; NFI=.929; CFI=.935). The factor loadings for this measure (.72-.83) exceed .70, indicating that the surveyed items in the inventory reflect the characteristics of daily work engagement. The measure of daily negative customer contact revealed high reliability across all data collection points ($\alpha=.797-.900$). There was no result with regard to model fit indices available for this measure with the exception of its GFI (1) (Reilly, 1995). Specifically, in this case, there were only three observations, which means that the information provided by the collected data was equal to the number of estimated parameters in the model. Therefore, there is only one result, and no variance exists. The factor loadings for this measure (.76-.87) exceeded .70 at all data points, which indicates that the surveyed items in the inventory reflect the characteristics of daily negative customer contact.

The measure of daily intensity and amount of work revealed high reliability ($\alpha=.835-.962$) across all data time points and acceptable construct validity ($X^2/df=4.322$; GFI=.988; AGFI=.941; RMR=.011; SRMR=.010; RMSEA=.096; NFI=.994; CFI=.995). The factor loadings for this measure (.84-.92) exceeded .70,

indicating that the surveyed items in the inventory reflect the characteristics of daily intensity and amount of work. The measure of daily team climate revealed high reliability across all time points ($\alpha=.730-.924$). Because the measure only had two items, based on Eisingate, Grotenhuis, and Pelzer's (2013) suggestion, this study conducted the Spearman-Brown reliability estimation. The results showed high reliability across all time points ($\alpha=.730-.924$). There was no result with regard to model fit indices for this measure because there are only two indicators, which means that the information provided by the collected data was less than the number of estimated parameters (i.e., the model is under-identified; Reilly, 1995). Therefore, CFA could not be conducted, and no factor loading is available.

The measure of daily colleague/manager social support revealed high reliability across all time points ($\alpha= .897-.948$) and acceptable construct validity ($X^2/df=5.483$; $GFI=.985$; $AGFI=.925$; $RMR=.020$; $SRMR=.014$; $RMSEA=.112$; $NFI=.990$; $CFI=.992$). The factor loadings for this measure (.83-.91) exceeded .70, indicating that the surveyed items in the inventory reflect the characteristics of daily colleague/manager social support. The measure of daily family/home demands revealed high reliability across all time points ($\alpha= .897-.949$) and high construct validity ($X^2/df=.274$; $GFI=.999$; $AGFI=.996$; $RMR=.004$; $SRMR=.004$; $RMSEA=.000$; $NFI=1.000$; $CFI=1.000$). The factor loadings for this measure (.87- .91) exceeded .70, indicating that the surveyed items in the inventory reflect the characteristics of daily family/home demands.

The measure of daily personal life demands revealed high reliability across all time points ($\alpha=.864-.937$) and acceptable construct validity ($X^2/df=5.217$; $GFI=.985$; $AGFI=.924$; $RMR=.022$; $SRMR=.016$; $RMSEA=.108$; $NFI=.989$; $CFI=.991$). The factor loadings for this measure (.81-.88) exceeded .70, indicating that the surveyed

items in the inventory reflect the characteristics of daily personal life demands. The measure of daily family/home social support revealed high reliability across all time points ($\alpha=.914-.956$) and high construct validity ($X^2/df=.990$; $GFI=.997$; $AGFI=.986$; $RMR=.007$; $SRMR=.005$; $RMSEA=.000$; $NFI=.998$; $CFI=1.000$). The factor loadings for this measure (.88-.90) exceeded .70, indicating that the surveyed items in the inventory reflect the characteristics of daily family/home social support.

The measure of daily personal life resources revealed high reliability across all time points ($\alpha=.922-.957$). The rationale for this measure without the result of model fit indices, except for the GFI (1), is the same as that for the measure of daily negative customer contact. The factor loadings for this measure (.91-.93) exceeded .70, indicating that the surveyed items in the inventory reflect the characteristics of daily personal life resources. The measure of extra-role performance ($\alpha=.710-.804$) showed acceptable reliability across all time points. The measure only has two items. Therefore, in line with previously described approaches for two-item instruments, the researcher performed a Spearman-Brown reliability estimation (Eisingate et al., 2013). The result showed acceptable reliability ($\alpha=.715-.804$). The measure of in-role performance ($\alpha=.686-.895$) revealed high reliability across all time points. The measure only has two items. Therefore, in line with previously described approaches for two-item instruments, the researcher performed a Spearman-Brown reliability estimation (Eisingate et al., 2013). The result showed high reliability ($\alpha=.700-.899$). The rationale for these two measures without the result of model fit indices and factor loading is the same as that for the measure of daily team climate.

Table 3. CFA and reliability results of all measures (N=360)

Statistical Analysis	Criteria	Daily Work Engagement	Job Demands (JDeus) ¹	Job		Job Resources		FHL Demands		FHL Resources		FHL Resources (FRP) ¹	Extra-role Performance	In-role Performance
				Demands (JDpac) ¹	Resources (JRamp) ¹	Resources (JRss) ¹	Demands (FDF) ¹	Demands (FDP) ¹	Resources (FRF) ¹					
Cronbach's α	>.70	.900	.888	.941	.819	.922	.936	.911	.940	.939	.766	.800		
χ^2	The													
	smaller	63.869		8.643		10.966	.548	10.434	1.979					
	the	($p=.000$)		($p=.013$)		($p=.006$)	($p=.760$)	($p=.127$)	($p=.372$)					
Absolute	better													
	<5	7.984	N/A: just	4.322	N/A: under	5.483	.274	5.217	.990	N/A: just	N/A: under	N/A: under		
			identification ²							identification	identification	identification		
Fit Indices ⁴			(GFI= 1)							(GFI= 1)				
GFI	>.90	.920		.988	identification ³	.985	.999	.985	.997					
AGFI	>.90	.913		.941		.925	.996	.924	.986					
RMR	The													
	smaller	.045		.011		.020	.004	.022	.007					
	the													

	better							
	SRMR	<.05	.042	.010	.014	.003	.016	.005
	RMSEA	<.08	.159	.096	.112	.000	.108	.000
Incremental	NFI	>.90	.929	.994	.990	1.000	.989	.998
Fit Indices ⁴	CFI	>.90	.935	.995	.992	1.000	.991	1.000

Note: ¹ JDcus= daily negative customer contact; JDpac=daily intensity and amount of work; JRamp=daily team climate; JRss=daily colleague/manager social support; FDF= daily family/home demands; FDP=daily personal life demands; FRF= daily family/home social support; FRP=daily personal life resources

²just identification (DF-P [P: estimated parameters]=0) accounts for the fact that the information provided by the collected data is just equal to the number of estimated parameters in the model. Thus, there is only one result (no variance) existed.

³Under-identification (DF-P [P: estimated parameters]<0) refers to the fact that the information provided by the collected data is less than the number of estimated parameters in the model. Thus, CFA cannot be conducted.

⁴GFI=goodness of fit index; AGFI=adjusted goodness of fit index; RMR=root mean squared residual; SRMR=standardized root mean squared residual; RMSEA= root mean squared error of approximation; NFI=normed fit index; CFI=comparative fit index

Table 4. Factor loadings of all measures (*N*=360) (cut-off value of .70)

Measures ¹										
Daily Work Engagement ³	Job Demands		Job Resources		Job Resources		FHL Demands	FHL Resources	FHL Resources	Intra-role Performance
	(JDcus)	(JDpac)	(JRamp)	(JRss) ⁴	(FDF)	(FDP)	(FRF) ⁴	(FRP)		
Item 1	.78	.84		.85	.89	.88	.88	.93		
Item 2	.81	.92		.91	.87	.81	.90	.91		
Item 3	.74	.91	N/A: under	.88	.91	.83	.90	.91	N/A: under	N/A: under
Item 4	.83	.92	identification ²	.83	.87	.87	.89		identification	identification
Item 5	.77									
Item 6	.72									

Note: ¹ JDcus=daily negative customer contact; JDpac=daily intensity and amount of work; JRamp= daily team climate; JRss=daily colleague/manager social support; FDF=daily family/home demands; FDP=daily personal life demands; FRF=daily family/home social support; FRP=daily personal life resources

² under-identification (DF-P [P: estimated parameters]<0) refers to the fact that the information provided by the collected data is less than the number of estimated parameters in the model. Thus, CFA cannot be conducted, and no factor loading is available.

³ Items 1-3 are for *Vigor* and 4-6 are for *Dedication*.

⁴ Items 1-4 represent *Emotional support*, *Appraisal support*, *Informational support*, and *Instrumental support*, respectively.

5.2 The operationalization check of manifest variables and model simplification

Prior to testing the study hypotheses and propositions, the researcher adopted a series of measurement models to assess the operationalization of the two job resources (i.e., daily team climate and daily colleague/manager social support), the two job demands (i.e., daily negative customer contact and daily intensity and amount of work), the two FHL resources (i.e., daily family/home social support and daily personal life resources), the two FHL demands (i.e., daily family/home demands and daily personal life demands), the two dimensions of job performance (i.e., extra-role performance and in-role performance), and the two daily work engagement components (i.e., vigor and dedication) as underlying dimensions of an overall job resource factor, an overall job demand factor, an overall FHL resource factor, an overall FHL demand factor, an overall job performance factor, and an overall daily work engagement factor, respectively (Luthans et al., 2007). Specifically, this study conducted item-level CFA, as described by Gerbing and Anderson (1984), to obtain the chi-square value of each model and then conducted a chi-square difference test (Yuan & Bentler, 2004). If the difference in the chi-square is significant, the model with the smaller chi-square is more favorable than the alternative one (Yuan & Bentler, 2004).

For the job resources factor, this study compared an uncorrelated, first-order CFA model (in which the two job resources with their respective items are represented as independent constructs) with a second-order CFA model (in which the items of each scale loaded on the respective underlying factor—e.g., the two daily team climate items loaded on a daily team climate factor, and the four daily colleague/manager social support items loaded on a daily colleague/manager social support factor—and then the two specific job resources loaded on an overall job resources factor). The

results supported the representation of the two job resources ($X^2=68.668$, $df=10$, GFI=.943; AGFI=.881; RMR=.189; SRMR=.187; RMSEA=.128; NFI=.951; CFI=.957) in one overall job resources factor ($X^2=18.002$, $df=9$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta X^2=50.666$, $df=1$, $p<.001$). For the job demands factor, this study compared an uncorrelated, first-order CFA model (in which the two job demands with their respective items were represented as independent constructs) with a second-order CFA model (in which the items of each scale loaded on the respective underlying factor—e.g., the three daily negative customer contact items loaded on a daily negative customer contact factor, and the four daily intensity and amount of work items loaded on a daily intensity and amount of work factor—and then the two specific job demands loaded on an overall job demands factor). The results supported the representation of the two job demands ($X^2=71.707$, $df=14$, GFI=.949; AGFI=.898; RMR=.171; SRMR=.190; RMSEA=.107; NFI=.963; CFI=.970) in one overall job resources factor ($X^2=25.712$, $df=13$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta X^2=46.995$, $df=1$, $p<.001$).

For the FHL resources factor, this study compared an uncorrelated, first-order CFA model (in which the two FHL resources with their respective items were represented as independent constructs) with a second-order CFA model (in which the items of each scale loaded on the respective underlying factor—e.g., the four daily family/home social support items loaded on a daily family/home social support factor, and the three daily personal life resources items loaded on a daily personal life resources factor—and then the two specific FHL resources loaded on an overall FHL resources factor). The results supported the representation of the two FHL resources

($\chi^2=65.998$, $df=14$, $GFI=.953$; $AGFI=.907$; $RMR=.283$; $SRMR=.209$; $RMSEA=.102$; $NFI=.971$; $CFI=.977$) in one overall FHL resources factor ($\chi^2=14.148$, $df=13$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta\chi^2=51.850$, $df=1$, $p<.001$). For the FHL demands factor, this study compared an uncorrelated, first-order CFA model (in which the two FHL demands with their respective items were represented as independent constructs) with a second-order CFA model (in which the items of each scale loaded on the respective underlying factor—e.g., the four daily family/home demands items loaded on a daily family/home demands factor, and the four daily personal life demands items loaded on a daily personal life demands factor—and then the two specific FHL demands loaded on an overall FHL demands factor). The results supported the representation of the two FHL demands ($\chi^2=48.702$, $df=20$, $GFI=.968$; $AGFI=.942$; $RMR=.204$; $SRMR=.137$; $RMSEA=.063$; $NFI=.978$; $CFI=.987$) in one overall FHL resources factor ($\chi^2=26.116$, $df=19$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta\chi^2=22.586$, $df=1$, $p<.001$).

For the job performance factor, this study compared an uncorrelated, first-order CFA model (in which the two job performances with their respective items were represented as independent constructs) with a second-order CFA model (in which the items of each scale loaded on the respective underlying factor—e.g., the two extra-role performance items loaded on an extra-role performance factor, and the four in-role performance items loaded on an in-role performance factor—and then the two specific job performances loaded on an overall job performances factor). The results supported the representation of the two job performances ($\chi^2=219.135$, $df=4$, $GFI=.814$; $AGFI=.534$; $RMR=.293$; $SRMR=.348$; $RMSEA=.387$; $NFI=.641$;

CFI=.644) in one overall job performances factor ($X^2=.997$, $df=1$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta X^2=218.138$, $df=3$, $p<.001$). For the daily work engagement factor, this study compared an uncorrelated, first-order CFA model (in which the two daily work engagement dimensions with their respective items were represented as independent constructs) with a second-order CFA model (in which the items of each sub-scale loaded on the respective underlying factor—e.g., the three vigor items loaded on a vigor factor, and the three dedication items loaded on a dedication factor—and then the two specific daily work engagement dimensions loaded on an overall daily work engagement factor). The results supported the representation of the two daily work engagement dimensions ($X^2=368.796$, $df=9$, GFI=.819; AGFI=.577; RMR=.412; SRMR=.384; RMSEA=.334; NFI=.709; CFI=.712) in one overall daily work engagement factor ($X^2=63.869$, $df=8$; refer to Table 5 for the model fit index) because the second-order model showed an acceptable and significantly better fit than the first-order model ($\Delta X^2=304.90$, $df=1$, $p<.001$).

Considering the limitations to data analysis posed by the sample size, the researcher minimized the complexity of the research model (i.e., the number of freely estimated parameters) without losing information by using manifest variables (Jöreskog & Sörbom, 1993). To apply scores for the manifest variables (e.g., job resources) that encapsulate the factor loadings of their underlying dimensions, their weighted factor scores are computed with a second-order principal axis factor (PAF) analysis with varimax rotation. This method considers the factor loadings of each sub-dimension while computing the factor score. The result is summarized in Table 5. PAF analyses resulted in one job resources factor (54.735% of explained variance) with factor loadings ranging from .77-.91 ($>.70$), one job demands factor (51.768% of

explained variance) with factor loadings ranging from .76-.92 (>.70), one FHL resources factor (53.847% of explained variance) with factor loadings ranging from .88-.93 (>.70), one FHL demands factor (44.289% of explained variance) with factor loadings ranging from .81-.91 (>.70), one job performance factor (58.364% of explained variance) with factor loadings ranging from .76-.88 (>.70), and one daily work engagement factor (66.839% of explained variance) with factor loadings ranging from .78-.86 (>.70). In light of the above, the manifest job resources variable represented the factor score of the two original job resources scales; the manifest job demands variable represented the factor score of the two original job demands scales; the manifest FHL resources variable represented the factor score of the two original FHL resources scales; the manifest FHL demands variable represented the factor score of the two original FHL demands scales; and the manifest job performance variable represented the factor score of the original in-role and extra-role performance scales. Table 6 shows the factor loadings for each manifest variable. The simplified theoretical model is depicted in Figure 4. The simplified theoretical model is based on the manifest variables.

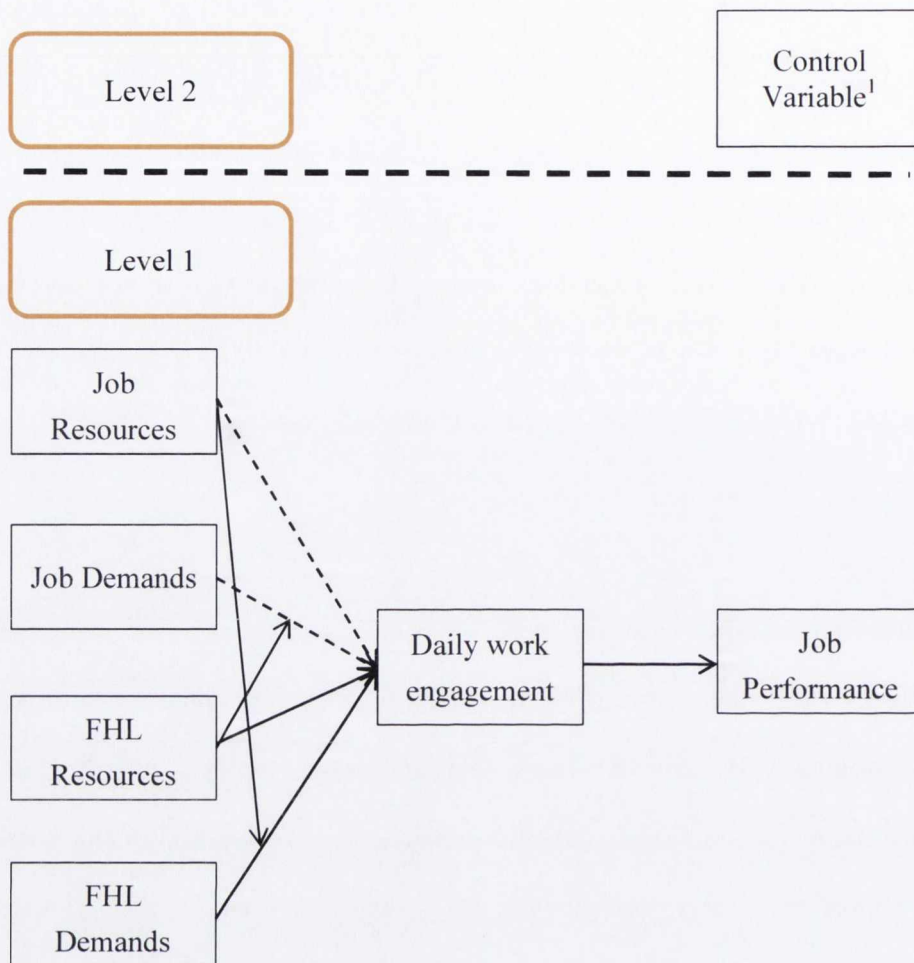


Fig. 4 The simplified theoretical model of this research²

Note: ¹ Control variable represents general work engagement.

² Manifest variables are observed variables.

³ The dotted lines represent the relationships that are not hypothesized but used as a premise because they are the dual processes (motivational and health impairment processes) that are already specified by the existing JD-R model. However, they are still analyzed as a part of a complete test of the predicted relationships derived from the extended model even though they are not presented as specific study hypotheses of this research project.

Table 5. Second-order PAF and second-order CFA of manifest variables (N=360)

Statistical Analysis	Criteria	Job Demands ¹	Job Resources ¹	FHL Demands ¹	FHL Resources ¹	Job Performance ¹	Daily Work Engagement
Kaiser-Meyer-Olkin (KMO)	>.70	.846	.815	.864	.854	.788	.876
Bartlett's Test of Sphericity (X ²) ³	The larger the better	2013.97***	1379.30***	2221.13***	2281.68***	606.33***	1255.65***
Explained variance (%)	N/A	51.768	54.735	44.289	53.847	58.364	66.839
X ²	The smaller the better	25.714(p=.028)	18.002 (p=.035)	26.116 (p=.127)	14.148 (p=.364)	.997 (p=.318)	63.869
X ² /df	<5	1.837	2.000	1.375	1.088	.997	7.984
GFI	>.90	.980	.984	.982	.989	.999	.920
AGFI	>.90	.960	.962	.966	.977	.986	.913
RMR	The smaller the better	.027	.026	.032	.020	.005	.045

Incremental Fit	SRMR	<.05	.029	.020	.021	.014	.010	.042
	RMSEA	<.08	.048	.053	.032	.016	.008	.159
	NFI	>.90	.987	.987	.988	.994	.998	.929
Indices ²	CFI	>.90	.994	.993	.997	.999	.992	.935

Note: ¹ Job resources= *JRamp*+ *JRss*; Job demands= *JDpac*+ *JDcus*; FHL resources= *FRF*+ *FRP*; FHL demands= *FDP*+ *FDF*; Job performance= *Extra-role Performance*+ *In-role Performance*; Daily work engagement= *Vigor*+ *Dedication*

² GFI= goodness of fit index; AGFI= adjusted goodness of fit index; RMR= root mean squared residual; SRMR= standardized root mean squared residual; RMSEA= root mean squared error of approximation; NFI= normed fit index; CFI= comparative fit index

³ ***. *p*<.001

Table 6. Factor loadings of all factors ($N=360$) (cut-off value of .70)

Manifest Variables ⁶	Job Demands ²	Job Resources ¹	FHL Demands ⁴	FHL Resources ³	Job Performance ⁵	Daily Work Engagement
Item 1	.84	.77	.88	.93	.79	.82
Item 2	.92	.90	.81	.91	.79	.85
Item 3	.91	.85	.83	.91	.76	.79
Item 4	.92	.91	.87	.88	.88	.86
Item 5	.76	.88	.89	.90	n/a	.82
Item 6	.83	.83	.87	.90	n/a	.78
Item 7	.87	n/a	.91	.89	n/a	n/a
Item 8	n/a	n/a	.87	n/a	n/a	n/a

Note: ¹ Job resources= *JRamp*+ *JRss*; Items 1-2 are for *JRamp* and 3-6 are for *JRss*.

² Job demands= *JDpac*+ *JDcus*; Items 1-4 are for *JDpac* and 5-7 are for *JDcus*.

³ FHL resources= *FRF*+ *FRP*; Items 1-3 are for *FRP* and 4-7 are for *FRF*.

⁴ FHL demands = *FDP* + *FDF*; Items 1-4 are for *FDP* and 5-8 are for *FDF*.

⁵ Job performance = *Extra-role Performance* + *In-role Performance*; Items 1-2 are for *Extra-role Performance* and 3-4 are for *In-role Performance*.

⁶ JDcus = daily negative customer contact; JDpac = daily intensity and amount of work; JRamp = daily team climate; JRss = daily colleague/manager social support;

FDF = daily family/home demands; FDP = daily personal life demands; FRF = daily family/home social support; FRP = daily personal life resources

5.3 Common method variance (CMV) test

Before examining the study hypotheses, the researcher performed tests for CMV. Following the recommendation by Podsakoff and his collaborators (2003), the researcher adopted Harman’s single-factor test (Podsakoff et al. 2003). All measurement items were entered into an EFA using an unrotated method. The results are summarized in Table 7. According to the analyzed results, 9 factors with eigenvalues exceeding 1 were extracted. Among these, the explained variance of the main factor was 37.927% (<50%), indicating that it did not explain a large portion of the common variance among measurements. This study also adopted other recommendations for CMV tests (e.g., Iverson & Maguire, 2000) by entering all measurement items into the same model and performing a CFA. The results are summarized in Table 8. According to the results, none of model fit indices for the analyzed model ($X^2/df=9.483$; $GFI=.468$; $AGFI=.408$; $RMR=.150$; $SRMR=.115$; $RMSEA=.154$; $NFI=.458$; $CFI=.484$) reached the common acceptance criteria for acceptable model fit. Thus, the CFA result also indicated that CMV does not pose a significant problem in this study.

Table 7. Harman’s single-factor test result ($N=360$)

Factor Number	Explained Variance (%)	Accumulated Explained Variance (%)
1	37.927 (<50)	37.927
2	8.032	45.959
3	6.424	52.383
4	5.558	57.941
5	5.084	63.025
6	5.021	68.046

7	4.074	72.119
8	3.568	75.687
9	2.776	78.464
KMO	.934 (>.70)	
Bartlett's Test of Sphericity (X^2)	11323.238***	

Note: ***: $p < .001$

Table 8. CFA result for the model with all measurement items ($N=360$)

Statistical Analysis		Criteria	Single dimension for all measures
Absolute Fit Indices	X^2	The smaller the better	6306.023 ($p=000$)
	X^2/df	<5	9.483
	GFI	>.90	.468
	AGFI	>.90	.408
	RMR	The smaller the better	.150
	SRMR	<.05	.115
	RMSEA	<.08	.154
Incremental Fit Indices	NFI	>.90	.458
	CFI	>.90	.484

Note: GFI= goodness of fit index; AGFI= adjusted goodness of fit index; RMR= root mean squared residual; SRMR= standardized root mean squared residual; RMSEA= root mean squared error of approximation; NFI= normed fit index; CFI= comparative fit index

5.4 Correlation analysis and collinearity statistics

The correlation between each measure was analyzed, and the results are summarized in Table 9. According to the results, job resources ($r=.871, p<.001$), job demands ($r=-.767, p<.001$), FHL resources ($r=.699, p<.001$), and FHL demands ($r=-.794, p<.001$) are all significantly correlated with daily work engagement. Daily work engagement is significantly positively correlated with self-reported job performance ($r=.716, p<.001$). These results reveal that both job demands/resources and FHL demands/resources are strongly correlated with daily work engagement and that daily work engagement strongly correlated with self-reported job performance.

Concerning the control variable, general work engagement is significantly positively correlated with daily work engagement ($r=.543, p<.001$) and job performance ($r=.300, p<.01$). It is also significantly correlated with job resources ($r=.472, p<.001$), job demands ($r=-.387, p<.01$), FHL resources ($r=.405, p<.01$), and FHL demands ($r=-.544, p<.001$). The above results reveal that in line with existing studies (e.g., Bakker, 2009; Xanthopoulou et al., 2008, 2009a), general work engagement may make a potential difference to the findings of this study and should therefore be considered as a control variable when testing the study hypotheses.

Job resources are significantly negatively correlated with job demands ($r=-.730, p<.001$) and FHL demands ($r=-.707, p<.001$). FHL resources are significantly negatively correlated with job demands ($r=-.730, p<.001$) and FHL demands ($r=-.582, p<.001$). The above associations reveal that both resources and demands from work and FHL may influence each other. The absence of any bivariate relationships between the study variables would make further analysis moot. The overall results of the correlation analysis, however, support the claim that each measure may impact the others, and further analysis through HLM is warranted. The demographic variables

are not significantly correlated with the dependent variables (e.g., daily work engagement and job performance) and are therefore excluded from further analyses (Volman, Bakker, & Xanthopoulou, 2013; Xanthopoulou et al., 2009b).

Because predictors (i.e., job demands/resources and FHL demands/resources) are significantly correlated with the dependent variable (i.e., daily work engagement), collinearity statistics are applied to check whether any predictors could be predicted by other predictors. The results are summarized in Table 10. According to the results, job resources (eigenvalue=.115, CI=6.505, tolerance=.328, VIF=3.047) do not have a collinearity problem. Job demands (eigenvalue=.020, CI=15.542, tolerance=.357, VIF=2.803) do not have a collinearity problem. FHL resources (eigenvalue=.011, CI=21.770, tolerance=.414, VIF=2.415) do not have a collinearity problem. FHL demands (eigenvalue=.002, CI=53.815, tolerance=.475, VIF=2.105) do not have a collinearity problem but have a slight risk of a collinearity concern because they just exceed the criteria for their eigenvalue but do not reach the criteria for their CI. However, the overall result reveals that collinearity is not a detriment in this study.

Table 9. Pearson correlation analysis result of all measures ($N=360$)

Variables ¹	1	2	3	4	5	6	7	8	9	10	11	12	13
Age													
Gender	-.121												
Cohabitant	.254	-.152											
Education	-.193	.092	.141										
Tenure	.383**	.130	-.081	-.131									
Other Job	-.211	.060	-.091	.010	-.143								
Working Hour	.150	-.055	.164	-.076	.236	-.179							
Gen WE	-.104	-.034	-.134	-.218	.024	.114	-.130						
DWE	-.086	.097	-.143	-.109	-.095	.087	-.208	.543**					
JP	-.081	-.096	-.086	-.235	.080	.181	.054	.300*	.716**				
JR	-.037	-.051	.039	-.054	-.086	.106	-.091	.472**	.871**	.702**			
JD	-.019	.083	.065	.195	.133	.013	-.075	-.387**	-.767**	-.619**	-.730**		

FR	-.149	-.030	-.140	-.331*	-.071	.035	.001	.405**	.699**	.708**	.658**	-.730**
FD	.102	.009	.093	.114	-.123	.011	.179	-.544**	-.794**	-.604**	-.707**	.549**
												-.582**

Note: *: $p < .05$; **: $p < .01$

¹Gen WE= general work engagement; DWE= daily work engagement; JP= job performance; JR= job resources; JD= job demands; FR= FHL resources; FD= FHL demands

Table 10. Collinearity statistics on independent variables (DWE¹ as dependent variable) (N=360)

Criteria	Eigenvalue	CI	Tolerance ³	VIF ³
Models ¹	>.001	<30	>.10	<10
JR	.115	6.505	.328	3.047
JD	.020	15.542	.357	2.803
FR	.011	21.770	.414	2.415
FD	.002	53.815	.475	2.105

Note: ¹ DWE= daily work engagement; JP= job performance; JR= job resources; JD= job demands; FR= FHL resources; FD= FHL demands

² VIF= variance inflation factor; CI= condition index

³ The absolute collinearity criteria. When a model's Tolerance value is less than .10 and/or VIF value exceeds 10, collinearity problem will happen.

5.5 Multilevel analysis for hypotheses

The data of this study may be viewed as multilevel data, with repeated diary measurements nested within individuals. This results in a two-level model with the repeated measurements (i.e., daily measures) at the first level ($N=360$ observations), and the individual persons (i.e., general measure) at the second level ($N=45$ participants). The HLM 7 statistical package (Raudenbush, Bryk, & Congdon, 2000) was used to examine the study hypotheses and propositions. When testing the hypotheses and propositions, first-level (daily) predictor variables were centered on the respective person mean, and second-level variables were centered on the sample mean (Xanthopoulou et al., 2008).

Before the examination of the study hypotheses and propositions, it is critical to provide statistical evidence that supports the use of multilevel modeling (Tims et al., 2011). Following the suggestions of Tims and collaborators (2011), the researcher calculated the intra-class correlation (ρ) based on the intercept-only model. The intra-class correlation explains how much of the variance may be attributed to the different levels of analysis. If the amount of within-person variance is very low, this would mean that daily work engagement does not vary significantly from one day to another. The findings show that 41% of the variance is attributable to between-person fluctuations and 59% to within-person fluctuations. These results suggest that there is enough variance attributable to both between- and within-person variations in daily work engagement, which supports the use of multilevel modeling for further analysis. Additional analyses support significant daily fluctuations in the predictor variables (for job demands: $\rho=.26$, suggesting that 74% of the variation is attributable to within-person variations; for job resources: $\rho=.43$, suggesting that 57% of the variance is attributable to within-person variations; for FHL demands: $\rho=.16$,

suggesting that 84% of the variation is attributable to within-person variations; for FHL resources: $\rho=.36$, suggesting that 64% of the variation is attributable to within-person variations; and for self-reported job performance: $\rho=.27$, suggesting that 73% of the variation is attributable to within-person variations). The above results indicate that the multilevel structure of data in this research should be taken into account when examining the study hypotheses and propositions.

Hypothesis 1 states that FHL resources positively predict work engagement. To test Hypothesis 1, three nested models (i.e., Null model, Model 1, and Model 2) were examined. The intercept only was initially entered in the Null model. In Model 1, the control variable (i.e., general [trait-based] work engagement) was added. The independent variable (i.e., FHL resources) was further introduced in Model 2. The results are summarized in Table 11. Based on Table 11, after controlling for general (trait-based) work engagement, the predicted link between FHL resources and daily work engagement reached statistical significance ($t=6.05$, $p<.001$). Model 2 is the best-fitting model to the data because its value of deviance ($-2 LL=1906.53$) is significantly lower in comparison with the previous models. This finding provides support for Hypothesis 1.

Hypothesis 2 states that FHL resources moderate the link between job demands and work engagement. To test Hypothesis 2, the four nested models (i.e., Null model, Model 1, Model 2, and Model 3) were examined. The intercept was entered in the Null model; the control variable (i.e., general [trait-based] work engagement) and independent variable (i.e., job demands) were added for Model 1; the moderator (i.e., FHL resources) was added for Model 2; and the interaction term (i.e., the interaction influence between FHL resources and job demands) was included for Model 3. The results are summarized in Table 12. Based on Table 12, after controlling for general

(trait-based) work engagement, job demands, and FHL resources, the interaction term is significant ($t = .71, p < .05$). Model 3 is the best-fitting model to the data because its value of deviance ($-2 LL = 1806.27$) is significantly lower in comparison with the previous models. This finding supports Hypothesis 2. To test the direction of the effect, a graphical representation of the interaction is generated from a simple slope analysis (Aiken & West, 1991; Frazier, Tix, & Barron, 2004). This study computed the predicted values of daily work engagement for two groups, namely, those who scored 1 standard deviation below and above the mean on the predictor (job demands) and moderator (FHL resources) variables. A figure representing the form of the interaction could therefore be drawn (Figure 5). As expected, the relation between job demands and daily work engagement is more negative for employees with fewer FHL resources ($t = -4.104, p < .001$) in comparison with employees with many FHL resources ($t = -.736, p > .05$).

Hypothesis 3, which states that FHL demands negatively predict work engagement, was again tested with the same approach used for Hypothesis 1. The intercept was initially entered in the Null model, with the control variable (i.e., general [trait-based] work engagement) added for Model 1 and the hypothesis predictor variable (i.e., FHL demands) added in Model 2. The results are summarized in Table 13. After controlling for general (trait-based) work engagement, the predicted link between FHL demands and daily work engagement reached statistical significance ($t = -6.26, p < .001$). Model 2 is the best-fitting model to the data because its value of deviance ($-2 LL = 1911.70$) is significantly lower in comparison with the previous models. This finding supports Hypothesis 3.

Hypothesis 4 states that job resources moderate the link between FHL demands and work engagement. To test Hypothesis 4, the four nested models (i.e., Null model,

Model 1, Model 2, and Model 3) were examined. The intercept was entered in the Null model; the control variable (i.e., general [trait-based] work engagement) and independent variable (i.e., FHL demands) were added for Model 1; the moderator (i.e., job resources) was added for Model 2; and the interaction term (i.e., the interaction influence between job resources and FHL demands) was included for Model 3. The results are summarized in Table 14. Based on Table 14, after controlling for general (trait-based) work engagement, FHL demands, and job resources, the interaction term is significant ($t=2.46, p<.05$). Model 3 is the best-fitting model to the data because its value of deviance ($-2 LL=1815.92$) is significantly lower in comparison with the previous models. This finding supports Hypothesis 4. To test the direction of the effect, a graphical representation of the interaction was generated from the simple slope analyses (Aiken & West, 1991; Frazier et al., 2004). This study again computed the predicted values of daily work engagement for two groups, namely, those who scored 1 standard deviation below and above the mean on the predictor (FHL demands) and moderator (job resources) variables. A figure representing the form of the interaction could therefore be drawn (Figure 6). As expected, the relation between FHL demands and daily work engagement is more negative for employees with fewer job resources ($t=-3.579, p<.001$) in comparison with employees with many job resources ($t=-.939, p>.05$).

This study additionally compared the original JD-R model with the extended JD-R model. One of the assumptions (see section 2.2.4) of the original JD-R model is that job resources and demands interact with each other to influence work engagement. This study thus additionally included this interaction influence in the analysis to compare the extended JD-R model with the original JD-R model. In this regard, four nested models (i.e., Null model, Model 1, Model 2, and Model 3) were examined. The

intercept was initially entered in the Null model. In Model 1, which is the original JD-R model, the control variable (i.e., general [trait-based] work engagement), job resources, job demands, and an interaction term (i.e., the interaction influence between job resources and job demands) were added. In Model 2, which is the extended JD-R model, FHL resources and demands were also included. Finally, the hypothesized interactions were further included in the last model (Model 3) to observe whether they would contribute to the fit of the model over and above Model 2. The results are summarized in Table 15 and show that Model 2 (i.e., the extended JD-R model) is a better fit to the data than Model 1 (i.e., the original JD-R model) because its value of deviance (-2 $LL=1713.00$) is lower in comparison with Model 1 (-2 $LL=1806.38$). In addition, Model 3 is the best-fitting model to the data because its value of deviance (-2 $LL=1706.67$) is again lower than the previous models (-2 $LL=6.33, p<.05$).

5.6 Supplemental Analyses

Proposition 1 states that work engagement fully mediates the relationship between FHL resources and job performance. Following Baron and Kenny (1986), the researcher examined the required conditions for mediation: (1) the predictor must be associated with the mediator; (2) the mediator must be associated with the outcome; and (3) the predictor–outcome relationship becomes non-significant (full mediation) or becomes significantly weaker (partial mediation) after the inclusion of the mediator. The Sobel test (Sobel, 1982) is used to examine the degree of significance with which the direct effect changes when the interaction effect is also considered. In other words, it is used to examine whether the indirect effect of the independent variable on the dependent variable through the mediator variable reaches statistical significance. The

first condition (i.e., whether FHL resource is significantly related to work engagement) was previously tested for the first hypothesis; the result is supported (Table 11). To test whether work engagement correlates significantly with job performance (second condition), the three models (i.e., Null model, Model 1, and Model 2) were tested. The intercept was initially entered in the Null model. In Model 1, the control variable (i.e., general [trait-based] work engagement) was then inserted. The independent variable (i.e., work engagement) was further introduced in Model 2. The results are summarized in Table 16. Based on Table 16, after controlling for general (trait-based) work engagement, the predicted link between daily work engagement and job performance reached statistical significance ($t=12.47$, $p<.001$). Model 2 is the best-fitting model to the data because its value of deviance ($-2 LL=1613.94$) is significantly lower in comparison with the previous models. To test proposition 1, the four nested models (i.e., Null model, Model 1, Model 2, and Model 3) were tested. The intercept was entered in the Null model; the control variable (i.e., general [trait-based] work engagement) was added for Model 1; and the independent variable (i.e., FHL resources) was added for Model 2. For Model 3, the mediator variable (i.e., daily work engagement) was entered. The results are summarized in Table 17. Based on Table 17, after controlling for general (trait-based) work engagement, the inclusion of daily work engagement in Model 3 turned the previously significant relationship between FHL resources and job performance ($t=4.85$, $p<.001$) into a non-significant one ($t=.32$, $p=.75$). Model 3 is the best fit to the data because its value of deviance ($-2 LL=1621.08$) is significantly lower in comparison with the previous models. The result of the Sobel test reveals that this mediating effect is significant ($z=5.25$, $p<.05$). This finding supports Proposition 1.

Proposition 2 states that work engagement fully mediates the relationship

between FHL demands and job performance. The required conditions for mediation proposed by Baron and Kenny (1986) were applied again. The Sobel test (Sobel, 1982) was used again to examine whether the mediator significantly carried the influence of the independent variable to the dependent variable. The first condition (i.e., whether FHL demands are significantly related to work engagement) was met (see support for Hypothesis 3 in Table 13). Similarly, tests for Proposition 1 (see Table 16) indicate that the second condition was met (i.e., whether work engagement correlate significantly with job performance). Thus, to test Proposition 2, the four nested models were examined. The intercept only was entered in the Null model; the control variable (i.e., general [trait-based] work engagement) was added for Model 1; the predictor variable (i.e., FHL demands) was added for Model 2; and the mediator variable (i.e., daily work engagement) was added for Model 3. The results are summarized in Table 18 and indicate that after controlling for general (trait-based) work engagement, the inclusion of daily work engagement in Model 3 changed the previously significant direct relationship between FHL demands and job performance ($t=-4.06$, $p<.001$) into a non-significant relationship ($t=.18$, $p=.86$). Model 3 is the best-fitting model to the data because its value of deviance ($-2 LL=1614.53$) is significantly lower in comparison with the previous models. The result of the Sobel test reveals that this mediating effect is significant ($z=-5.89$, $p<.05$). This finding supports Proposition 2.

This study also tested the proposed theoretical model that incorporates the two additional propositions. The five nested models (i.e., Null model, Model 1, Model 2, Model 3, and Model 4) were examined. The intercept was entered in the Null model; the control variable (i.e., general [trait-based] work engagement) and job resources as well as demands were added for Model 1; FHL resources and demands were added

for Model 2; daily work engagement was included for Model 3; and the interaction terms were included for Model 4. The results are summarized in Table 19 and indicate that Model 3 fits the data better than the previous models because its value of deviance ($-2 LL=1623.31$) is lower in comparison with the previous models. Model 4 is the best-fitting model to the data because its value of deviance ($-2 LL=1622.69$) is lower in comparison with the previous models, although the change in $-2 LL$ does not reach significance ($\Delta -2 LL=0.62, p>.05$).

Table 11. Multilevel estimates for models predicting daily work engagement: FHL resources as predictor (N=360 occasions, N=45 participants)

Model		Null		1		2			
Variables	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	19.88	.57	34.63***	19.88	.49	40.77***	19.88	.49	40.77***
General									
Work				.45	.11	4.24***	.46	.11	4.34***
Engagement									
FHL Resources							.34	.06	6.05***
		χ^2		χ^2		χ^2		χ^2	
Level 1 (Daily)	12.83			12.83			7.77		
Variance									
Level 2 (General)	13.23	406.971***		9.10	286.94***		9.73	473.87***	
Variance									

-2 LL	2036.86	2025.97	1906.53
Δ-2 LL		10.89	119.44**

Note: ***, $p < .001$

Table 12. Multilevel estimates for models predicting daily work engagement: Job demands as predictor and FHL resources as moderator ($N=360$ occasions, $N=45$ participants)

Model	Null						1						2						3					
Variables	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	19.88	.57	34.63***	19.88	.48	41.7***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.50***									
General Work Engagement				.44	.13	3.51***				.45	.12	3.69***				.38	.12	3.31**						
Job Demands				-.48	.06	-8.58***				-.34	.05	-6.90***				-.34	.05	-7.16***						
FHL Resources										.22	.05	4.90***				.22	.04	4.91***						
FR*JD																.11	.15	.71*						
Level 1 (Daily) Variance	12.83									6.91						5.28						5.16		
		χ^2									χ^2						χ^2					χ^2		

Level 2 (General)	13.23	406.971***	9.83	532.56***	10.03	696.91***	10.13	719.77***
Variance								
-2 LL		2036.86		1864.93		1811.48		1806.27
Δ-2 LL				171.93***		53.45***		5.21*

Note: **: $p < .01$; ***: $p < .001$

¹ FR= FHL resources; JD= Job demands

Table 13. Multilevel estimates for models predicting daily work engagement: FHL demands as predictor ($N=360$ occasions, $N=45$ participants)

Model		Null		1		2		
Variables	Estimate	SE	t	Estimate	SE	Estimate	SE	t
Intercept	19.88	.57	34.63***	19.88	.49	19.88	.48	40.77***
General Work								
Engagement				.45	.11	.45	.11	4.25***
FHL Demands						-.26	.04	-6.26***
		χ^2		χ^2		χ^2		
Level 1 (Daily)	12.83			12.83		8.02		
Variance								
Level 2 (General)	13.23	406.97***		9.10	286.94***	9.70	459.15***	
Variance								

-2 LL	2036.86	2025.97	1911.70
Δ -2 LL		10.89	114.27***

Note: ***: $p < .001$

Table 14. Multilevel estimates for models predicting daily work engagement: FHL demands as predictor and job resources as moderator ($N=360$ occasions, $N=45$ participants)

Model	Null						1						2						3					
Variables	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	19.88	.57	34.63***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.70***	19.88	.48	41.70***
General Work Engagement				.45	.12	3.67***	.46	.12	3.88***	.45	.12	3.75***												
FHL Demands				-.26	.04	-6.34***	-.022	.04	-6.15***	-.26	.04	-6.36***												
Job Resources							.45	.05	8.81***	.44	.05	8.96***												
JR*FD							.44	.18	2.46*															
Level 1 (Daily) Variance	12.83						8.02			5.77			5.65											
		χ^2			χ^2			χ^2			χ^2			χ^2			χ^2							

Level 2 (General)	13.23	406.971***	9.70	459.150***	10.00	637.912***	10.00	582.452***
Variance								
-2 LL		2036.86		1911.70		1821.31		1815.92
Δ -2 LL				125.16***		90.39***		5.39*

Note: **: $p < .01$; ***: $p < .001$

¹ JR= job resources; FD= FHL demands

Table 15. Multilevel estimates for models predicting daily work engagement: JD-R model and the extended JD-R model (*N*=360 occasions,

N=45 participants)												
Model	Null			1			2			3		
Variables	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	19.88	.57	34.63***	19.88	.48	41.693***	19.88	.48	41.69***	19.88	.48	41.58***
General	Work			.43	.12	3.79***	.43	.11	4.01***	.40	.12	3.40**
Engagement												
Job Resources				.32	.06	5.45***	.25	.05	5.41***	.23	.05	5.21***
Job Demands				-.38	.05	-7.46***	-.24	.05	-4.90***	-.22	.05	-4.53***
JR*JD				.06	.04	1.42*	.07	.04	1.82*	.07	.04	1.81*
FHL Resources							.11	.04	3.06**	.11	.04	2.97**
FHL Demands							-.16	.03	-5.62***	-.19	.03	-6.60***
FR*JD										.01	.14	.06*
JR*FD										.39	.12	3.25**

		χ^2	χ^2	χ^2	χ^2
Level 1	(Daily)				
		12.83			
Variance			3.36	5.48	3.06
Level 2	(General)				
		13.23	10.27	10.01	10.36
Variance		406.971***	1097.22***	671.74***	605.39***
-2 LL		2036.86	1713.00	1806.38	1706.67
Δ -2 LL			93.38***	230.48***	6.33*

Note: **: $p < .01$; ***: $p < .001$

Table 16. Multilevel estimates for models predicting job performance: Daily work engagement as predictor ($N=360$ occasions, $N=45$ participants)

Model		Null		1		2			
Variables	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	15.11	.28	54.75***	15.11	.26	57.39***	15.11	.26	57.37***
General									
Work				.12	.05	2.35*	.11	.05	2.23*
Engagement									
Daily							.42	.03	12.47***
Engagement									
		χ^2			χ^2			χ^2	
Level 1 (Daily)	6.66			6.66			4.03		
Variance									
Level 2 (General)	2.67	185.389***		2.43	168.669***		2.75	279.211***	

Variance			
-2 LL	1766.73	1764.25	1613.94***
Δ-2 LL		2.48	150.31***

Note: **, $p < .01$; ***, $p < .001$

Table 17. Multilevel estimates for models predicting job performance: FHL resources as predictor and daily work engagement as mediator
(N=360 occasions, N=45 participants)

Model		Null		1		2		3	
Variables	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	15.11	.28	54.13***	15.11	.27	57.10***	15.11	.27	56.18***
General									
Work				.12	.06	2.07*	.08	.05	1.89*
Engagement									
FHL Resources							.16	.03	4.85***
							.01	.03	.32
Daily Work Engagement							.41	.04	10.38***
Level 1 (Daily) Variance	6.66			2.43			5.59		4.04
Level 2 (General)	2.67	185.39***		6.66	168.67***		2.56	201.66***	2.75
Variance			χ^2			χ^2			χ^2

-2 LL	1766.73	1753.25	1720.78	1621.08
Δ -2 LL		13.48	32.47***	99.70***

Note: *: $p < .05$, ***: $p < .001$

Table 18. Multilevel estimates for models predicting job performance: FHL demands as predictor and daily work engagement as mediator
(*N*=360 occasions, *N*=45 participants)

Model		Null			1			2			3		
Variables		Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept		15.11	.28	54.13***	15.11	.27	57.10***	15.11	.27	55.787***	15.11	.27	56.02***
General	Work				.12	.06	2.07*	.07	.05	1.39	.09	.05	1.70
Engagement													
FHL Demands								-.11	.03	-4.06***	.01	.03	.18
Daily	Work										.42	.04	10.637***
Engagement													
			χ^2			χ^2			χ^2			χ^2	
Level	1 (Daily)	6.66			2.43			5.46			3.81		
Variance													

Level	2	(General)	2.67	185.39***	6.66	168.67***	2.62	209.21***	2.80	296.90***
Variance										
-2 LL				1766.73		1753.25		1716.52		1614.53
Δ-2 LL						13.48		36.73***		101.99***

Note: *: $p < .05$; ***: $p < .001$

Table 19. Multilevel estimates for models predicting job performance: Full extended JD-R model that incorporates two additional propositions
(*N*=360 occasions, *N*=45 participants)

Model	Null			1			2			3			4		
Variables	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>	Estimate	SE	<i>t</i>
Intercept	15.11	.28	54.75***	15.11	.26	57.36***	15.11	.26	57.16***	15.11	.26	57.29***	15.11.	.26	57.32***
General				.13	.05	2.76**	.09	.04	1.92*	.10	.05	2.11*	.10	.04	2.33*
Work															
Engagement															
Job				.15	.04	3.87***	.13	.04	3.65***	.02	.03	.49	.01	.03	.26
Resources															
Job Demands				-.18	.03	-5.53***	-.11	.04	-3.036**	-.002	.03	-.06	-.01	.03	-.22
FHL							.05	.03	1.82	.003	.02	.16	.01	.02	.55
Resources															
FHL							-.06	.03	-2.02	.01	.03	.24	-.01	.03	-.27

Demands									
Daily	Work								
		.42	.04	9.32***	.42	.05	8.38***		
Engagement									
FR*JD					.06	.12	.52		
JR*FD					.15	.15	1.04		
								χ^2	
Level	1				4.34	5.17	3.68	χ^2	
(Daily)		6.66							
Variance									
Level	2				2.74	2.62	2.80	χ^2	
(General)		2.67	185.389***						
Variance									
-2 LL									
		1766.73	1698.71	1679.23	1623.31				1622.69

Δ-2 LL	68.02***	19.48**	55.91***	.62
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Note: *: $p < .05$; **: $p < .01$; ***: $p < .001$

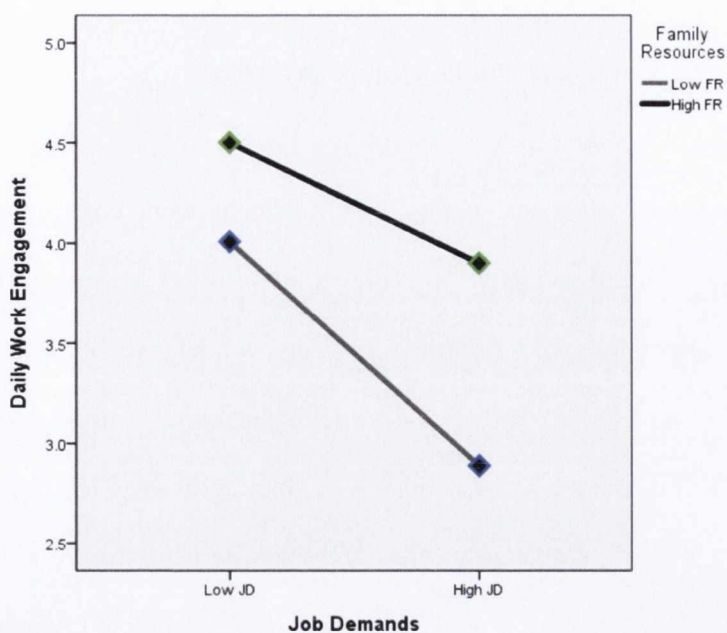


Fig. 5 Interaction effect of job demands and FHL resources on daily work engagement

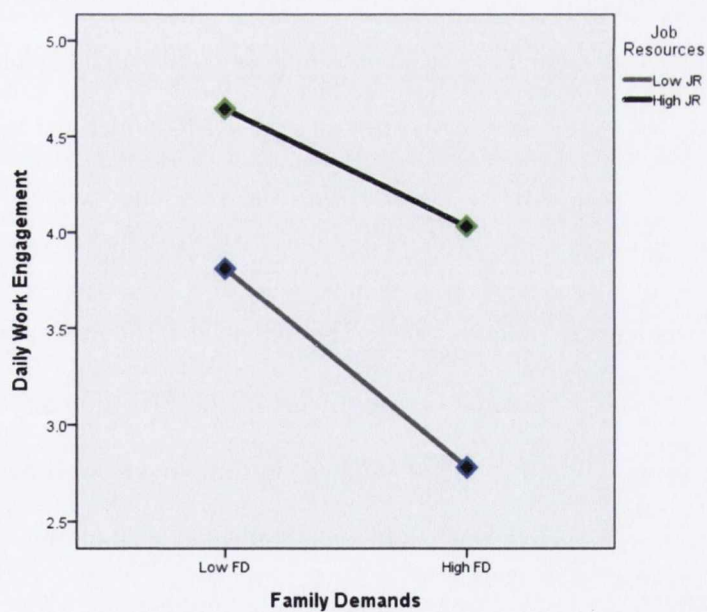


Fig. 6 Interaction effect of FHL demands and job resources on daily work engagement

Chapter 6 Discussion and Conclusion

This study presents an extension to the JD-R model of work engagement that includes FHL demands and resources and the results of an empirical test of hypotheses and propositions derived from this extended model. At the heart of the model extension is the premise that employees' work engagement is impacted by FHL influences, specifically by resources and demands originating in the FHL domain, in addition to interacting with the demands and resources arising from the work domain. The study hypotheses predicted that FHL resources (and demands) would both directly and indirectly affect work engagement and proposed that through the above hypothesized predictions, job performance would also be impacted. The results of the empirical investigation supported these hypotheses and propositions. Theoretically, this model extension incorporates FHL resources and demands and explains their impact on model variables. Previously, work utilizing the JD-R model had to rely on extraneous concepts and propositions drawn from theories and models on the work-family interface, such as family-to-work enrichment (Greenhaus & Powell, 2006) and conflict (Greenhaus & Beutell, 1985). The extended JD-R model presented and tested here facilitates future research on the impact of the FHL domain on work engagement and thus on a central factor related to employee well-being and performance. This chapter discusses the study's theoretical contributions, research limitations, implications for future research, and pragmatic implications.

6.1 Theoretical contributions

The JD-R model of work engagement has been applied to many different

occupations (e.g., call center and home care organization; Bakker et al., 2003; Bakker, Demerouti, & Schaufeli, 2003) and in many countries, including Australia, Belgium, China, Finland, Germany, Greece, Italy, Norway, Spain, Sweden, and South Africa (Bakker, 2014). It is widely used for predicting work engagement and job performance (Bakker & Demerouti, 2007; Demerouti et al., 2001; Schaufeli & Bakker, 2004). However, to date, the JD-R model has been almost solely rooted in the work environment and has not explicitly considered the potential impact of non-work domains on central model variables (Bakker et al., 2006). This exclusive focus limits the consideration of additional factors that can affect employees and their well-being, motivation and performance. Moreover, the literature on work engagement that employs the JD-R theory contains some conflicting, inconsistent, and unexpected findings (see Bakker et al., 2006; de Lange, De Witte, & Notelaers, 2008; Hakanen et al., 2008; Schaufeli & Bakker, 2004) that may be better understood and explained when a more holistic perspective is applied that facilitates the consideration of influences (i.e., resources and demands) that are not directly related to work but may play a role in influencing employees' work engagement and job performance (Bakker & Leiter, 2010; Warr, 2007).

The extension to the JD-R model presented in this study reflects the above considerations and incorporates the family and home (FHL) environment as a potential source of factors that influence employees at work. Other domains could also provide resources and demands that have similar effects, but the choice of the FHL domain reflects the fact that the balance between work and family/home is widely regarded as one of the major challenges facing employees and employers in the 21st century (U.S. Department of Labor, 1999). In the following, the researcher discusses four aspects of the extended JD-R model that make theoretical contributions

to the existing literature (the third and the fourth contributions are discussed in section 6.1.3).

6.1.1 *Non-work (FHL) resources and demands in the extended model*

The main theoretical contribution the extended JD-R model makes is the integration of FHL resources and demands into the JD-R model and the explication of their influence on central model variables and relationships. The theoretical considerations and the empirical results reveal that in addition to job demands and resources, FHL demands and resources play a vital role in determining employees' work engagement. The result implies that attempts to explain work engagement may not be comprehensive enough if they only consider job demands and resources without consideration of the influence arising from the FHL domain.

Both the theoretical explanations of the extended JD-R model and the empirical results reported here are consistent with several authors' claims about differential patterns of relationships among specific family demands, specific family resources, and work engagement components as measured with the UWES (e.g., Bakker et al., 2005; Hakanen et al., 2008). In addition, many empirical findings in this hitherto rather fragmented research area can be ordered according to the patterns suggested by the extended model. For instance, family demands, such as home overload, emotional demands, cognitive demands (Bakker et al., 2005), quantitative home demands, emotional home demands, mental home demands (Montgomery et al., 2003), parental demands (Fu & Shaffer, 2001), family negative affect (Rathbard, 1999), household tasks (Ten Brummelhuis & Bakker, 2012b), and family conflict (Lu et al., 2015), have all been reported to be negatively related to components of work engagement and/or positively related to job stress. Similarly, family resources, such as family autonomy,

family social support (Bakker et al., 2005; Siu et al., 2010), friends' social support (Montgomery et al., 2003), family mastery (Lu, Siu, Chen, & Wang, 2011), marital status (Siu et al., 2010), family importance, family positive affect (Rathbard, 1999), family-to-work goal facilitation, partnership engagement (Wiese & Salmela-Aro, 2008), spousal empathy (Bakker & Demerouti, 2009), spousal support (Aryee et al., 1999), and family satisfaction (Shimazu & Schaufeli, 2009), have been shown to be positively related to components of work engagement and/or well-being. It is instructive to consider the empirical patterns found in the research referenced above in light of the extended JD-R model and the empirical results of this study. The factors considered in the above research are all included in the FHL domain used here, and the premise of the JD-R model extension as well as the empirical support presented here are in line with the above literature. Thus, the extended JD-R model can provide a useful reference point for the consideration of this wide-ranging and at times fragmented body of research.

6.1.2 Dual processes created by FHL resources and demands in the extended model

According to the analytic results, FHL demands and resources may create two independent processes (i.e., main effects of FHL resources and demands on work engagement) to influence work engagement. Whereas FHL demands contribute to a health impairment process that is detrimental to work engagement, FHL resources contribute to the motivational process at the heart of the JD-R model. As addressed in the hypothesis development section, FHL demands may tax employees' personal resources that could have been used to address job demands, resulting in existing job demands remaining unsolved or future job demands becoming unsolvable due to the unavailability of sufficient personal resources. Therefore, work may be experienced as

more demanding, and employees may need to invest additional personal resources at work to address these job demands. Such an additional investment of personal resources may lead employees to experience an increase of job stress (Hobfoll, 2002). Job stress is highly related to health impairments (e.g., chronic fatigue, melancholia, sleeping disorders, personality disorders, and substance abuse; Fusilier & Manning, 2005; Langelaan et al., 2006; Maslach & Goldberg, 1998; Pines & Guendelman, 1995; Sandström, Rhodin, Lundberg, Olsson, & Nyberg, 2005). Employees with lost personal resources and an increase in job stress may be less active and less effective and are more likely to be energetically exhausted at work (e.g., Hakanen et al., 2006; Ouweneel et al., 2012), all of which contribute to lower work engagement.

FHL resources may improve employees' positive emotion in the FHL domain, and through a spillover process (Edwards & Rothbard, 2000), employees bring this positive emotion to work. When employees experience positive emotion at work, they actively build and extend their personal resources at work by building their own sense of ability (e.g., self-efficacy, Bandura, 2000) to successfully manage their work, seeking more job resources to strengthen their ability at work, or both. Additionally, increased personal resources at work contribute to employees' sense of well-being (Hobfoll, 2002). Employees with increased personal resources and an increased sense of well-being may be more energetic, active, and effective at work (e.g., Hakanen et al., 2006; Ouweneel et al., 2012) and may experience higher levels of intrinsic motivation to engage in their work (e.g., Xanthopoulou et al., 2007).

According to the dual processes of FHL demands and resources that is incorporated in the extended JD-R model, this study makes an additional theoretical contribution by partially combining the theoretical notions of work-family conflict (i.e., family-to-work conflict) and work-family enrichment (i.e., family-to-work

enrichment) into the JD-R theory. Work-family enrichment and work-family conflict are traditionally viewed as two distinct concepts (Boyar & Mosley, 2007). Existing studies have suggested an integrated model that explains both conflict and enriching relationships between the work and family domains (e.g., Ten Brummelhuis & Bakker, 2012a). Ten Brummelhuis and Bakker (2012a) attempted to integrate the concepts of work-family enrichment and work-family conflict into a particular model. However, the model does not fully align with the original concepts. The authors claimed that the degree to which family and work conflict with or enrich each other depends on the quantity of resources and demands. Whereas low resources and high demands in one domain are likely to worsen outcomes in the other domain (work-family conflict), low demands and high resources facilitate outcomes in the other domain (work-family enrichment). However, both traditional concepts of work-family enrichment and work-family conflict are central to the fit between resources and demands across domains. Work-family conflict reflects the issue that resources in one domain that could have been used to address demands in that domain were used to address the demands of another domain, resulting in the former domain becoming demanding due to existing unsolved demands and/or potential future unsolvable demands (Greenhaus & Beutell, 1985). Work-family enrichment reflects the issue that resources transferred from one domain to another domain promote effective functioning in the latter domain, whereas the former domain is not at risk of losing particular resources to address demands in its domain (Greenhaus & Powell, 2006). In other words, the occurrence of FWE and FWC depends on whether one domain (e.g., family) contributes to (or hinders) an individual's effective functioning in another domain (e.g., work) by adding to (or detracting from) an individual's available resources. The dual processes of FHL resources and demands in the extended JD-R model of work

engagement maintain the traditional concepts of work-family enrichment and work-family conflict.

In addition, Ten Brummelhuis and Bakker (2012a) used personal resources as a mechanism to explain how job/family resources and demands influence family/work outcomes, which is not dissimilar to this research. However, there are important differences between the conceptions and definitions of personal resources used. Following Hobfoll (2002), Ten Brummelhuis and Bakker (2012a) define personal resources as traits and energies. In contrast, in this study, the researcher defines personal resources as the mental and pragmatic aspects individuals possess that may enable them to control and impact their environment successfully, which includes traits and energies, physical and intellectual resources, as well as social and psychological resources. Work engagement, by definition, implies that individuals do not only feel energetic but also persist in the face of difficulties (Vigor), psychologically identify with work, and experience feelings of challenge (Dedication) (Schaufeli et al., 2002, p. 74). The researcher argues that personal resources facilitate a more positive response to perceived job difficulties and/or challenges in addition to feelings of greater energy; therefore personal resources contribute to higher levels of work engagement. In other words, personal resources as defined by Ten Brummelhuis and Bakker (2012a) may not be sufficiently applicable to explain how family/job resources and demands impact work engagement because their definition primarily focuses on general psychological traits and physical states that, in some cases, may lead an individual to negatively perceive job difficulties and/or challenges (e.g., neuroticism [i.e., trait], Langelaan et al., 2006). In contrast, personal resources, as defined in this research, are sufficiently applicable because they help to enable individuals to successfully control and impact their environment.

6.1.3 *The interaction effects in the extended JD-R model*

In addition to the fact that FHL resources and demands may create two different processes (e.g., motivational process and health impairment process), they may interact with job resources and demands in their influence on work engagement. The results of this study reveal that job/FHL resources and FHL/job demands interact in influencing employees' work engagement. The results support the buffering effect of resources proposed by Kahn and Byosiene (1992) and Bakker, Demerouti, and Euwema (2005) and are in line with empirical evidence reported by numerous researchers that family may contribute to reducing the impact of job stress (e.g., Adams et al., 1996; Casper et al., 2002; Fu & Shaffer, 2001). Additionally, the results of this study reveal that under demanding (e.g., high job/FHL demands) conditions, individuals with greater FHL/job resources are more likely to experience a lessened negative impact on their work engagement, whereas those with lower FHL/job resources are more likely to experience more sizable reductions of their work engagement. The results of this study thus extend existing research by suggesting that job resources influence work engagement particularly when a high level of job demands exist (Bakker & Demerouti, 2007) by showing that under high job (FHL) demand conditions, FHL (job) resources particularly influence work engagement.

6.2 Research limitations and implications for future research

There are a number of important limitations that should be considered in assessing this research. First, all measures are based on self-reports, which raises potential concerns regarding the influence of common method variance on the research findings (Doty & Glick 1998; Podsakoff et al., 2003). The relevant analyses

(CFA and Harman's single-factor test) indicate that all variables could be empirically distinguished and that the resulting impact of CMV is therefore not a significant issue (Siu et al., 2010). In addition, because general (trait-based) levels of work engagement are controlled for in the multilevel analyses, this study indirectly rules out potential bias arising from positive affectivity within the sample that may have inflated the study findings (Tims et al., 2011). Additionally, this study attempts to minimize potential CMV issues during the research design stage by adopting a number of approaches, such as item re-ordering, reverse item insertion, survey anonymity, and survey time point diversity, which lowers the likelihood of findings being influenced by inflated correlations due to consistency in responses (Siu et al., 2010). Previous research claims that longitudinal designs, or in this case the time differences in participants' responses due to the multiple data points of the diary design, also contributes to reducing the risk of CMV influences (e.g., Doty & Glick, 1998; Hakanen et al., 2008). Nevertheless, the nature of the performance measures (self-report) prevents objective performance assessments and cannot provide independent assessments of this important outcome variable. Therefore, future research should attempt to include objective indicators of job performance (e.g., register-based job retention and supervisors' assessments of employees' job performance, van der Heijden, Demerouti, Bakker, & Hasselhorn, 2008; Hakanen et al., 2008) to validate and expand the findings of this research.

Second, the sample size of this study may initially appear quite small, especially in light of the number of predictors used, which could conceivably cause bias during analysis (Xanthopoulou et al., 2009b). However, this study follows the suggestion of Xanthopoulou and collaborators (2009b) to minimize the complexity of the hypothesized theoretical model (i.e., the amount of freely estimated parameters)

before testing the proposed hypotheses and to adopt manifest variables (Jöreskog & Sörbom, 1993) that could prevent this study from losing information (Xanthopoulou et al., 2009b). In addition, the sample size of this study (i.e., the number of respondents and occasions) may be viewed as acceptable because both the number of respondents ($N=45$) and occasions ($N=360$) used in this study exceed those used in many existing diary studies of work engagement and the JD-R model (e.g., Bakker & Bal, 2010; Xanthopoulou et al., 2008) (also refer to Appendix 3). According to Maas and Hox's (2005) rule of thumb for power in multilevel modeling (i.e., a minimum of 30 cases at level 2), it may be suggested that the sample of the present study ($N=45$ at level 2) is adequate for robust estimations. However, the overall sample size of this research may still not be regarded as truly representative of the working population (i.e., the international coffee chain) in Ireland. Future research with additional cases and larger samples will be useful to validate the results of this study.

Third, this study investigates a specific occupational group of employees, namely, employees of an international coffee chain. Although the findings are highly relevant for this particular group (van der Heijden, Demerouti, Bakker & Hasselhorn, 2008), it remains unclear to what degree these findings can be generalized to other occupational settings (Koekemoer & Mostert, 2006) because it is possible that the relevant job/family demands and resources vary by occupation (Bakker, Lieke, Pins, & van der Heijden, 2011). Koekemoer and Mostert (2006) claim that working conditions are unique within different occupations, are related to work/non-work (e.g., FHL) interface issues and are involved in influencing employees' psychological state (e.g., well-being). Thus, these authors suggest that the investigation of heterogeneous populations is important (Koekemoer & Mostert, 2006). Although existing studies of other professions (e.g., newspaper managers and dentists) have produced results that

suggest that there may be comparable effects of family/job demands and resources on work engagement and job performance (Bakker et al., 2005; Hakanen et al., 2005; Montgomery et al., 2003), further research that adopts job/FHL demands and resources other than those used in this study and that investigates other occupational settings may be required to confirm the generalizability of findings of this research to other occupational settings and other non-work domains.

Fourth, the interaction terms explain only a limited amount of the variance in daily work engagement. Caution may therefore be warranted in interpreting the practical implications of this research (Bakker et al., 2011). However, existing studies have claimed that the effect sizes for interactions are usually small (e.g., Bakker et al., 2011; Chaplin, 1991), particularly for non-experimental studies (Frazier et al., 2004; Siemsen, Roth, & Oliveira, 2010). For example, in an investigation of respondents' work engagement in the afternoon, Bledow, Schmitt, Frese, and Kuhnel (2011) found that model R^2 s increased from .49 to .50 after the interaction between resources (e.g., positive mood [afternoon]) and demands (e.g., negative mood [morning]) was added to the model ($r = .17$; $p < .05$; $\Delta R^2 = .01$). In a multilevel analysis predicting dedication, van Emmerik, Euwema, and Bakker (2007) found that model fit (i.e., -2 LL) reduced from 9029.18 to 9025.00 after the interaction between resources (e.g., peer support) and demands (e.g., unsafe climate) was added to the model (i.e., $r = .18$; $p < .05$; $\Delta -2 LL = 4.18$, $p < .01$). Bakker, Demerouti, and Euwema (2005) investigated different interaction effects between resources (e.g., autonomy, social support, and quality relationship with supervisor) and demands (e.g., physical demands, work overload, and emotional demands) on three components of burnout (e.g., exhaustion, cynicism, and professional efficacy) separately and found that the ΔR^2 s typically ranged from .00 to .01 for models that included the interaction. Hakanen, Bakker, and

Demerouti (2005) observed different interaction effects between resources (e.g., job control, innovativeness, variability in the required professional skills, positive patient contacts, and peer contacts) and demands (e.g., negative changes, emotional dissonance, physical work environment, and qualitative workload) on work engagement and revealed that the ΔR^2 s typically ranged from .00 to .01 for models that included the interaction. In this regard, this study argues that these interactions are vital, at least from a theoretical perspective (Bakker et al., 2011), and that they are in line with the theoretical predictions derived from the extended JD-R model. These findings elucidate the integration of different working and FHL conditions that may improve daily work engagement (Bakker et al., 2011) and thus have both theoretical and practical significance (Bakker et al., 2005).

Finally, little is known about the impacts of a diary study design on participants' responses (Bolger et al., 2003). Respondents were asked to complete the same survey for two days per week over four weeks. It is possible that participants filled in the survey in a habitual way after a few weeks or even days. However, if habituation effects were a serious problem in this research, this study would not find significant within-person fluctuations in the daily variables because participants would answer in the same way every time (Tims et al., 2011). As addressed in the result section, the intra-class correlations for job resources, job demands, FHL resources, FHL demands, daily work engagement, and daily self-report job performance are all below .43 (i.e., within-person variances explained exceed 57%), revealing significant amounts of within-person variation in the answers across the eight days (Tims et al., 2011). Habituation effects are vital to consider in diary studies, but any such influence appears to have been quite limited and does not seem to have influenced the results of this research in substantial ways.

6.3 Additional implications for future research

Although several implications for future research were addressed in section 6.2, the section below provides additional research avenues derived from the extended JD-R model of this research.

6.3.1 *The impact of non-work domains on work engagement*

The role of the non-work environment may be further expanded in the extended JD-R model. Specifically, this research used FHL as a representative of some important parts of the non-work life of individuals. However, non-work influences are not limited to people's FHL. Empirical studies have proposed a number of non-work environments, such as church (e.g., Fairholm, 1996), clubs (e.g., Allis & O'Driscoll, 2008), off-job activities (e.g., leisure activities; Ponde & Santana, 2000), and other social communities (e.g., Fairholm, 1996) in which individuals are frequently involved outside of work. Future research may further adopt and extend the JD-R model as a theoretical framework to investigate how different non-work environments may influence individuals' work engagement and job performance from a resources and demands perspective.

Another issue of interest for future research is to investigate individuals who have multiple jobs (i.e., individuals with multiple employments) and treat the different work environments as different domains. Different work environments have different resources and demands (Fuqua & Couture, 1986). Future research may adopt the extended JD-R model as a theoretical framework to investigate how the resources and demands of one job can interact with those of another job to influence the levels of an individual's work engagement and job performance in each employment. Additionally,

future research may investigate individuals with distinct work aspects. Specifically, individuals may work in the same work environment with significantly different elements; for example, many academics have significantly different work areas, such as a research domain, a teaching domain, and an administrative domain. Different job aspects may have their own job characteristics, and job resources and demands may change according to different job characteristics (Bakker et al., 2004). In this regard, future research may test the fundamental premise of this research, namely, that the resources and demands from one domain can affect individuals' motivation, well-being, job stress, and performance in another domain.

6.3.2 A potential full integration of work-family interface into the extended JD-R model

Current literature related to the work-family interface proposes that an integrated model that explains both conflict and enriching relationships between the work and family domains is needed (Ten Brummelhuis & Bakker, 2012a). Although this study makes an additional theoretical contribution by partially addressing the theoretical notions of work-family conflict (i.e., family-to-work conflict) and work-family enrichment (i.e., family-to-work enrichment) in the JD-R theory (as addressed in section 6.1.2), another part of these two theories (i.e., work-to-family conflict and enrichment) has not been considered. Therefore, the researcher argues that a more comprehensive model extension by incorporating the theoretical notions of work-to-family conflict as well as enrichment into the proposed extended JD-R model may not only help to better explain how work and FHL interact with each other to influence individuals' work engagement and their job performance but also theoretically contribute to filling the addressed gap in the current work-family

interface-related literature.

6.3.3 *An integration of personal resources in the extended JD-R model*

This study does not empirically test and include personal resources in the extended JD-R model. Rather, it treats them as part of a theoretical explanation to articulate how FHL influences (e.g., FHL resources and demands) directly and indirectly affect individuals' work engagement and job performance. This is because the conceptualization and definition of personal resources have not been fully and uniformly clarified in contemporary work engagement research, in the JD-R model, and in the work-family interface literature (Schaufeli & Taris, 2014; see section 2.2.5). However, the researcher argues that to better understand the role of personal resources in the extended JD-R model of work engagement as proposed in this research, it may be necessary to both theoretically discuss and empirically test personal resources in the extended JD-R model. In this light, future research may test the fundamental premise of this research by operationalizing and empirically examining personal resources as defined in this study.

6.3.4 *Daily and general personal resources*

A number of existing studies claim that personal resources play a certain role at the general level (i.e., general personal resources) in influencing work engagement (e.g., Xanthopoulou et al., 2009a). Schwarzer, Boehmer, Luszczynska, Mohamed, and Knoll (2005) argue that general personal resources (e.g., general self-efficacy) may serve as a dispositional coping resource factor in terms of stress. Therefore, general personal resources should be controlled for in analysis. For example, Xanthopoulou and her collaborators (2009a) investigated how daily fluctuations in job resources

(e.g., autonomy, coaching, and team climate) were related to employees' levels of personal resources (e.g., self-efficacy, self-esteem, and optimism), work engagement, and financial returns by controlling for respondents' general personal resources (e.g., self-efficacy, self-esteem, and optimism). In this light, future research that both empirically tests daily personal resources and controls for general personal resources may be required to validate the findings of this research.

6.4 Implications for practice

Motivating employees to achieve higher job performance is one of the main concerns of managers and other organizational practitioners. Bakker and collaborators (2008) propose that to do so, managers need to motivate employees to engage in their jobs because when employees are engaged, they will be proactive, actively develop their own profession, and commit to pursuing high job performance (Bakker et al., 2008; Bakker & Schaufeli, 2008). However, the ways in which such motivation and engagement can be facilitated are not always clear. In this context, this study and the insights into the cross-domain effects of resources and demands on work engagement and performance can help to formulate some pragmatic implications for managers and organizational practitioners.

Individuals' work and non-work spheres are much less separated than they were in the past (e.g., Herlihy, 2000), and for many employees, they are not easily separable. This situation mirrors recent research that shows how the advancement of information and communication technology, as well as changes in the general use of these technologies in contemporary society in general and in modern workplaces in particular, has allowed work organizations to more easily connect to employees outside of normal work settings and formal work hours (Butts, Becker, & Boswell,

2015). These findings reflect the level to which today's employees are easily and frequently impacted by cross-domain influences through technology-mediated linkages such as email, smartphones, and other means.

Based on the results of this study, employees' engagement at work and their job performance are impacted by influences originating outside of the work environment from factors in their FHL. In this regard, it is useful for managers to consider how to mitigate the potential negative impact of employees' FHL influences (e.g., FHL demands) on employees' work engagement that may further jeopardize their job performance, and to consider how to support or even amplify the potential positive effects arising from employees FHL. The researcher suggests that managers may provide a number of family-related adaptations, such as those that have been established in previous studies. These include flexible work scheduling (e.g., part-time work, jobsharing, and variable starting and quitting times; Allen, 2011; Dex & Scheibl, 2001; Grover & Crooker, 1995), family-leave policies that allow employees periods away from work to take care of family matters, child care assistance (e.g., referral services, on-site or off-site day care centers; Allen, 2011; Grover & Crooker, 1995), and leaves of absence (e.g., Allen, 2011). Previous studies have found that this family-related assistance may help employees to reconcile or balance the increased pressures of work and family/home life and further motivate them to improve their work attitude (e.g., Ngo, Foley, & Loi, 2009) and dedicate their efforts at work (e.g., Dex & Scheibl, 2001).

This is because, based on the extended JD-R model, providing family assistance may counterbalance or reduce employees' demands from non-work environments (i.e., FHL demands). In turn, employees will not overtax their personal resources to address the non-work (e.g., FHL) demands that may leave their job demands unsolved or

unsolvable. Therefore, employees may experience a reduction of job stress induced by their non-work (e.g., FHL) demands because they have available personal resources to address job demands at work, which in turn helps them to stay engaged (e.g., dedicate their efforts at work; Dex & Scheibl, 2001).

6.5 Conclusion

This study extended the JD-R model of work engagement by integrating FHL-related variables and by offering explanations for their role in determining work engagement (four hypotheses) and, ultimately, work performance (two additional propositions). The empirical test of hypotheses and propositions that was directly derived from this model extension provided support for the novel claims this extended model offers. Researchers may apply the extended JD-R model of work engagement to further investigate the impact of the FHL domain on employees and their well-being and performance at work. Future research can also use the extended model as a blueprint for the investigation of the potential similar impact of other non-work domains. Practitioners can use these findings as important support and guidance for managerial and organizational interventions that can change the way in which the FHL/work interface is managed and that can transform contemporary workplaces into healthier and more productive places for employees.

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Appendix

Appendix 1. Empirical findings of the positive and negative interference of family/home to work and related observed family/home influences

Author (Year)	Title	Sample Characteristics	Analysis	Findings
Negative Family Interference to Work				
Frone, M. R., Russell, M., & Cooper, M. L. (1992).	Antecedents and outcomes of work-family conflict: testing a model of the work-family interface. <i>Journal of applied psychology</i> , 77(1), 65-78.	631 randomly selected individuals	SEM	Family stressors lead to family interference in work.
Frone, M. R., Yardley, J. K., & Markel, K. S. (1997).	Developing and testing an integrative model of the work-family interface. <i>Journal of vocational behavior</i> , 50(2), 145-167.	372 employed adults who were married and/or parents	SEM	Family distress and overload lead to work overload and distress.
Kossek, E., & Ozeki, C. (1998).	Work-family conflict, policies, and the job-life satisfaction	Studies from two computer databases, Psychological	Meta-analysis	Family-work conflict leads to low job and life satisfaction.

relationship: A review and directions for Abstracts (1967 to 1998) organizational behavior-human resources and the Expanded research. *Journal of applied Academic Index* (1987 to psychology, 83(2), 139-149.

Grandey, A. A., & Cropanzano, R. (1999). 1250 faculty at a land-grant state university campus applied resources model applied regression analyses Hierarchical multiple Children at home contribute to The conservation of resources model applied regression analyses family-work conflict. to work-family conflict and strain. *Journal of Vocational Behavior*, 54(2), 350-370.

Fu, C. K., & Shaffer, M. A. (2001). The tug of A Hong Kong university Regression analysis Parental demands contribute to the work and family: Direct and indirect sample (including both conflict from family to work. domain-specific determinants of work-family academic and non-academic staff) ($N=267$) conflict. *Personnel review*, 30(5), 502-522.

Rothbard, N. P. (2001). Enriching or 790 employees at a large SEM
depleting? The dynamics of engagement in public university
work and family roles. *Administrative Science* Family negative affect leads to job
stress.

Quarterly, 46, 655-684.

Montgomery, A. J., Peeters, M. C. W., 69 newspaper managers

Mediation analyses Quantitative home demands, emotional

Schaufeli, W. B., & Ouden, M. D. (2003).

conducted in line with home demands, mental home demands

Work-home interference among newspaper

methodology lead to lower vigor and dedication.

managers: Its relationship with burnout and

suggested by Baron

engagement. *Anxiety, Stress, and*

and Kenny (1986).

Coping, 16(2), 195-211.

Byron, K. (2005). A meta-analytic review of More than 60 studies from Meta-analysis

The more hours spent on family,

work-family conflict and its the computer database

housework, childcare or other

antecedents. *Journal of vocational Psych-Info of the American*

nonwork-related activities, the more

behavior, 67(2), 169-198. Psychological Association

family-work conflict that is experienced.

In addition, the more family-related

stress that is experienced, the higher

family-work conflict is.

Bakker, A. B., Demerouti, E., & Schaufeli, W. 323 couples working in a A series of Home overload, emotional demands,

B. (2005). The crossover of burnout and work engagement among working couples. <i>Human Relations</i> , 58(5), 661-689.	variety of occupations.	hierarchical regression analyses	cognitive demands leads to lower vigor and dedication.
Ten Brummelhuis, L. L., & Bakker, A. B. (2012b). Staying engaged during the week: The effect of off-job activities on next day work engagement. <i>Journal of occupational health psychology</i> , 17(4), 445-455.	74 nurses from several health institutions in the Netherlands	Multilevel analysis	Household tasks reduce vigor.
Lu, L., Chang, T. T., Kao, S. F., & Cooper, C. L. (2015). Testing an integrated model of the work-family interface in Chinese employees: A longitudinal study. <i>Asian Journal of Social Psychology</i> , 18(1), 12-21.	409 Chinese employees	SEM	Family conflict leads to lower job satisfaction and higher job stress at work.

Positive Family Interference to Work

Adams, G. A., King, L. A., & King, D. W.	163 workers who were A series of	Family social support reduces negative
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- (1996). Relationships of job and family living with at least 1 family member involvement, family social support, and member regression equations work-family conflict with job and life satisfaction. *Journal of Applied Psychology*, 81(4), 411-420.
- Aryee, S., Luk, V., Leung, A., & Lo, S. A sample of Hong Kong Moderated multiple Spousal support contributes to job (1999). Role stressors, interrole conflict, and Chinese employed parents regression (MMR) satisfaction.
- well-being: The moderating influence of in dual-earner families (N=243)
- spousal support and coping behaviors among 243)
- employed parents in Hong Kong. *Journal of Vocational Behavior*, 54(2), 259-278.
- Montgomery, A. J., Peeters, M. C. W., 69 newspaper managers Mediation analyses Friends' social support leads to an
- Schaufeli, W. B., & Ouden, M. D. (2003). conducted in line with increase of work engagement.
- Work-home interference among newspaper methodology
- managers: Its relationship with burnout and suggested by Baron

engagement. <i>Anxiety, Stress, and Coping</i> , 16(2), 195-211.	and Kenny (1986).
Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2005). The crossover of burnout and work engagement among working couples. <i>Human Relations</i> , 58(5), 661-689.	A series of Family autonomy and family social hierarchical regression support contribute to an increase of analyses vigor and dedication.
Bakker, A. B., & Demerouti, E. (2009). The 175 Dutch women and their crossover of work engagement between partners working in different occupational sectors as well as 175 colleagues of the male participants	Moderated structural equation modeling respondents' work engagement.
working couples: A closer look at the role of different occupational sectors as well as 175 colleagues of the male participants	(MSEM)
empathy. <i>Journal of Managerial Psychology</i> , 24(3), 220-236.	Family satisfaction is associated with work engagement.
Shimazu, A., & Schaufeli, W. B. (2009). Is workaholism good or bad for employee well-being? The distinctiveness of direct and indirect divisions	SEM

workaholism and work engagement among	of a construction machinery
Japanese employees. <i>Industrial health</i> , 47(5),	company in western Japan
495-502.	
Siu, O. L., Lu, J. F., Brough, P., Lu, C. Q.,	A matched sample of 786 SEM
Bakker, A. B., Kalliath, T., ... & Shi, K.	full-time workers from
(2010). Role resources and work-family	hospitals in Guangzhou and
enrichment: The role of work engagement.	an eyeglasses factory in
<i>Journal of Vocational Behavior</i> , 77(3),	Dongguan
470-480.	
Lu, C. Q., Siu, O. L., Chen, W. Q., & Wang,	A sample of 279 Chinese SEM
H. J. (2011). Family mastery enhances work	female nurses from a
engagement in Chinese nurses: A	hospital in Guangzhou
cross-lagged analysis. <i>Journal of Vocational</i>	
<i>Behavior</i> , 78(1), 100-109.	

Appendix 2. Sources of the baseline and daily measures of this study

Measures	Author(s)	Original Items	Original Anchors
<i>Baseline Measure</i>			
General	Schaufeli, W. B., Bakker, A. B., &	Total of 6 (9) items (unrevealed 3 items for	Strongly Disagree (0)
(Trait-based) work	Salanova, M. (2006). The measurement of	<i>Absorption</i>	Disagree (1)
engagement	work engagement with a short	1. I felt bursting with energy. (<i>Vigor</i>)	Somewhat Disagree (2)
	questionnaire: A cross-national study.	2. I felt strong and vigorous at my job. (<i>Vigor</i>)	Neither disagree nor
	<i>Educational and Psychological</i>	3. When I got up this morning, I felt like	agree (3)
	<i>Measurement, 66</i> (4), 701-716.	going to work. (<i>Vigor</i>)	Somewhat Agree (4)
		4. I was enthusiastic about my job.	Agree (5)
		(<i>Dedication</i>)	Strongly agree (6)
		5. My job inspired me. (<i>Dedication</i>)	
		6. I was proud of the work that I did.	
		(<i>Dedication</i>)	

Note:

1. The instrument is known as the *UWES-9*.
2. The items exclude those for the measure of *Absorption*.
3. The rationale for excluding the measure of *Absorption* is that it has been found to be a relevant dimension for work engagement (Schaufeli & Bakker, 2001).
4. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Daily Measure

Daily work engagement	Brevaart, K., Bakker, A. B., Demerouti, E., & Hetland, J. (2012). The measurement of state work engagement: A multilevel factor analytic study. <i>European Journal of Psychological Assessment</i> , 28, 305–312.	Total of 6 (9) items (unrevealed 3 items for <i>Absorption</i>)	Strongly Disagree (0)
		1. Today, I felt bursting with energy. (<i>Vigor</i>)	Somewhat Disagree (2)
		2. Today, I felt strong and vigorous at my job. (<i>Vigor</i>)	Neither disagree nor agree (3)
		3. Today, when I got up this morning, I felt like going to work. (<i>Vigor</i>)	Somewhat Agree (4)
			Agree (5)

4. Today, I was enthusiastic about my job. Strongly Agree (6)

(Dedication)

5. Today, my job inspired me. (Dedication)

6. Today, I was proud of the work that I did.

(Dedication)

Note:

1. The instrument is known as the daily version of UWES.

2. The items exclude those for the measure of Absorption.

3. The rationale for excluding the measure of Absorption is that it has been found to be a relevant dimension for work engagement (Schaufeli & Bakker, 2001).

4. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Strongly Disagree (1)

Self-report daily Goodman, S. A., & Svyantek, D. J. (1999). Total of 2 items

in-role performance Person- organization fit and contextual 1. Today, I fulfilled all the requirements of my Disagree (2)

performance: Do shared values matter? job. Neither Disagree Nor

<i>Journal of Vocational Behavior</i> , 55, 254–274.	2. Today, I performed well.	Agree (3)
		Agree (4)
		Strongly Agree (5)

Note: The items were developed and tested as high reliability and validity by the original authors.

Self-report	daily	Xanthopoulou, D., Bakker, A. B., Heuven, E., Demerouti, E., Schaufeli, W. B.	Total of 2 items	Strongly Disagree (1)
extra-role			1. Today, I voluntarily did more than was required of me.	Moderately Disagree (2)
performance		(2008). Working in the sky a diary study on work engagement among flight attendants.	2. Today, I helped my colleagues when they had too much work to do.	Slightly Disagree (3)
		<i>Journal of Occupational Health Psychology</i> , 13(4), 345-356.		Neither Agree Nor Disagree (4)
				Slightly Agree (5)
				Moderately Agree (6)
				Strongly Agree (7)

Note:

1. The items were found to have high reliability and validity by the original authors.
2. The original anchor used for this measure in this study was amended based on the recommendation of the store

managers.

Daily negative customer contact	Consiglio C., Borgogni L., Alessandri G., Total of 3 items	Disagree Strongly (1)
	Schaufeli W. B. (2013). Does self-efficacy matter for burnout and absenteeism? The mediating role of demands and resources at the individual and team levels. <i>Work & Stress</i> , 27, 1, 22-42.	Disagree Moderately (2)
	1. Customers are often impolite to the agent without any reason.	Disagree A Little (3)
	2. Most customers behave in a polite and civil manner with agents. [R]	Neither Agree Nor
	3. Most of the customers are patient and understanding when they have to wait longer than expected. [R]	Disagree (4)
		Agree A Little (5)
		Agree Moderately (6)
		Agree Strongly (7)

Note:

1. The items were developed and found to have high reliability and validity by the original authors.
2. To fit the use of this study, the term “Today” was added at the beginning of each item.
3. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.
4. [R] represents the reversed item.

Intensity and the amount of work	Karasek, R. A. (1985). <i>Job Content Questionnaire and user's guide</i> .	Total of 4 items	Strongly Disagree (1)
		1. My job requires working very fast and/or hard.	Disagree (2)

	University of Massachusetts Lowell,		Agree (3)
	Department of Work Environment.	2. I am not asked to do an excessive amount of work.	Strongly Agree (4)
		[R]	

	3. I have enough time to get the job done.	[R]
	4. I am free from conflicting demands others make.	[R]

Note:

1. The items are within the *Intensity and the amount of work* category of the *Job Content Questionnaire*.
2. To fit the use of this study, the term “Today” was added at the beginning of each item.
3. [R] represents the reversed item.

Daily	Peeters, M. C. W., Buunk, B. P., &	Total of 4 items	Never (1)
colleague/manager	Schaufeli, W. B. (1995).	1. My colleagues/manager(s) paid attention to	Almost Never (2)
social support	interactions, stressful events and negative	my feelings and problems.	Sometimes (3)

affect at work: A micro-analytic approach. *Support* Fairly Often (4)

European Journal of Social Psychology, 2. If necessary, my colleagues/manager(s) Very Often (5)

25, 391–401. helped me with specific tasks. (*Instrumental*

Support)

3. If necessary, my colleagues/manager(s)

gave me advice on how to handle things.

(*Informational Support*)

4. My colleagues/manager(s) show(s) that

they appreciate the way I do my job.

(*Appraisal Support*)

Note:

1. To fit the use of this study, the term “Today” was added at the beginning of each item.

2. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Daily team climate Xanthopoulou, D., Bakker, A. B., Total of 2 items Strongly Disagree (1)

Demerouti, E., & Schaufeli, W. B. 1.	Today during the shift, there was a very	Moderately Disagree (2)
(2009a). Work engagement and financial	good working atmosphere.	Slightly Disagree (3)
returns A diary study on the role of job	2. I had a very nice time with my colleagues.	Neither Agree Nor
and personal resources. <i>Journal of</i>		Disagree (4)
<i>Occupational and Organizational</i>		Slightly Agree (5)
<i>Psychology</i> , 82, 183–200.		Moderately Agree (6)
		Strongly Agree (7)

Note: The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Daily personal life demands	Gutek, B. A., Searles, S., & Klepa, L. Total of 4 items	Strongly Disagree (1)
(1991). Rational versus gender role	1. I'm often too tired at work because of the	Disagree (2)
expectations for work family conflict.	things I have to do at home.	Neither Disagree Nor
<i>Journal of Applied Psychology</i> , 76, 2.	My personal demands are so great that it	Agree (3)
566-568.	takes away from my work.	Agree (4)
	3. My superiors and peers dislike how often I	Strongly Agree (5)

am preoccupied with my personal life while
at work.

4. My personal life takes up time that I'd like
to spend at work.

Note: Because the original items of the scale are for general measures and aim to investigate family-to-work conflicts, the researcher revised the original items by including “Yesterday” in front of each item and removing the impact of family on work to accommodate daily use.

Daily family/home demands	Schuster, T. L., Kessler, R. C., & Aseltine, R. H. (1990). Supportive interactions, negative interactions, and depressed mood. <i>American Journal of Community Psychology</i> , 18, 423–438.	Total of 4 items	Never (1)
	1. Not including your spouse or partner, how often do members of your family make too many demands on you?	1.	Rarely (2)
	2. How often do they criticize you?	2.	Sometimes (3)
	3. How often do they let you down when you are counting on them?	3.	Often (4)
	4. How often do they get on your nerves?	4.	

Note:

1. Because the original items of the scale are for general measures, to accommodate daily usage, the researcher revised the original items by including “Yesterday” in front of each item.
2. The original items of the scale mainly focus on family members, even though some respondents may live with people other than family members (e.g., roommate). The researcher revised the original items by including “people you live with”.
3. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Daily family/home social support	Peeters, M. C. W., Buunk, B. P., & Schaufeli, W. B. (1995). Social interactions, stressful events and negative affect at work: A micro-analytic approach. <i>European Journal of Social Psychology</i> , 25, 391–401.	Total of 4 items	My colleagues/manager(s) paid attention to my feelings and problems. (Emotional Support)	Almost Never (2)	Sometimes (3)	Fairly Often (4)	Very Often (5)
			helped me with certain tasks. (Instrumental Support)				

3. If necessary, my colleagues/manager(s) gave me advice on how to handle things.
(*Informational Support*)
4. My colleagues/manager(s) showed that they appreciate the way I do my job. (*Appraisal Support*)

Note:

1. To accommodate daily use and to measure family experiences, the researcher revised the original items by including “Yesterday” in front of each item and replacing “colleagues/manager(s)” with “family members/people I live with”.
2. The original anchor used for this measure in this study was amended based on the recommendation of the store managers.

Personal resources	life	Wayne, J. H., Randel, A. E., & Stevens, J.	Total of 3 items	Strongly Disagree (1)
		(2006). The role of identity and work–family support in work–family enrichment and its work-related consequences.	1. Having a good day at home makes me a better employee when I get to work.	Disagree (2)
			2. Having a successful day at home puts me in	Neither Disagree Nor Agree (3)

Journal of Vocational Behavior, 69, 445–461. a good mood to better handle my work responsibilities. Agree (4) Strongly Agree (5)

3. I feel more confident at work when I feel that I am being successful at home.

Note: Because the original items of the scale are for general measures and aim to investigate family-to-work enrichment, the researcher revised the original items by including “Yesterday” in front of each item and removing the impact of family on work to accommodate daily use.

Appendix 3. Summarization of sample size/occasions from related diary research

Publications	Variables/study aim	Sample size/consecutive	Occasions
Butler, A., Grzywacz, J., Bass, B., & Linney, K. (2005). Extending the demands-control model: A daily diary study of job characteristics, work-family conflict and work-family facilitation. <i>Journal of Occupational and Organizational Psychology</i> , 78(2), 155-169.	Variables/study aim	91/ 14	1274
Heller, D., & Watson, D. (2005). The dynamic spillover of satisfaction between work and marriage: the role of time and mood. <i>Journal of Applied Psychology</i> , 90(6), 1273-1279.	This study tested both the concurrent and lagged associations between job and marital satisfaction at a within-individual level of analysis. The authors further examined the mediating role of mood in this spillover process.	76/(15*2)	2280

Sonnentag, S., & Bayer, U. V. (2005). This study hypothesized that a high degree of workload	87/3	261
Switching off mentally: predictors and encountered during the work day has a negative impact on		
consequences of psychological detachment subsequent detachment processes and that psychological		
from work during off-job time. <i>Journal of detachment from work is positively related to well-being.</i>		
<i>occupational health psychology</i> , 10(4),		
393-414.		
Rook, J. W., & Zijlstra, F. R. (2006). The aim was to gain insight into recovery processes during a	46/7	322
contribution of various types of activities to normal week. The main hypotheses were that more time spent on		
recovery. <i>European journal of work and work and work-related activities would have a negative impact on</i>		
<i>organizational psychology</i> , 15(2), 218-240.		
recovery, whereas more time spent on specific leisure activities		
would have a beneficial impact on recovery.		
Mageau, G. A., & Vallerand, R. J. (2007). This study investigated the moderating effect of passion on the	140/14	1960
The moderating effect of passion on the relation between activity engagement and daily positive affect.		
relation between activity engagement and		
positive affect. <i>Motivation and Emotion</i> ,		

Beckers, D. G., van Hooff, M. L., van der 120/9 1080

Linden, D., Kompier, M. A., Taris, T. W., & among university faculty members by providing information on (i)

Geurts, S. A. (2008). A diary study to open when faculty members work overtime, (ii) what activities are

up the black box of overtime work among undertaken during overtime, and (iii) how overtime is experienced.

university faculty members. *Scandinavian*

Journal of Work, Environment & Health,

213-223.

Xanthopoulou, D., Baker, A. B., Heuven, This study examined whether daily fluctuations in colleague 44/3 132*

E., Demerouti, E., & Schaufeli, W. B. support (i.e., a typical job resource) predict day levels of job

(2008). Working in the sky: a diary study on performance through self-efficacy and work engagement.

work engagement among flight attendants.

Journal of Occupational Health

Psychology, 13(4), 345-356.

Xanthopoulou, D., Bakker, A. B., This study investigated how daily fluctuations in job resources 42/5 210*

Demerouti, E., & Schaufeli, W. B. (2009a). (autonomy, coaching, and team climate) are related to employees' Work engagement and financial returns: A levels of personal resources (self-efficacy, self-esteem, and diary study on the role of job and personal optimism), work engagement, and financial returns. resources. <i>Journal of Occupational and Organizational Psychology</i> , 82(1), 183-200.		
Bakker, A. B., & Xanthopoulou, D. (2009). Work engagement crosses over from an employee (the actor) to his The crossover of daily work engagement: or her colleague (the partner) on a daily basis. Test of an actor-partner interdependence model. <i>Journal of Applied Psychology</i> , 94(6), 1562-1571.	124/5	620
Bakker, A. B., & Bal, M. P. (2010). Weekly This study found that teachers' weekly job resources are positively work engagement and performance: A study related to their week-level of work engagement, which is among starting teachers. <i>Journal of Occupational and Organizational momentary work engagement has a positive, lagged effect on the Psychology</i> , 83(1), 189-206.	54/5	270*
	next week's job resources.	

Mojza, E. J., & Sonnentag, S. (2010). Does volunteer work engagement was examined as a buffer in the volunteer work during leisure time buffer relationship between two types of job stressors and two job-related negative effects of job stressors? A diary study. <i>European Journal of Work and Organizational Psychology</i> , 19(2), 231-252.	51/7*2	714
Sanz-Vergel, A. I., Demerouti, E., Moreno-Jiménez, B., & Mayo, M. (2010). Work-family balance and energy: A day-level study on recovery conditions.	This study examined whether daily recovery inhibiting and enhancing conditions predict day levels of work-family conflict (WFC), work-family facilitation (WFF), exhaustion and vigor.	49/5 245*
Simbula, S. (2010). Daily fluctuations in teachers' well-being: a diary study using the Job Demands-Resources model. <i>Anxiety, Stress, & Coping</i> , 23(5), 563-584.	This study examined whether daily fluctuations in co-workers' support (i.e., a typical job resource) and daily fluctuations in work/family conflict (i.e., a typical job demand) predict day levels of job satisfaction and mental health through work engagement	61/5 305*

	and exhaustion, respectively.	
Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? <i>The Leadership Quarterly</i> , 22(1), 121-131.	This study found that a transformational leadership style enhances employees' work engagement through the mediation of self-efficacy and optimism on a day-to-day basis.	42/5 210*
Niessen, C., Sonnentag, S., & Sach, F. (2012). Thriving at work—A diary study. <i>Journal of Organizational Behavior</i> , 33(4), 468-487.	This study examined how employees thrive at work in response to resources (i.e., positive meaning, relational resources, and knowledge). Thriving is conceptualized as the joint experience of vitality and learning.	121/3*5 1815 *three times per day