Boon or bane? : The role of filial piety, relationship quality, caregiver gender on work-family interface among working caregivers of the elderly

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**Boon or Bane? The Role of Filial Piety, Relationship Quality, Caregiver Gender on
Work-Family Interface among Working Caregivers of the Elderly**

**LEONG XUEHENG (ANTHONY)
SCHOOL OF SOCIAL SCIENCES**

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Work-Family Interface among Working Caregivers of the Elderly**

LEONG XUEHENG (ANTHONY)

SCHOOL OF SOCIAL SCIENCES

A thesis submitted to the Nanyang Technological University in partial fulfilment of the
requirement for the degree of Master of Arts

2021

Statement of Originality

I certify that all work submitted for this thesis is my original work. I declare that no other person's work has been used without due acknowledgement. Except where it is clearly stated that I have used some of this material elsewhere, this work has not been presented by me for assessment in any other institution or University. I certify that the data collected for this project are authentic and the investigations were conducted in accordance with the ethics policies and integrity standards of Nanyang Technological University and that the research data are presented honestly and without prejudice.

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This thesis **does not** contain any materials from papers published in peer-reviewed journals or from papers accepted at conferences in which I am listed as an author.

18/6/2021

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Date

A handwritten signature in black ink, appearing to be 'LEONG XUEHENG', written on a light-colored background.

.....

LEONG XUEHENG (ANTHONY)

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The past two years have been nothing short of crazy with major upheavals in the lifestyle and changes in society as a result of Covid-19. I have struggled immensely during this period with juggling academics, coping with new challenges, coming to terms with loss and gains of relationships, dealing with both depression and physical health issues and finding my way in this “new normal” termed by many people. I am deeply grateful for the experiences I had, and this thesis would not have been possible without the support and guidance of many people in my life.

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Abstract

The present study advances the existing knowledge on the work-family interface among working caregivers of the elderly with new ideas about filial piety, relationship quality and gender. I examined the two dimensions of filial piety, compassionate reverence (*CR*) and pragmatic obligation (*PO*), and their effects on work-family interface; *CR* was hypothesized to lead optimal work-family experiences (less work-family conflict (WFC) and more work-family-enrichment (WFE)), while *PO* was predicted to lead more WFC and less WFE. I investigated whether higher levels of *CR* weakens the negative relationship between WFC and vitality, and if it strengthens the positive relationship between WFE and vitality. I also explored if higher levels of *PO* strengthens the negative relationship between WFC and vitality, and if it weakens the positive relationship between WFC and vitality. A three-way interaction between relationship quality (closeness to care recipient; CCR), *CR* and work-family interface in predicting caregiver wellbeing (vitality) was also studied. Finally, gender was considered in a three-way interaction between *PO* and work-family interface in predicting caregiver wellbeing (vitality). Full-time workers who take care of an older relative were recruited; 195 participants (143 women, 52 men) were recruited. Participants completed an initial survey followed by three daily surveys over five consecutive working days. Data were analysed using multi-level modelling. The results suggest that the two dimensions of filial piety have unique relationship with work-family interface; *CR* was positively associated with Family-Enriches-Work (FEW) and Work-Enriches-Family (WEF), while *PO* was negatively associated with WEF and Family-Interference-with-Work (FIW). The negative relationship between Work-Interference-with-Family (WIF) and vitality was more pronounced among caregivers who perceive higher *PO* than those who perceive lower *PO*. When FIW was experienced, caregivers higher in *CR* and CCR reported lower vitality than those with lower or an average level of CCR. When FEW was experienced, caregivers higher

in *CR* and *CCR* reported higher bedtime vitality than any other combination of *CR* and *CCR*. At higher levels of *PO* and *FIW* (or *PO* and *WEF*), women caregivers experienced more vitality than men caregivers. At higher levels of *PO* and *FEW*, men caregivers experience more vitality than women caregivers. This is the first study to examine the relationship between the multi-dimensional filial piety and the work-family interface among working caregivers of the elderly, with considerations of relationship quality and gender. Findings point to potential directions for future research and offer suggestions on how to aid working caregivers to optimize interactions between work and family domains.

Keywords: Work-family interface, family-interference-with-work, work-interference-with-family, work-enriches-family, family-enriches-work, filial piety, gender, relationship quality, closeness to care recipient, multilevel modelling, factor analysis

**Boon or Bane? The Role of Filial Piety, Relationship Quality on Work-Family Interface
among Working Caregivers of the Elderly.**

With an aging population worldwide (Chin, Dunn, Berlinger, & Gusmano, 2018; Nations, 2017; SingStat, 2019), the demand for caregiving to meet the needs of the elderly has increased. However, available supportive resources (such as home nursing, day care centres, etc.) remain limited (Basu, 2013), forcing more and more working adults to become caregivers without formal training (Tai, 2018). Working caregivers are subject to increased stress due to the challenges of balancing multiple demands arising from caregiving and paid work (Ng, Griva, Lim, Tan, & Mahendran, 2016). Previous studies have shown that working caregivers experience negative health and wellbeing consequences, such as burnout (Penning & Wu, 2016) and depression (Sanson, Vellone, & Piras, 2004; Wilson, Van Houtven, Stearns, & Clipp, 2007). Suboptimal wellbeing among working caregivers can be detrimental to the organization because it results in negative work outcomes such as more absences and lowered job satisfaction (Ybema, Smulders, & Bongers, 2010). These consequences could lead to not only economic impacts of the country, but also a strain on healthcare resources, such as increased hospitalization. In sum, the demographic trends and potential impacts of working caregivers' wellbeing on the national economy point out the need for a better understanding of their work-family experiences.

Despite the importance, much is unknown about work-family experiences in this growing segment of population; little attention has been paid to working caregivers of the elderly as opposed to employed parents (Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Clancy et al., 2019). Further, most studies on work-family experiences were conducted in America, a Western, Educated, Industrialized, Rich, and Democratic (WEIRD) society (Henrich, Heine, & Norenzayan, 2010). Given that cultural contexts in each country influence

experiences of caregiving for the elderly parents and relatives (Pharr, Dodge Francis, Terry, & Clark, 2014), findings in the extant literature may not be generalizable to other countries.

In particular, previous research has documented several cultural differences between the people in the East and the West. People in the East tend to engage in dialectical thinking (i.e. “tendency toward acceptance of contradiction”; Peng & Nisbett, 1999) as a result of their holistic cognition (i.e. considering the relations between objects and context) and adopt the idea of interdependent self (i.e. the self is viewed as a result of relationships, social roles, memberships, etc.) and philosophical tradition (which is influenced by Confucianism, Taoism and Buddhism among many others; Yama & Zakaria, 2019). In contrast people in the West tend to engage more in linear thinking due to analytic cognition ((i.e. focusing on the object and a set of criterion to understand the categories, function and behaviour; Nisbett, Peng, Choi, & Norenzayan, 2001) and adopt the idea of independent self and philosophical beliefs that originated in Ancient Greece (Yama & Zakaria, 2019). These cultural differences often result in differences between the findings of studies conducted with Western and Eastern population.

As Singaporeans tend to engage in dialectical thinking and adopt the idea of the interdependent self, work and family domains may overlap much more closely than their western counterparts. Indeed, a meta-analysis has found that the level of family-to-work conflict was significantly higher in collectivistic (Eastern) as opposed to individualistic (Western) cultures (Allen, French, Dumani, & Shockley, 2015). Such difference might also be observed in a study of caregivers of older adults, in that the interdependent view of the caregiver-care recipient relationship likely differs across cultures. In sum, the current study expands the existing literature by investigating work-family experiences among caregivers of older adults in an Eastern culture.

The present study advances the literature by investigating work-family experience of working caregivers of the elderly in Singapore. The focal point of the current study is filial piety, which is a combination of behavioural components of responsibility, sacrifice, and repayment and the emotional component of affection, harmony, and respect towards one's parents (Lum et al., 2016). Filial duty is an important expectation in a Confucian society such as Singapore (Kuah, 1990). Despite its prominent role in the culture in the Confucius Asia (Cho & Choi, 2018; Ikels, 2004), filial piety has not received much attention in the context of caregiving of the elderly. As filial piety is a cornerstone in the Confucian beliefs, it may shape work-family experiences among working caregivers of the elderly. Thus, the current study examines the role of filial piety in relation to working caregivers' work-family experiences. Of importance, filial piety has also been used to inform and enhance some of western research on parent-child relations in recent years (Bedford & Yeh, 2019), which suggests that filial piety is a concept that can be extended beyond the Confucius Asia.

In addition to filial piety, this study attempts to investigate whether relationship quality between the caregiver and care recipient explains work-family experiences of the caregiver. Although multiple past studies have shown some relations between work-family interface and relationship quality (Cinamon, Weisel, & Tzuk, 2007; Cooklin et al., 2015; Fellows et al., 2016), they are largely focused on relationships among married couples or parent-child relationships. The current study addresses the research gap by investigating caregiver-care-recipient relationships as well as the complex interaction between filial piety, relationship quality and the work-family experiences among caregivers of the elderly.

Finally, this study also explores the role of gender. Previous research has reported gender differences in expectations of filial piety (Carreiro, 2012). The expectations of women caregivers are different from that of men caregivers, such that women are typically expected to be in the caregiving role more than men (Friedemann & Buckwalter, 2014) and perceive

less social support while caregiving compared to men (Hsiao, 2010). In addition, women - both in Singapore and overseas – tend to be paid less, juggle more work-family demands and report more issues with work-life balance (Schwab et al., 2017 Leopold, Ratcheva, Hausman & Tyson, 2017; Vaswani, 2017; Williams, 2017). Notwithstanding the observed gender differences in challenges and consequences of working while caregiving, there is limited empirical research on gender and filial piety among working caregivers. Thus, this study takes a closer look at potential gender differences in the relationships among filial piety and work-family experiences.

Work-Family Experiences

In the simplest form, work-family interface refers to the interaction of the domains of work and family. As such, any worker who has a family may experience work-family interface. However, work-family research to date has mainly focused on young and middle-aged workers, usually married parents of young children (Casper et al., 2007), although recent research has broadened the target population, including working caregivers of the elderly. Previous research has shown that the interface can be both negative – work-family conflict (Greenhaus & Beutell, 1985) – and positive – work-family enrichment (Greenhaus & Powell, 2006). Of importance, work-family conflict and work-family enrichment are independent phenomena (Ode-Dusseau, Britt, & Greene-Shortridge, 2012; Robinson, Magee, & Caputi, 2018). As such, this study considers both aspects of work-family interaction.

Work-family conflict (WFC) occurs when demands from work and family are incompatible (Greenhaus & Beutell, 1985). WFC arises because employees have limited resources (e.g. time, cognitive energy) to satisfy multiple role demands (S. R. Marks, 1977). WFC can be categorized into three types: (1) time-based conflict (i.e., time is the resource demanded by both work and family roles), (2) strain-based conflict (i.e., strain experienced

from one role impacts the other role) and (3) behaviour-based conflict (i.e., when certain behaviour in one role clashes with expectations of another role).

WFC is bidirectional, whereby family experiences can affect work (family interference with work; FIW), and vice versa (work interference with family; WIF). Different consequences and antecedents have been found for the bidirectional WFC (Kelloway, Gottlieb, & Barham, 1999; Mesmer-Magnus & Viswesvaran, 2005), hence it is important to distinguish between them. FIW is exemplified by an employee who is late for a work meeting because his/her care recipient's medical appointment ends up taking longer than expected due to complications in the condition. An example of WIF would be that an employee is unable to be present or is too exhausted to care for his/her care recipient due to working overtime.

Work-family enrichment (WFE) occurs when experiences in one role improve the quality of life in the other role (Greenhaus & Powell, 2006). Similar to WFC, WFE is bidirectional, such that work experiences can enhance family life (work enriches family; WEF) and family experiences can augment work life (family enriches work; FEW). WFE can occur in two ways, either via affective route (i.e., a great performance in either roles results in positive affect, which improves performance in the other role) or instrumental route (i.e., the resources in either role, such as skills, psychological / physical resources, directly affects the performance in the other role; Greenhaus & Powell, 2006). The FEW may be observed when a caregiver gains interpersonal skills from taking care of a care recipient, which may be applied to work and enhance job performance. An example of WEF would be that a caregiver receives recognition for an excellent job performance, which would result in a good mood that improves interaction with his/her care recipient.

Consequences of Work-Family Experiences

Positive and negative work-family experiences have received growing attention in part due to their far-reaching consequences. A wide variety of outcomes have been

documented as consequences of WFC (Allen, 2013; Amstad, Meier, Fasel, Elfering, & Semmer, 2011; M. Zhang, Griffeth, & Fried, 2012). More specifically, there are three domains of consequences, which are work-related outcomes (e.g. work performance), family-related outcomes (e.g. family satisfaction) and domain-unspecific outcomes (e.g. life satisfaction, psychological strain such as burnout, etc.; Amstad et al., 2011). Generally, WIF tends to lower work-related outcomes and FIW tends to worsen family-related outcomes more. Evidence from a meta-analysis suggests that WIF is more closely associated with physical symptoms, while FIW is more closely associated with depression (Amstad et al., 2011).

Consequences of WFE includes job satisfaction, family satisfaction as well as better physical and mental health (McNall, Nicklin, & Masuda, 2009; Y. Zhang, Xu, Jin, & Ford, 2018). Similar to WFC, research on WFE to date has also identified three domains of consequences, job-related outcomes (e.g. job satisfaction), family-related outcomes (e.g. family satisfaction) and domain-unspecific outcomes (e.g. physical health). WEF contributes more to work-related outcomes such as job satisfaction, and FEW influences family-related outcomes, such as family satisfaction, more (McNall et al., 2009), while both WEF and FEW results in domain-unspecific outcomes (e.g. better physical and mental health; McNall et al., 2009), perhaps due to having more resources to effectively handle stressful situations. Studies have also found that both WEF and FEW contributes to commitment to the caregivers' organisation (Bhargava & Baral, 2009).

Individual Factors as Predictors of Work-Family Experiences

The well-established literature on the consequences of positive and negative work-family experiences raised a key question of who and under what circumstances WFC and WFE occur. To address this important research question, earlier research has focused on situational factors (e.g., familial – number and age of children, organizational – work hours,

organizational culture, supportive supervisor) as predictors of work-family experiences (Byron, 2005), but there is increasing interest in exploring dispositional variables as a predictor of work-family interface (Allen et al., 2012; Lapierre et al., 2018).

To explore the role of personal factors (filial piety, relationship quality and caregiver gender) in the work-family experiences and well-being among working caregivers of the older adults, this study adopts the differential exposure and reactivity perspective (Bolger & Zuckerman, 1995), which has been the basis for previous research on individual factors as predictors of work-family experiences. The differential exposure perspective explains how different personalities are drawn to different experiences (and by extension, stressors) and thus leading to different outcomes for different individuals. The differential reactivity perspective suggests that different personalities may react to similar stressors differently (Bolger & Zuckerman, 1995).

Past research about individual differences as a predictor of WFC has gained significant traction in the past decade (Allen et al., 2012). Personality traits like openness to experience may act via differential exposure, where caregivers higher in openness to experience may be more likely to choose jobs that involve diverse work tasks, and thus increasing the amount of WFC experienced. Differential reactivity may explain how personality traits like neuroticism influence WFC, as caregivers who are more neurotic may experience higher WFC as they may react with more anxiety. Past research about individual differences as a predictor of WFE is relatively scant, but accumulating evidence suggests that work-related personality traits (e.g., work involvement) predicts WEF while family-related personality traits (e.g., family centrality) predicts FEW (Lapierre et al., 2018). The differential reactivity and exposure could explain differences in WFE, as different personalities would be attracted (and exposed) to different stressors and react differently. An example of differential exposure would be that a caregiver with a higher work centrality

might be drawn to organisations that provide more opportunities to gain resources at work, which facilitates WFE. For differential reactivity, a caregiver higher in optimism might be able to reap more benefits from work and family by viewing the involvement in multiple roles as opportunities for growth, thereby experience more WFE.

Filial Piety

Filial piety (孝, pronounced xiao) is one of the four virtues in Confucian philosophy (Woods & Lamond, 2011) and is considered as an important virtue and primary duty of respect, obedience, and care for one's parents and elderly family members. Indeed filial piety in Confucian values (and the Chinese society) does not strictly focus on parent-child relations, but also emphasizes the importance of respect of elders (Hsieh, 1959). Such concepts of filial piety are deeply ingrained in Asian countries such as Singapore (Mehta & Ko, 2004).

Filial piety represents a fundamental value within the Singaporean society. The late founding father of modern Singapore Minister Mentor Lee Kuan Yew attributed part of the success of Singapore to “to the hard framework of basic cultural values and the tightly-knit Asian family system” (Cummings, Gopinathan, & Tomoda, 2014). The family unit as the “basic building block of society” is considered one of the five shared values in Singapore (Lim, N.D.). The focus on the family unit is so important that it is listed as one of the key principles of Singapore’s social compact (Ministry of Social and Family Development, 2019).

In recent years, the focus of filial piety among Chinese has changed gradually from being an authoritarian obligation (i.e., absolute deference to the elders) to that of an interdependent relationship with mutual support (i.e. both the parent and the child rely on one another; Lum et al., 2016). That is, filial piety may be viewed as an obligation, while it can also be perceived as a rewarding behaviour. In attempts to capture the changing nature of

filial piety in the modern society, recent research conceptualized filial piety in two dimensions, *pragmatic obligation (PO)* and *compassionate reverence (CR)* (Lum et al., 2016), which is a meaningful expansion from past research that only focused on the obligation component.

PO reflects a task-centric view of filial caregiving, which is achieved by discussing about what kind of care is expected from the child when the parents are ill or unable to care for themselves, whether the child is capable of meeting that expectation and whether they can come to an agreement or compromise. *CR* is the emotional dimension of the caregiving, which reflects the bonds of the parent-child. It includes assisting the parents to meet their unmet goals, and attempting to fulfil their parents' expectations. Research suggests that *PO* and *CR* are independent constructs (Lum et al., 2016), such that the presence of one dimension does not mean the absence of the other dimension.

PO and *CR* likely have different influences on the work-family experiences of caregivers. On the one hand, *PO* reflects filial caregiving motivated by extrinsic sources such as societal and parental expectations. Caregiving might be particularly stressful for caregivers with higher *PO* who lack a strong emotional attachment with the care recipient, as they likely view the care recipient as a liability. That is, in line with differential exposure perspective (Bolger & Zuckerman, 1995), caregivers who are driven by *PO* may experience more difficulties and generate less resources from the experience of working while caregiving, leading to more WFC and less WFE, respectively. In support of this notion, research has found that external motivation tend to have a negative effect of stress than does intrinsic motivation (Hui, Sun, Chow, & Chu, 2011; Ng et al., 2016). Specifically, caregivers of cancer patients who provide caregiving for primarily extrinsic motivations (e.g. to avoid being labelled as an ungrateful child) faced greater stressors and internal conflict (Ng et al., 2016) and obligations of filial piety increased caregiver burden (Tang, 2015). Relatedly,

another study found that a difference in expectations of filial piety between the child and parent was positively correlated with WFC, which suggests that expectations of filial piety. Unfortunately as of writing, there has been no research reporting benefits of *PO*, perhaps as it requires the caregiver to suppress their own needs in order to meet the parents' wishes (Shi & Wang, 2019) or to completely adhere to the authority (Leung, Wong, Wong, & McBride-Chang, 2010). However, it is possible that caregivers high in *PO* may experience less relationship conflict, as they would keep their discontentment to themselves.

To date, there is no empirical research examining the relationship between filial piety and WFE. It is also important to note that previous studies used an earlier scale to measure filial piety (Ho, 1994), which does not differentiate *PO* and *CR* as it was based on an older view of filial piety, the blind obedience to authority.

On the other hand, *CR* reflects filial caregiving motivated by intrinsic motivation such as gratitude felt by the caregiver towards the care recipient and is expected to act as a form of empowerment of the caregiver. *CR* may help caregivers to view caregiving in a positive light, as an opportunity to give back to the care recipient. That is, in line with differential exposure perspective (Bolger & Zuckerman, 1995), caregivers who are driven by *CR* may experience less distress and generate more resources from the experience of working while caregiving, leading to less WFC and more WFE, respectively. In support of this notion, some studies found that filial piety has both indirect (Khalaila & Litwin, 2011) and direct (Pan, Jones, & Winslow, 2017) benefits to caregivers' mental health, linked to increased life satisfaction (Sun, Liu, Jiang, & Qian, 2016), although the two dimensions were not explicitly measured. In another longitudinal study (Chen, Wu, & Yeh, 2016), filial piety was associated with happiness. Specifically, young adults' reciprocal filial piety – “encompasses children's natural intimate affection for and gratitude to their parents, demonstrated, for instance, by the provision of emotional and spiritual support, physical and financial care as the parents age,

and memorialization of the parents after the latter's death" – influenced their happiness. However, the concept of reciprocal filial piety was a reflection of an authoritarian filial piety view, which does not reflect the modern-day view of filial piety (Shi & Wang, 2019). Thus, the theoretical model of *CR* – which includes consideration of the caregiver's own capabilities and resources – proposed by Lum et al. (2016) was chosen for this study.

One of the likely drawbacks of *CR* is a greater psychological stress experienced when a caregiver is unable to provide care (e.g. being in a different country from the care recipient). This was suggested in a previous study that caregivers who are unable to spend time with their care recipient as much as they wish experienced a significant level of psychological stress (Vuong, 2010).

In sum, it is hypothesized that the two dimensions of filial piety relate to work-family interface differently. That is, *PO* has a negative influence (more WFC, less WFE) and *CR* has a positive influence (less WFC, more WFE).

H_{1a}: *CR* is negatively correlated with WFC.

H_{1b}: *CR* is positively correlated with WFE.

H_{2a}: *PO* is positively correlated with WFC.

H_{2b}: *PO* is negatively correlated with WFE.

In addition to the main effect on work-family experiences, filial piety may also moderate the relationship between work-family experiences and caregiver well-being. According to the differential reactivity perspective (Bolger & Zuckerman, 1995), filial piety may alter how caregivers perceive work-family experiences. Specifically, it is proposed that *PO* may exacerbate the negative impacts of WFC while *CR* ameliorates the negative effect of WFC. Those higher on *PO* may be more sensitive to WFC occurring because they do caregiving purely out of obligation (i.e., more bothered by interferences across roles).

Conversely, those higher on *CR* may be less sensitive to WFC occurring as they provide caregiving out of emotional concern (i.e., less bothered by interference across roles).

H_{3a}: *CR* moderates the negative relationship between WFC and caregivers' vitality such that the relationship is weaker for those who with higher *CR* than those who with lower *CR*.

H_{3b}: *PO* moderates the negative relationship between WFC and caregivers' vitality such that the relationship is stronger for those who with higher *PO* than those who with lower *PO*.

Further, caregivers higher in *PO* are expected to benefit less from WFE, whereas those higher in *CR* benefit more from it. *PO* may reduce the relationship between experienced WFE and health as caregiving is done out of obligation, and thus any WFE that occurs may not benefit wellbeing as much. However, caregivers higher in *CR* are more involved in caregiving, and hence when WFE occurs, they may be more affected by it.

H_{4a}: *CR* moderates the positive relationship between WFE and caregiver's vitality, such that the relationship is stronger for those who with higher *CR* than those with lower *CR*.

H_{4b}: *PO* moderates the positive relationship between WFE and caregiver's vitality, such that the relationship is weaker for those who with higher *PO* than those with lower *PO*.

Compassionate Reverence, Relationship Quality and Work-Family Interface

Although filial piety is an important personal belief that shapes caregivers' work-family experiences, it is likely to be affected by other relationship factors such as the quality of the relationship. Previous research has been unequivocal that quality of relationships bring about health impact regardless of the type of relationship, be it romantic (Carpenter, 2019), parent-child (Hair et al., 2009), and caregiver-care-recipient (Hooker, Grigsby, Riegel, & Bekelman, 2015) or patient-provider (Beach, Keruly, & Moore, 2006). Similar conclusions have been drawn about the benefits of the quality relationship for work-family interface, that

is, quality of relationship is negatively related to WFC and positively related to WFE, although past research has focused largely on parent-child relationships (Allen, 2013; Sweet, 2014) or spousal relationships (Md-Sidin, Sambasivan, & Ismail, 2010) rather than relationships between a caregiver and an elderly care-recipient.

Drawing on the literature, it is expected that close relationship between caregiver and care recipient further enhances the health benefits of WFE among caregivers with *CR*. Similarly, the harmful effect of WFC is proposed to be the weakest when caregivers perceive higher *CR* and have a close relationship with their care recipient. A research found that relationship quality affects stress levels prior and during stressful tasks, that is, a poorer relationship quality would result in heightened stress levels while a good relationship quality would lead to lower stress levels (Byrd-Craven, Auer, Granger, & Massey, 2012). This suggests that relationship quality may interact with work-family experiences and *CR* to predict caregiver well-being.

Together, relationship closeness would likely boost the effects of *CR* on WFC and WFE. Caregivers higher in *CR* who have a close relationship with care recipients would likely experience greater benefits from WFE, while experiencing a greater buffer against the harm from WFC than caregivers with the same level of *CR* but a more distant relationship. Relationship quality may further enhance the effects of *CR* by improving the perception of the caregiving as more of an enjoyable time spent with the care recipient. This would lead to greater health outcomes from WFE and lesser impact on health from WFC.

H_{5a}: There is a three-way interaction among closeness to care recipient, *CR* and work-family interface in explaining caregiver's vitality. The negative relationship between WFC and vitality is weaker when both closeness to care recipient and *CR* are higher than in any other combination of *CR* and closeness to care recipient.

H_{5b}: There is a three-way interaction among closeness to care recipient, *CR* and work-family interface in explaining caregiver's vitality. The positive relationship between WFE and vitality is stronger when both closeness to care recipient and *CR* are higher than in any other combination of *CR* and closeness to care recipient.

Gender, Pragmatic Obligation and Work-Family Experiences

Considering gender in work-family research is important because there are assigned gender roles in family and at work (Eisenclaus, 2013). According to the traditional gender role expectation, for instance, women tend to be expected to adopt caregiving roles – regardless of their employment status, while men are expected to be the breadwinner (J. Marks, Bun, & McHale, 2009). Some studies have argued that differences in gender experiences of WFC may be due to cultural differences (Koura, Sekine, Yamada, & Tatsuse, 2017; Mortazavi, Pedhiwala, Shafiro, & Hammer, 2009; Rajadhyaksha, Korabik, & Aycan, 2015), and that gender has complex relationships with WFC partly due to gender roles prescribed in each culture (Rajadhyaksha et al., 2015).

As filial piety expectations also vary across genders, considering these factors together may provide additional insights into caregivers' work-family experiences and wellbeing. In particular, *PO* which reflects the obligational nature of filial piety is likely to be experienced differently across genders. Previous research has documented different expectations for men and women who assume the eldercare role and how such expectations result in unequal division of caregiving responsibilities across genders. For instance, Vuong (2010) found that parents tend to have different expectations of filial piety and caregiving from a son as compared to a daughter, such that a daughter is given more domestic responsibilities than a son of a similar birth order and that sons are given more financial responsibilities compared to a daughter. Similarly, Khalaila and Litwin (2011) found that women caregivers experienced greater caregiving burden, cared for more dependents and

giving more hours of care than men caregivers. Given that women experience more filial expectations from care recipients, are considered the main caregiver, and are exposed to unequal division of caregiving than men, the impact of work-family experiences on well-being might be more salient among women caregivers.

H6: Gender moderates the effect of *PO* on the work-family interface and vitality, such that the interaction between *PO* and work-family interface predicting caregiver's vitality is more pronounced for women caregivers than men caregivers.

Method

Participants and Procedure

One hundred and ninety five participants (143 women, 52 men) were recruited in Singapore. All of the participants were full-time workers who were taking care of an elderly relative. Their age ranged from 23 – 63 years old ($M = 37.35$, $SD = 9.69$). Regarding ethnicity, the participants were predominantly Chinese ($n = 179$), followed by Malay ($n = 9$), and Others ($n = 7$; 2 Indians, 1 Eurasian, 1 Dutch, 1 European, 1 Filipino and 1 Javanese). Majority ($n = 138$) of the participants had a university degree or higher. One hundred and ninety five participants (143 women, 52 men) were recruited. All of the participants were full-time workers who were taking care of an elderly relative. Their age ranged from 23 – 63 years old ($M = 37.35$, $SD = 9.69$). The participants were predominantly Chinese ($n = 179$), followed by Malay ($n = 9$), and Others ($n = 7$). Majority ($n = 138$) of the participants had a university degree or higher. A hundred and nine of the participants were daughters, 36 were sons, 9 were grandsons and 17 were granddaughters of their care recipients. Two (1 woman and 1 man) of the participants were caring for their spouse / partners, one was a niece and another was a nephew, and the rest (14 women and 6 men) were child-in-laws of their care recipient.

The current study was part of a larger research effort targeted to better understand work-family experiences among working caregivers of older adults. The study protocol was approved by the institute review board of Nanyang Technological University. Recruitment emails were sent to the human resource department of various companies in Singapore to disseminate to their employees. Messages were also sent out via social media such as Facebook and through personal contacts of the researchers. Participants were required to complete their eligibility check to ensure that they were full-time employees (i.e., works at least 35 hours a week) and provided care to an older relative for at least three hours a week in the past six months, regardless of living situation.

Potential participants were invited to meet up with a research associate for a 10-minute face-to-face briefing session. During the briefing session, they were required to sign the informed consent form if they wish to take part, and be given a hardcopy set of survey. The survey included questions for demographic variables and study variables, including the adapted Closeness of relationship (Whitlatch, Schur, Noelker, Ejaz, & Looman, 2001) to gauge the relationship between the caregiver and the care recipient and Contemporary Filial Piety Scale (CFPS-10; Lum et al., 2016) that assesses filial piety. Participants were instructed to complete the survey in their own time and mail it back via paid registered mail (borne by the researcher). Participants used a random ID to protect their confidentiality and anonymity.

In the following week, participants completed three daily surveys (morning, after work, and bedtime) over five working days; this study utilized data collected from the after work and bedtime surveys only. For each survey, the link was sent via SMS to the participants' smartphone via the SurveySignal programme (Hofmann & Patel, 2015). If participants missed any of the daily surveys, they were given the option to restart the daily surveys on the following week. Once participants have completed the surveys, they were

compensated \$20 for the completion of hardcopy survey, \$5 for each daily survey and a \$15 bonus for perfect completion (for a total of \$110) and thanked for their time in the study.

The *after work surveys* included a short form of a measure of family-to-work conflict (Carlson, Kacmar, & Williams, 2000) and family-to-work enrichment scale (Carlson, Kacmar, Wayne, & Grzywacz, 2006), as well as the SF-36 (McHorney, Ware, & Raczek, 1993) for afternoon vitality. The *bedtime surveys* comprised of a short form of the work-to-family conflict measure (Carlson et al., 2000) and work-to-family enrichment scale (Carlson et al., 2006), and the SF-36 (McHorney et al., 1993) for evening vitality.

Materials

Closeness to Care Recipient. The adapted Closeness of the Relationship (Whitlatch et al., 2001) was used to determine the relationship perceived by the participant, on a 5-point scale (*Strongly Disagree* to *Strongly Agree*) and included six items (e.g. *My relative and I could always discuss things together.*). A higher score would indicate a closer relationship. The Closeness of the Relationship measure can be found in Appendix A.

Filial Piety. The Contemporary Filial Piety Scale – 10 Items (CFPS-10; Lum et al., 2016) measures the levels of filial piety in participants. Participants were required to answer on a 5-point scale (*Very Unimportant* to *Very Important*) on ten items to determine their filial piety levels in two aspects – POs (e.g., *Attend parents' funerals no matter where I am.*) and CR (e.g., *Always care about parents' wellbeing.*). The scale is found in Appendix B.

Vitality. The adapted version of SF-36 (McHorney et al., 1993) was provided to participants daily to determine their vitality levels at different times of the day over five consecutive days. Participants responded on a 5-point scale (*Not at all* to *Extremely*) for four questions (e.g. *Feel Tired.*). The scale is found in Appendix C.

Work-Family Conflict. The short form of Work-Family Conflict (Carlson et al., 2000) was taken by the participant. It comprises of four items (e.g. *Today the time I spent on*

caregiving responsibilities interfered with my work responsibilities.) on a 5-point scale (*Strongly Disagree* to *Strongly Agree*). Family-to-work conflict was measured in the afternoon survey, while work-to-family conflict was measured in the bedtime survey. The scale is found in Appendix D.

Work Family Enrichment Scale. Work-Family Enrichment Scale (Carlson et al., 2006) consists of four items (e.g. *Today, taking care of my care recipient put me in a good mood and this helped me be a better worker.*) on a 5-point scale (*Strongly Disagree* to *Strongly Agree*). Family-to-work enrichment was measured in the afternoon survey, while work-to-family enrichment was measured in the bedtime survey. The scale can be found in Appendix E.

Analysis.

Descriptive statistics were run to check if there were any violations to the normality assumption. Confirmatory factor analysis (CFA) was conducted to check for reliability and goodness-of-fit of the data to the scales used. Scale scores were computed from CFA.

Multilevel modelling was conducted to test the hypotheses. Multilevel modelling provides separate estimates for predictors at the individual and group level, as well as allows the test of interactions in hierarchical data (Mumper, 2017). The multilevel model used incorporates Level 1 daily variables, such as Vitality and Work-Family Interface, and Level 2 person variables such as Filial Piety, Closeness of the Relationship and Gender. The entire model tested can be found in Figure 1.

An example of the equation model for hypothesis 5 would be:

$$V_{ij} = \alpha_1 + \beta_1(FIW_{ij}) + \beta_2(FP(cr)_{ij}) + \beta_3(CCR_{ij}) + \beta_4(FIW_{ij} \times FP(cr)_{ij}) + \beta_5(FIW_{ij} \times CCR_{ij}) + \beta_6(FP(cr)_{ij} \times CCR_{ij}) + \beta_7(FIW_{ij} \times FP(cr)_{ij} \times CCR_{ij}) + e_{ij}.$$

(1)

Scale scores were mean-centered in order to obtain fixed effect estimates to plot interaction graphs.

Figure 1. Diagram of the hypothesized model in this study.

Results

Data Screening

With the final sample size of 195 participants, there were 195 general surveys completed and 1,067 surveys completed at after work and bedtime over the 5-day daily study period (some participants had more than 5 entries of each survey, as they chose to re-start the daily surveys for full compensation). Typically, participants who missed a survey early on (e.g., missing a survey on the first day) decided to discontinue and re-start in the following week. As such, these participants did not provide many entries in the initial week. These extra data were not used for the analyses.

In addition, as vitality was the examined outcome and the experienced FIW, FEW, WEF and WIF occurred in the afternoon and evening respectively, thus, the morning vitality levels were omitted from any analyses based on chronological sequence of events.

Assumption of Normality

The descriptive statistics regarding the items of WFE, WFC, *CR*, *PO* and CCR are reported in Appendix F. The skewness and kurtosis of all items were within ± 3 , which suggests that they did not violate the assumption of normality. Additionally, the Q-Q plots suggested that the assumption of normality holds. The exception were all items of *PO* and 1 item of *CR* that was negatively skewed with most participants score higher; responses to those items of *PO* and *CR* might have been affected by the social desirability bias.

Factor Analysis

Confirmatory factor analysis (CFA) was performed for each scale in M-plus (Muthén & Muthén, 1998-2011). Any item with factor loadings (λ) $< .4$ on their respective factors were removed. Additionally, Hu and Bentler (1999) suggested a CFA model with continuous data can be considered good fit with the Comparative Fit Index (CFI) of 0.95 or above, SRMR smaller 0.08 and RMSEA smaller than 0.08.

Closeness of the Relationship. A 1-factor CFA was fitted based on the original scale proposed by Whitlatch et al. (2001). One item (item 5) was dropped for poor loading and CFA was repeated. The remaining items had loadings from 0.76 to 0.48. The acquired values indicate a good fit: $\chi^2 = 4.66$, $df = 5$, $p = 0.46$, CFI = 1.00, TLI = 1.00, RMSEA = 0.

Filial Piety. The skewness and kurtosis of *PO* and 1 item of *CR* suggested the violation of the normality assumption (see Appendix G), thus another approach was required. According to Brown (2006 as cited in Proitsi et al., 2009), “Weighted Least Squares Mean and Variance adjusted (WLSMV) is a robust estimator which does not assume normally distributed variables and provides the best option for modelling categorical or ordered data”. A 2-factor CFA was fitted to the CFPS-10. The heuristic rule by Hu and Bentler (1999) does not apply here as the data was analysed by assuming it is ordered categorical, and with WLSMV, the data indicated a good fit: $\chi^2 = 153.83$, $df = 34$, $p = 0$, CFI = 0.98, TLI = 0.97, RMSEA = 0.13.

Vitality. CFA was performed for vitality at after work and bedtime across 5 days (for a total of ten analyses). The original scale proposed by McHorney et al. (1993) did not suggest a good fit. Considering that the scale comprises two positively-worded items and two negatively worded items, a bi-factor analysis¹ proposed by Deng, Guyer, and Ware Jr. (2015) was conducted. The results of the bi-factor analyses described a better fit than the results of a two factor or single factor model of vitality; across the ten measurements, χ^2 ranges from 6.68 to 13.04, $df = 4$, p from 0 to 0.15, CFI ranging from .98 to 1, TLI between 0.88 to 1.02 and RMSEA from 0 to 0.13.

¹Bi-factor model refers to a model that has all items load on a general factor, and includes two or more group factors.

Work-Family Conflict. WFC in two directions were analysed for all 5 days separately (for a total of five different analyses). Although one of the results did not meet the conventionally considered good standard of fit (i.e., TLI = 0.81), overall, the rest of the data indicates a good fit for the scale (Carlson et al., 2000), with χ^2 from 0 to 5.64, $df = 1$, p from 0.02 to 0.95, CFI from 1 to 0.97, TLI from 1.03 to 0.97, RMSEA from 0 to 0.01.

Work-Family Enrichment Scale. Likewise, CFA was conducted on WFE in two directions were for all 5 days separately (for a total of five different analyses). While some of the results do not adhere to the conventional good standard of fit (i.e., RMSEA = 0.31 and TLI = 0.56 for day 4), the remaining data indicates a good fit for the scale (Carlson et al., 2006), with χ^2 from 0.03 to 20.36, $df = 1$, p from 0 to 0.87, CFI from 1 to 0.93, TLI from 0.96 to 1.03, RMSEA from 0 to 0.06.

Based on CFA results, only one item was dropped from the closeness of the relationship scale while no items were dropped from other scales, scale scores were formed.

Table 1 consists of the descriptive statistics and number of items in each scale. The exact scores for each individual analysis can be found in Appendix G. Table 2 consists of the correlation between scales and the reliability of the scale.

Table 1

Descriptive Statistics of scales

<i>Factors</i>	<i>Number of Items</i>	<i>Descriptive Statistics</i>		<i>Response Range</i>
		<i><u>M</u></i>	<i><u>SD</u></i>	
WIF	2	2.68	.86	1 – 5
FIW	2	2.19	.74	1 – 5
WEF	2	2.95	.73	1 – 5
FEW	2	2.34	.92	1 – 5
<i>PO</i>	6	4.67	.51	1 – 5
<i>CR</i>	4	3.97	.72	1 – 5
CCR	5	17.02	3.71	5 – 25

Note. WIF = Work-Interference-with-Family, FIW = Family-Interference-with-Work, WEF = Work-Enriches-Family, FEW = Family-Enriches-Work, PO = Pragmatic Obligation, CR = Compassionate Reverence and CCR = Closeness to Care Recipient.

Table 2

Correlation and reliability of scales.

	FIW	FEW	WIF	WEF	CR	PO	CCR	Reliability
FIW								0.89
FEW	0.04 [-0.02, 0.10]							1.00
WIF	0.36** [0.30, 0.41]	-0.14** [-0.20, -0.08]						1.00
WEF	-0.01 [-0.07, 0.05]	0.38** [0.33, 0.43]	-0.35** [-0.40, -0.30]					1.00
CR	-0.06 [-0.12, 0]	0.27** [0.21, 0.33]	-0.13** [-0.19, -0.07]	0.13** [0.07, 0.19]				0.83
PO	-0.16** [-0.22, -0.10]	0.12** [0.06, 0.18]	-0.15** [-0.21, -0.09]	0 [-0.06, 0.06]	0.71** [0.68, 0.74]			0.90
CCR	-0.07* [-0.13, -0.01]	0.30** [0.24, 0.36]	-0.17** [-0.23, -0.11]	0.15** [0.09, 0.21]	0.45** [0.40, 0.50]	0.38** [0.32, 0.43]		0.55

* $p < 0.05$.** $p < 0.01$.

Note. WIF = Work-Interference-with-Family, FIW = Family-Interference-with-Work, WEF = Work-Enriches-Family, FEW = Family-Enriches-Work, PO = Pragmatic Obligation, CR = Compassionate Reverence and CCR = Closeness to Care Recipient.

Numbers in the square brackets are 95% confidence interval.

Hypotheses Testing

Filial Piety and Work-Family Interface. Hypothesis 1 proposed significant relationships between the *CR* and the two dimensions of work-family interface. No support was found for H_{1a} as *CR* was not significantly correlated with WIF ($t = -.58$, $df = 190.71$, $p = .56$, 95% CI [-0.23, 0.12]) or FIW ($t = 1.30$, $df = 191.88$, $p = .20$, 95% CI [-0.05, 0.25]). Results provided full support for H_{1b}. Specifically, *CR* was positively significantly related to both FEW ($t = 4.68$, $df = 191.90$, $p = 0$, 95% CI [0.27, 0.67]) and WEF ($t = 3.44$, $df = 191.66$, $p < 0.01$, 95% CI [0.11, 0.41]).

Hypothesis 2 concerned the relationships of *PO* with two dimensions of work-family interface. H_{2a} that proposed a positive relationship between *PO* and WFC was not supported. Contrary to expectation, *PO* was significantly but negatively related to FIW ($t = -3.01$, $df = 190.72$, $p < 0.01$, 95% CI [-0.53, -0.11]) and was not significantly related to WIF ($t = -1.54$, $df = 189.40$, $p = .13$, 95% CI [-0.44, 0.05]). H_{2b} was partially supported. As expected, *PO* was significantly and negatively related to WEF ($t = -2.42$, $df = 189.41$, $p = 0.02$, 95% CI [-.046, -0.05]). However, *PO* was not significantly associated with FEW ($t = -1.75$, $df = 190.90$, $p = .08$, 95% CI [-0.52, 0.03]).

Filial Piety and Work-Family Interface on Vitality. Hypothesis 3 proposed that the two dimensions of filial piety would moderate the negative effects of WFC on vitality, specifically that higher *CR* would reduce and higher *PO* would strengthen the negative effects. No support was found for Hypothesis 3a because no significant moderating effects was found for *CR*. In support of Hypothesis 3b, a significant interaction effect was found for *PO* and WIF in predicting bedtime vitality ($t = -2.73$, $df = 875.22$, $p < 0.01$, 95% CI [-0.25, -0.04]). Specifically, the negative relationship between WIF and vitality was more pronounced among caregivers who perceive higher *PO* than those who perceive lower *PO*. The interaction plot can be found in Figure 2.

Hypothesis 4 proposed that *CR* strengthens and *PO* weakens the positive relationship WFE and vitality. No significant interaction effect found for WFE, hence Hypothesis 4 was rejected. However, the main effect of WFE and WFC on vitality was significant in the expected direction (t from -11.95 to 11.97, df from 908.51 to 938.98, $p = 0$).

Figure 2. Plot of the interaction effects between *PO* and *WIF* on bedtime Vitality. Low and high levels refer to 2 s.d. below or above the mean respectively.

Compassionate Reverence, Relationship Quality and Work-Family Interface.

Hypothesis 5a proposed that the negative relationship between WFC and vitality is weakest when both closeness to care recipient and *CR* are higher than in any other combinations of *CR* and closeness to care recipient. For afternoon vitality levels as outcome, the interaction between *CR*, FIW and CCR was a significant predictor ($t = -2.14$, $df = 924$, $p = 0.03$, 95% CI [-0.03, 0]). When *CR* and CCR are higher, the experienced afternoon vitality is lower than those with lower or mean CCR and higher *CR*. The plots for the interaction between *CR*, FIW and CCR can be found in Figure 3 (a, b, c). A significant interaction effect was found for *CR*, FIW and CCR in predicting bedtime vitality ($t = -4.11$, $df = 888.38$, $p = 0$, 95% CI [-0.05, -0.02]) as well as for *CR*, FEW and CCR ($t = 2.08$, $df = 909$, $p = 0.04$, 95% CI [0, 0.03]) in predicting bedtime vitality. When *CR* and CCR are higher, the experienced bedtime vitality is

lower than those with lower or mean CCR and higher *CR*. The interaction plots can be found in Figure 4 (a, b, c). In sum, Hypothesis 5a was not supported because the significant interaction patterns were not in line with the prediction.

Hypothesis 5b proposed that the positive relationship between WFE and vitality is strongest when both closeness to care recipient and *CR* are higher than in any other combination of *CR* and closeness to care recipient. For FEW, higher levels of *CR* and CCR resulted in a stronger relationship between FEW and bedtime vitality, that is, caregivers with higher levels of *CR* and CCR experience higher bedtime vitality than those with lower or an average level of CCR. The interaction plots can be found in Figure 5 (a, b, c). The results partially support hypothesis 5b.

Figure 3 (a, b, c) Interaction between Filial Piety (CR) and CCR on afternoon vitality at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 4 (a, b, c). Interaction between Filial Piety (CR) and CCR on bedtime vitality at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 5 (a, b, c). Interaction between Filial Piety (CR) and CCR on bedtime vitality at low, mean and high FEW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Pragmatic Obligation, Gender and the Work-Family Interface. Hypothesis 6 posited that the interaction between *PO* and work-family interface predicting caregiver's vitality is more pronounced for women caregivers than men caregivers. Several interaction effects were found for FIW, FEW and WEF with Gender and *PO* on bedtime Vitality.

For FIW, there were significant interaction for *PO* and gender ($t = 3.78$, $df = 909$, $p = 0$, 95% CI [0.30, 0.94]). At higher levels of *PO*, women caregivers experience more vitality than men caregivers when there is higher FIW experienced, but they experience less vitality than men caregivers when there is lower FIW. The interaction plots can be found in Figure 6 (a, b, c).

For FEW, significant interaction was also found for *PO* and gender ($t = -2.45$, $df = 909$, $p = 0.02$, 95% CI [-0.55, -0.06]). At higher levels of *PO* and FEW, women caregivers experience less vitality than men caregivers. At higher levels of *PO* but lower levels of FEW, women caregivers experience more vitality than men caregivers. The interaction plots can be found in 7 (a, b, c).

Finally, an interaction effect for *PO*, WEF and gender was found ($t = 1.99$, $df = 873.15$, $p < 0.05$, 95% CI [0, 0.41]). At higher levels of *PO* and WEF, women caregivers experience more vitality than men caregivers. The interaction plots can be found in Figure 8 (a, b, c). Together, the results provide partial support for hypothesis 6; although the effects of *PO* and work-family interface were more pronounced among women caregivers, the observed relationship patterns were not always as expected. Table 2 provides a summary of all the hypotheses, description and if they are supported by the data. A table reporting results of the hypotheses testing can be found in Appendix H.

Figure 6 (a, b, c). Interaction between Filial Piety (PO) and gender on bedtime vitality at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 7 (a, b, c). Interaction between Filial Piety (PO) and gender on bedtime vitality at low, mean and high FEW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 8 (a, b, c). Interaction between Filial Piety (PO) and gender on bedtime vitality at low, mean and high WEF levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Table 2.

Summary of hypotheses, description of hypotheses and if they are supported.

Hypotheses	Description	Supported? (Y/N)
H _{1a}	<i>CR</i> is negatively correlated with WFC.	N
H _{1b}	<i>CR</i> is positively correlated with WFE.	Y
H _{2a}	<i>PO</i> is positively correlated with WFC.	N
H _{2b}	<i>PO</i> is negatively correlated with WFE.	N
H _{3a}	<i>CR</i> moderates the negative relationship between WFC and caregivers' vitality such that the relationship is stronger for those who with lower <i>CR</i> than those who with higher <i>CR</i> .	N
H _{3b}	<i>PO</i> moderates the negative relationship between WFC and caregivers' vitality such that the relationship is weaker for those who with lower <i>PO</i> than those who with higher <i>PO</i> .	N
H _{4a}	<i>CR</i> moderates the positive relationship between WFE and caregiver's vitality, such that the relationship is stronger for those who with higher <i>CR</i> than those with lower <i>CR</i> .	N
H _{4b}	<i>PO</i> moderates the positive relationship between WFE and caregiver's vitality, such that the relationship is weaker for those who with higher <i>PO</i> than those with lower <i>PO</i> .	N
H _{5a}	There is a three-way interaction among closeness to care recipient, <i>CR</i> and work-family interface in explaining caregiver's vitality. The negative relationship for WFC and vitality is weaker when both closeness to care recipient and <i>CR</i> are higher than in any other combination of <i>CR</i> and closeness to care recipient.	N

H _{5b}	There is a three-way interaction among closeness to care recipient, <i>CR</i> and work-family interface in explaining caregiver's vitality. The positive relationship for WFE and vitality is stronger (or negative relationship for WFC and vitality is weaker) when both closeness to care recipient and <i>CR</i> are higher than in any other combination of <i>CR</i> and closeness to care recipient.	Partial Y
H ₆	Gender moderates the effect of <i>PO</i> on the work-family interface and vitality, such that the interaction between <i>PO</i> and work-family interface predicting caregiver's vitality is more pronounced for women caregivers than men caregivers.	Partial Y

Note. *CR* = *Compassionate Reverence*, *PO* = *Pragmatic Obligation*, *WFE* = *Work-Family-Enrichment*, *WFC* = *Work-Family-Conflict*.

Exploratory Analysis: Marital Status as a Moderator

Despite the growing body of work-family research, findings on the role of marital status in relation to work-family experiences are either mixed (Piftman, 1994) or limited (Mäkelä & Suutari, 2015). Furthermore, limited research has examined marital status and work-family experiences in the context of eldercare. Findings from the broader work-family literature suggests that marital status may play a role; marital status interacted with gender in predicting WFC (Minnotte, 2012), family permeability (and by extension, supportive spouses) enhanced experienced WFE (Premchandran & Priyadarshi, 2019), and marital status moderated the negative relationship between WFE and personal burnout such that the link is significant only for married mothers (Robinson, Magee, & Caputi, 2016). Taken together, an

exploratory analysis for the moderating role of marital status in the current study of working caregivers is warranted.

Although the marital status is important, it is unclear how it may alter the focal relationships examined in the current study. On the one hand, as married individuals have additional resources offered by their spouse (e.g. a spouse to share caregiving duties, extended family of the spouse, etc.), it is likely that marital status reduce some of the stress that caregiving can bring about, reducing the impact of WFC on vitality and increasing the effects of WFE on vitality. On the other hand, as married woman caregivers might be expected to adopt even more caregiving responsibilities (J. Marks et al., 2009), they might experience higher levels of *PO*, increasing the impact of WFC on vitality while reducing any possible effects of WFE.

With this in mind, the potential moderating role of marital status was explored in relation to *CR* and WFC on vitality (Hypothesis 3a), *PO* and WFC on vitality (Hypothesis 3b), *CR* and WFE on vitality (Hypothesis 4a), *PO* and WFE on vitality (Hypothesis 4b), closeness to care recipient, WFC and *CR* on vitality (Hypothesis 5a), closeness to care recipient, WFE and *CR* on vitality (Hypothesis 5b) and gender, *PO*, work-family interface on vitality (Hypothesis 6). Specifically, the analyses for these hypotheses were conducted for two groups of participants, namely married ($n = 91$) and single ($n = 104$). For the purpose of the following exploratory analysis, the ‘separated, divorced or widowed’ category was recoded as ‘single’ because there were only four participants in that category.

Marital Status, Filial Piety and Work-Family Interface.

Several differences were observed regarding results of the interaction between Filial Piety and WFC on bedtime vitality across married versus single caregivers.

Several differences were observed regarding results of the interaction between Filial Piety and WFC on bedtime vitality across married versus single caregivers.

A significant interaction effect was found for *PO* and WIF in predicting bedtime vitality of caregivers who are single ($t = -4.24$, $df = 476.15$, $p < 0.01$, 95% CI [-0.44, -0.16], see Figure 9), and CR and WIF in predicting bedtime vitality of caregivers who are single ($t = -2.48$, $df = 493.21$, $p = 0.01$, 95% CI [-0.22, -0.03], see Figure 10). Specifically, the negative relationship between WIF and vitality was more pronounced for single caregivers who perceive higher filial piety (*PO* and *CR*) than those who perceive lower filial piety (*PO* and *CR*). These interactions between WIF and filial piety were not significant for caregivers who are married.

A significant interaction effect was found for *PO* and FIW in predicting bedtime vitality of caregivers who are married ($t = -2.04$, $df = 429.88$, $p = 0.04$, 95% CI [-0.58, -0.01], see Figure 11). Specifically, the negative relationship between FIW and vitality was more pronounced for married caregivers who perceive higher *PO* than those who perceive lower *PO*. This interaction between *PO* and FIW in predicting bedtime vitality was not significant among single caregivers. The interaction between *CR* and FIW in predicting bedtime vitality was not significant regardless of the marital status.

Figure 9. Plot of the interaction effects between *PO* and WIF on bedtime Vitality of caregivers who are single. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 10. Plot of the interaction effects between CR and WIF on bedtime Vitality of caregivers who are single. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 11. Plot of the interaction effects between PO and FIW on bedtime Vitality of caregivers who are married. Low and high levels refer to 2 s.d. below or above the mean respectively.

There was a significant interaction effect found for *PO* and WEF in predicting bedtime vitality among caregivers who are single ($t = 2.77$, $df = 480.20$, $p = 0.01$, 95% CI [-0.06, -0.35], see Figure 12). The positive relationship between WEF and vitality was more pronounced for single caregivers who perceive higher *PO* than those who perceive lower *PO*.

No other interaction effect were found for *PO* and WEF or *CR* and WFE for caregivers of either marital statuses. Figure 12 shows the interaction plot for *PO* and WEF in predicting bedtime vitality of caregivers who are single.

Figure 12. Plot of the interaction effects between *PO* and WEF on bedtime Vitality of caregivers who are single. Low and high levels refer to 2 s.d. below or above the mean respectively.

Marital Status, Compassionate Reverence, Relationship Quality and Work-Family Interface

One difference was found for the interaction of FIW with *CCR* and *CR* on bedtime Vitality across married and single caregivers. For FIW, there were significant interaction for *CR* and *CCR* for caregivers who are single ($t = -3.07$, $df = 422$, $p = 0$, 95% CI [-0.11, -0.02]) and married ($t = -2.76$, $df = 464.85$, $p = 0.01$ 95% CI [-0.04, -0.01]). For single caregivers experiencing FIW, high levels of *CR* and *CCR* seems to result in higher levels of bedtime vitality than those with mean or low levels of *CCR*. In contrast for married caregivers experiencing FIW, high levels of *CR* and *CCR* has the opposite effect, resulting in a reduced vitality at bedtime compared to married caregivers of any other combination of *CR* and *CCR*. The interaction plots for caregivers who are single and caregivers who are married can be found in Figure 13 (a, b, c) and Figure 14 (a, b, c), respectively.

Figure 13 (a, b, c) Interaction between Filial Piety (CR) and CCR on bedtime vitality for caregivers who are single at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 14 (a, b, c) Interaction between Filial Piety (CR) and CCR on bedtime vitality for caregivers who are married at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Marital status, Pragmatic Obligation, Gender and the Work-Family Interface.

Two interaction effects were found for the interaction of FIW with Gender and *PO* on bedtime Vitality across married and single caregivers. However, there was no difference between married and single caregivers.

For FIW, there was an interaction effect found for gender and *PO* on bedtime vitality for single caregivers ($t = 2.76$, $df = 479$, $p = 0.01$, 95% CI [0.17, 1.01]) and married caregivers ($t = -1.97$, $df = 420.71$, $p < 0.05$, 95% CI [0, 1.23]). Specifically, both married and single caregivers who are female who experience higher *PO* report higher bedtime vitality than their male counterparts. The interaction plots can be found in Figure 15 (a, b, c) and Figure 16 (a, b, c). No other interaction effects were found.

Figure 15 (a, b, c). Interaction between Filial Piety (PO) and gender on bedtime vitality for single caregivers at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Figure 16 (a, b, c). Interaction between Filial Piety (PO) and gender on bedtime vitality for married caregivers at low, mean and high FIW levels. Low and high levels refer to 2 s.d. below or above the mean respectively.

Discussion

This is the first study that explored the relationship between filial piety, relationship quality and work-family interface among working caregivers of the older adults. Despite being one of the important Confucian values (Woods & Lamond, 2011) and applicable to other cultures (Bedford & Yeh, 2019), the important role of filial piety in the work-family experiences among caregivers has received limited attention in the literature. The current study considered the multi-dimensional nature of filial piety in relation to work-family experiences and wellbeing among working caregivers of the elderly and examined relationship quality and gender as boundary conditions to obtain a nuanced understanding about the role of filial piety.

Key Findings and Theoretical Implications

Filial Piety and Work-Family Interface

Results show that *CR* is positively associated with both directions of work-family enrichment. In contrast, *PO* was negatively associated with WEF but not FEW. As an affective dimension, *CR* may create more opportunities to provide and receive emotional supports with the care recipient, which in turn benefits the work role. Additionally, as caregivers are more emotionally involved, they may have more chances to experience positive emotions and obtain more skills and perspectives from work and caregiving, which can be transferred and facilitate another role. Lastly, it could be possible that the caregivers are more involved and elicit more social support from other family members and people at work which can lead to WFE in both directions; previous research suggests that social support from family relates to higher WEF and FEW (Lapierre et al., 2018). Obligation-based filial piety related to less WEF, perhaps because obligation might function as a rational process rather than an emotional process, which reduces the likelihood of positive emotional spill-over between work and family.

Contrary to hypothesis, *PO* was negatively related to FIW. As caregiving is perceived as an obligation, perhaps the caregiver views family interruption as unavoidable, thus reducing their perceived FIW. Alternatively, given that the concept of filial piety concerns not only the parent-child relationship, but also between superiors and employees (Hsieh, 1959), caregivers higher in *PO* might engage in proactive measures to avoid FIW or compensate the time lost to family interference by putting in more time at work.

Another unexpected finding was that *CR* has no significant relationship with WFC in both directions. One explanation could be that *CR* as an affective trait does not reduce interruptions from occurring in either direction. Emergencies from either domain may occur independently of caregivers *CR* levels. It seems that *CR* helps WFE to occur, but not necessarily in avoiding WFC, which highlights the independence and uniqueness of WFC and WFE.

Filial Piety and the Work-Family Interface on Health

WIF and *PO* interacted to predict vitality of caregivers at bedtime. Caregivers who are higher in *PO* reported lower vitality levels than those with lower *PO* when they experience higher WIF levels. Due to its obligatory nature, *PO* may be considered as a stressor that further worsens well-being for the caregivers (East & Weisner, 2009). As such, it stands to reason that *PO* could further increase the harmful effects of WIF experienced by the caregiver. Overall, results suggest that caregivers who perceive caregiving as an obligation may be at an increased risk to be adversely affected by WIF.

No significant interactions were observed between the two dimensions of filial piety and WFE in predicting caregiver's vitality. Also, *CR* was found to have no mitigating effects on the relationship between WFC and vitality experienced by the caregiver. The findings suggest that effect of WFC and WFE on vitality are mostly universal across caregivers with

regardless of the levels of *CR* and *PO*, such that the experience of WFC is bad and WFE is good for caregivers' wellbeing.

Compassionate Reverence, Relationship Quality and Work-Family Interface

At lower levels of *CR*, caregivers with higher relationship quality experienced more vitality in the afternoon and at bedtime than those with lower relationship quality regardless of their FIW levels. However, at higher levels of *CR*, caregivers with better relationship quality experienced less vitality than those with lower relationship quality at higher FIW levels. Due to the affective nature of *CR*, experiencing more FIW might cause caregivers to experience guilt for having to work instead of taking care of their care recipient (whether due to self-imposed expectations or directly from the care recipients themselves), which would cause a significant drain on their vitality. On the other hand, those with lower relationship quality might feel that they have done more than enough for their care recipient when they experience FIW, which is reflected in greater vitality. This might also be an example of “too much of a good thing can be bad”; while filial piety from affective perspective (*CR*) is good and having a good relationship with the care recipient is good, having both might be too much for the caregiver. The caregiver might become too emotionally involved which causes them to become too sensitive to experienced FIW.

The positive relationship for FEW and bedtime vitality was stronger when both closeness to care recipient and *CR* were higher than in any other combination of *CR* and closeness to care recipient. The affective trait coupled with relationship quality further strengthened the relationship between FEW and vitality. This could be due to more interpersonal time and sharing with the care recipient, enabling more resources gained from caregiving to improve work (Greenhaus & Powell, 2006). However, an important point to note was that for caregivers lower in *CR* but higher in relationship quality, or caregivers higher in *CR* but lower in relationship quality, they actually experience less vitality. This

could be due to a disconnect between their ideal scenario and the reality, where caregivers who have higher *CR* might desire a greater relationship quality but failing to get it, or caregivers with lower *CR* might feel guilty for not feeling as filial, thus decreasing the strength of relationship between FEW and vitality.

However, the findings must be interpreted with caution, given the low reliability of CCR.

Pragmatic Obligation, Gender and Work-Family Interface

Several interesting 3-way interaction patterns were observed to reveal gender differences in the relationship between *PO* and work-family interface. Specifically, the relationships of FIW and FEW with bedtime vitality were weaker among women caregivers who perceive higher, as compared to lower *PO*. Previous research suggests that women are typically considered as the main caregiver for their aging parents (Khalaila & Litwin, 2011; Vuong, 2010). This suggests that women with higher *PO* may have internalized the societal expectation about the caregiving role and have expectations of balancing caregiving in addition to their work responsibilities thrust upon them (J. Marks et al., 2009). Perhaps due to such internalization and acceptance of the caregiving role, the occurrences of positive and negative spillover from family to work may have limited effect on women caregivers, compared with men caregivers. In line with this reasoning, women caregivers with lower levels of *PO* experienced a stronger association between FIW / FEW and vitality than their men counterparts. On the other hand, women caregivers higher in *PO* experienced a stronger relationship between WEF and vitality. Extending the earlier explanation based on the internalization and acceptance of the caregiving role among women, facilitation of the caregiving role due to work experiences may have special effects on women caregivers' wellbeing. In sum, the perception of obligatory filial piety seems to have a different effect on women caregivers depending on the direction of work-family interface.

Marital Status as a Moderator

Marital Status, Filial Piety and the Work-Family Interface

Results suggest that single caregivers who are higher in filial piety (either *PO* or *CR*) experience lower levels of vitality at bedtime, but married caregivers do not experience such a phenomenon. Perhaps this could be due to the presence (or absence) of spousal support. Married caregivers could have the additional resource of the spouse to share and alleviate some of the burdens that they might experience, be it cognitive, emotional or even financial. Marital status could act as a protection against the effects of WIF. Past studies have found that marital status did act as a protective factor in health (Waldron, Hughes, & Brooks, 1996) and helped patients cope better with cancer (Goldzweig et al., 2009) which may also apply to other challenging tasks such as eldercare.

The results found for *CR* were different from what was found in Hypothesis 3. In the original analysis, *CR* had no interaction with WFC. However, there was an interaction found between *CR* and WIF for single caregivers, with an opposite direction of interaction than predicted. It seems that for single caregivers, higher levels of *CR* did not mitigate the effects of WIF experienced, and instead worsened the effects. This could perhaps be attributed to *CR* increasing the guilt of the caregiver when the caregiver experiences WIF, as they may feel that they would like to spend more time with the care recipient but work is preventing them from doing so. This would explain why single caregivers high in *CR* reported lower bedtime vitality than those low in *CR*.

The significant interaction between *PO* and FIW was observed for married caregivers only. Married caregivers higher in *PO* experience lower vitality levels at bedtime as a function of FIW than those lower in *PO*. This could be due to differential reactivity, as married caregivers higher in *PO* may find more difficulty coping with stress from caregiving duties.

Another difference found was that *PO* enhances the effects of WEF on bedtime vitality levels among caregivers who are single (while the original hypothesis found no significant results). This might be due to the additional resources acquired from work allowed the care recipient to alleviate the obligatory burdens that they may experience from caregiving, hence improving their vitality levels at bedtime.

Marital Status, Compassionate Reverence, Relationship Quality and Work-Family Interface

For FIW, Married caregivers seem to experience the same trend found in Hypothesis 5 (i.e. *CR* and *CCR* results in lower experienced bedtime vitality than any other combination of *CR* and *CCR*). However, single caregivers higher in both *CR* and *CCR* report higher bedtime vitality levels than those with mean or low *CCR* and high *CR*. One possibility is that due to *CR* being affective in nature, they are able to mitigate some of the negative effects from FIW as they are able to attend to their care recipient, thus reducing the amount of vitality reduction they might have otherwise experience. On the other hand, married caregivers may have the effects compounded by marital status as they have to consider their own family in addition to their spouse, and their own time spent with the caregiver. This might compound the guilt experienced by the married caregiver and not the single caregiver.

Marital status, Pragmatic Obligation, Gender and the Work-Family Interface

There was a similar interaction effect found for *PO*, gender and FIW for both single and married caregivers, such that female caregivers report higher vitality than male caregivers at high levels of *PO*. This was similar to what was found in Hypothesis 6. It seems that regardless of marital status, female caregivers with a higher level of *PO* tend to cope better when high FIW is experienced. As discussed in the earlier section, female caregivers may have learnt to cope with the expectations and can handle spillover better than their male counterparts.

Theoretical and Practical Implications

As the first study to examine the relationship between filial piety and work-family interface with consideration of relationship quality and gender, the current findings have significant implications for theory and practice. Considering that population aging is a significant worldwide phenomenon (Chin et al., 2018; SingStat, 2019), more and more employees encounter the needs to juggle work and eldercare responsibilities.

The first theoretical implication is the systematic investigation of the multi-dimensional filial piety in relation to work-family experiences among working caregivers of older adult. Although filial piety has garnered increasing attention in the study of parent-child relationships in the west (Bedford & Yeh, 2019), only a few empirical studies have examined how filial piety shapes caregivers' experiences.

Second, the boundary conditions of each dimensions of filial piety (such as relationship quality and gender) were also studied. By taking into consideration the relationship quality between the caregiver and care recipient and caregivers' gender in explaining well-being consequences of work-family interface, the current study offers a more nuanced understanding about the role of filial piety in work-family experiences among working caregivers. Current findings highlight that filial piety's influence on work-family experiences and vitality is complex, and it is affected by the other factors such as CCR and gender.

From the current findings, the following suggestions are offered to anyone who may find themselves interacting with or helping a working caregiver:

- Assist caregivers to increase affection-based filial piety.
- Address the concerns of obligations towards the care recipient, and if possible, help caregivers to shape their thinking of obligations into that of affectionate care.

- Companies are advised to implement policies that minimize interruption of work into family as much as possible (e.g. no non-urgent requests during lunch hours or after work hours, etc.)
- For individuals higher in filial piety and have a good relationship with their care recipient, assist them in finding possible alternatives to avoid occurrences of family interfering with work (e.g. sending care recipient to a daycare centre, hire a daytime caregiver, ask a relative for help, etc.)
- Aid men caregivers higher in *PO* manage their experienced FIW or reduce it per the suggestions discussed above.
- Assist women caregivers higher in *PO* to discover how FEW can benefit their vitality levels.
- Enable women caregivers by supporting them to recognize the family resources they gained can improve their vitality levels.
- Provide adequate support or policies for employees of both genders to promote WEF.

In addition to the above discussed suggestions, government may also wish to implement more family policies and/or campaigns to enhance affectionate filial piety while educating the public about the impacts of obligations. Families are also encouraged to discuss caregiving expectations and utilize resources (e.g. family service centres) to achieve a satisfactory understanding and mutual agreement between a caregiver and a care recipient. Additionally, the government could create and disseminate information about the impacts of filial piety, perhaps utilizing a television series to open the public up to discussion about filial piety. In 2016, for instance, the government adopted a dialect television series to explain new policies to the elderly to ensure the contents reach to the targeted elderly citizens (Siau, 2016).

Limitations and Future Directions

Although this study has advanced the literature of filial piety and work-family interface among working caregivers of older adults, there are several notable limitations. First, the sample comprised mostly white-collar workers and thus findings may not be generalizable to blue-collar or shift-workers. Secondly, this study did not take into account the health states of the care recipients (e.g. relatively healthy or bedridden state), which would likely have an impact on caregivers' work-family experiences. Lastly, the reliability of CCR is lower than the conventional cut-off value of 0.70 (Nunnally, 1970), any of the above findings related to CCR must be interpreted cautiously.

This study paves the way for exciting future research directions. As specific job characteristics and organizational environment play key role in work-family experiences, future research can consider investigating how filial piety and work-family interface differs for diverse groups of workers, such as shift-workers, healthcare workers, etc., who are working in different settings. Future studies may also consider examining the myriad of caregiving relationships, such as caregiving in a formal capacity, caregiving with and without prior training, etc. Researchers may also explore the role of health conditions of the care recipient or caregiving training received by the caregiver. Additionally, gaps in filial piety expectations (i.e. expectations of filial piety and caregiving responsibilities) between caregiver and care recipient may affect the work-family interface, such as care recipient demanding higher level of filial piety and caregiving responsibilities than the caregiver may provide may increase WFC. Future studies may wish to pursue this line of research by collecting data from multiple sources (i.e., caregiver as well as care recipients). Finally, researchers may also wish to explore how marital status affects interaction between WFC, WFE and vitality levels.

Conclusion

In summary, the present study attempts to expand on the existing work-family literature with new ideas about filial piety, relationship quality and gender. Specifically, the role of filial piety for working caregivers' work-family experiences and whether its impact on caregiver well-being is moderated by other personal factors such as relationship quality and gender were examined. The results suggest that the two dimensions of filial piety have unique relationship with work-family interface. Affective filial piety enhances WFE while obligation-based filial piety reduces both WEF and FIW. Caregivers with higher obligation-based filial piety experience less vitality when work interferes with family. When family interferes with work, higher in affection-based filial piety caregivers with a good relationship with the care recipient experiences less vitality. When family enriches work domains, caregivers higher in the affective filial piety and with a good relationship with their care recipient reports greater vitality. When family interferes with work or when work experiences enriches their family domains, women caregivers experience more vitality when they have more obligation-based filial piety than men caregivers. On the other hand, when family experiences enriches their work, men caregivers with higher levels of obligation-based filial piety experience more vitality than women caregivers. In closing, the current study highlights that filial piety is important in working caregivers' work-family experiences and that other personal and relational characteristics should be considered to understand the role of filial piety in working caregivers' well-being.

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Appendix A**Closeness of the Relationship**

Please indicate the extent that you agree or disagree with each of the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. My care recipient always understood what I value in life.					
2. My relationship with my care recipient has always been close.					
3. My care recipient always made me feel like whatever I did for him/her was not enough.					
4. My care recipient always made me feel like a special person.					
5. My care recipient was often critical of me.					
6. My care recipient and I could always discuss things together.					

Appendix B**CFPS-10**

Please indicate how important each of the following item is to you as a son or a daughter.

	Very unimportant	Unimportant	Neutral	Important	Very important
1. Arrange care for parents when they can no longer care for themselves.					
2. Provide financial subsistence to parents when they can no longer financially support themselves.					
3. Arrange appropriate treatment for parents when they fall ill.					
4. Attend parents' funerals no matter where I am.					
5. Visit parents regularly if I am not living with them.					
6. Be thankful to parents' nurturing.					
7. Try my best to achieve parents' expectations.					
8. Always be polite when talking to parents.					
9. Try my best to complete parents' unachieved goals.					
10. Always care about parents' well-being.					

Appendix C**Vitality (SF-36)**

Below is a list of words that describe feelings people have. Please indicate how you feel **right now**.

	Not at all	A little	Moderately	Very	Extremely
1. Feel full of life					
2. Have a lot of energy					
3. Feel worn out					
4. Feel tired					

Appendix D

Work-Family Conflict

Please indicate the degree to which you agree with the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Today, the time I spent on caregiving responsibilities interfered with my work responsibilities.					
2. Today, I had a hard time concentrating on my work due to stress from caregiving responsibilities.					
3. Today, the time I had to devote to my job kept me from participating in caregiving responsibilities and activities.					
4. Today, when I got home from work I was so emotionally drained and it prevented me from caring for my care recipient.					

Appendix E

Work-Family Enrichment

Please indicate the degree to which you agree with the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Today, taking care of my care recipient put me in a good mood and this helped me be a better worker.					
2. Today, taking care of my care recipient made me to be more focused at work and this helped me be a better worker.					
3. Today, my involvement in my work put me in a good mood and this helped me be a better caregiver.					
4. Today, my involvement in my work provided me with a sense of accomplishment and this helped me be a better caregiver.					

Appendix F
Descriptive Statistics of Items

Scale	Item	Mean	SD	Skewness	Kurtosis
CFPS-10	PO1	4.75	.51	-2.87	14.16
	PO2	4.72	.60	-2.91	11.22
	PO3	4.74	.58	-3.07	12.63
	PO4	4.73	.73	-3.55	13.94
	PO5	4.49	.71	-1.57	3.30
	PO6	4.59	.66	-1.89	4.81
	CR1	3.97	.91	-.86	1.06
	CR2	4.15	.81	-.88	1.11
	CR3	3.29	1.11	-.14	-.66
	CR4	4.50	.70	-1.89	5.70
Closeness of the Relationship	CCR1	3.28	.95	-.33	-.46
	CCR2	3.77	.89	-.89	1.10
	CCR3	2.73	.98	.37	-.40
	CCR4	3.29	.95	-.16	-.26
	CCR5	2.76	1.06	.24	-.60
	CCR6	3.46	1.02	-.60	.11
Work-Family Enrichment	WEF1	2.93	.76	-.44	.31
	WEF2	2.97	.75	-.50	.40
	FEW1	2.38	.95	.04	-.61
	FEW2	2.29	.99	.11	-.78
Work-Family Conflict	FIW1	2.22	.78	.64	.75
	FIW2	2.17	.78	.66	.97
	WIF1	2.69	.95	.52	-.00
	WIF2	2.68	.95	.52	-.04

Appendix G

CFA Scores for Each Scale Used in Analysis

Scale	Method	Day	Time	χ^2	df	p	RMSEA	CFI	TLI	SRMR
Closeness of the Relationship	MLR	-	-	4.66	5	0.46	0	1	1	0.02
CFPS-10	WLSMV	-	-	153.83	34	0	0.13	0.98	0.97	0.01
SF-36	MLR	1	After Work	6.68	4	0.15	0.06	0.99	0.99	0.02
	MLR	1	Bedtime	5.18	0	0	0	0.98	1	0.01
	MLR	2	After Work	6.71	4	0.15	0.06	0.99	0.99	0.05
	MLR	2	Bedtime	8.45	4	0.08	0.07	0.98	0.98	0.07
	MLR	3	After Work	9.60	4	0.05	0.08	0.97	0.96	0.06
	MLR	3	Bedtime	18.54	4	0	0.13	0.94	0.91	0.05
	MLR	4	After Work	7.29	4	0.12	0.07	0.99	0.99	0.03
	MLR	4	Bedtime	13.04	4	0.01	0.11	0.97	0.95	0.04
	MLR	5	After Work	13.32	4	0	0.11	0.97	0.96	0.06
	MLR	5	Bedtime	11.80	4	0.02	0.10	0.97	0.96	0.06
WFC	MLR	1	-	2.20	1	0.14	0.07	0.99	0.97	0.01
	MLR	2	-	0.13	1	0.72	0	1	1.02	0
	MLR	3	-	0	1	0.95	0	1	1.03	0
	MLR	4	-	0.03	1	0.86	0	1	1.03	0
	MLR	5	-	5.64	1	0.02	0.15	0.97	0.81	0.01
WFE	MLR	1	-	0.61	1	0.43	0	1	1.01	0
	MLR	2	-	0.03	1	0.87	0	1	1.02	0

	MLR	3	-	0.27	1	0.6	0	1	1.02	0
	MLR	4	-	20.36	1	0	0.31	0.93	0.56	0.01
	MLR	5	-	0.46	1	0.5	0	1	1.01	0

Appendix H**Table of significant values from Hypothesis Testing of Multilevel Modelling**

Hypothesis	Factor	Outcome Variable	t	df	p	Fixed Effect Estimate
1a	<i>CR</i>	WIF	-.58	190.71	.56	-.05
	<i>CR</i>	FIW	1.30	191.88	.20	.10
1b	<i>CR</i>	WEF	3.44	191.66	.00*	.26
	<i>CR</i>	FEW	4.68	191.90	0*	.47
2a	<i>PO</i>	WIF	-1.54	189.40	.13	-.19
	<i>PO</i>	FIW	-3.01	190.72	.00*	-.32
	<i>PO</i>	WEF	-2.42	190.34	.02*	-.26
	<i>PO</i>	FEW	-1.75	190.87	.08	-.25
3	WIF	Vitality (B)	-11.86	938.73	0*	-.33
	<i>PO</i>	Vitality (B)	-.21	199.20	.83	-.02
	WIF * <i>PO</i>	Vitality (B)	-2.74	875.05	.01*	-.14
5.1	CCR	Vitality (Af)	1.11	194.71	.27	.01
	FIW	Vitality (Af)	-3.89	924	0*	-.14
	<i>CR</i>	Vitality (Af)	1.75	195.02	.08	.11
	<i>CR</i> * FIW	Vitality (Af)	-.19	924	.85	-.01
	<i>CR</i> * CCR	Vitality (Af)	.43	191.07	.67	0
	CCR * FIW	Vitality (Af)	-2.13	924	.034*	-.02
	<i>CR</i> * CCR * FIW	Vitality (Af)	-2.14	924	.033*	-.02
5.2	CCR	Vitality (B)	2.20	189.34	.03*	.028
	FIW	Vitality (B)	-2.82	909	.01*	-.10
	<i>PO</i>	Vitality (B)	-.80	189.08	.426	-.07
	<i>PO</i> * FIW	Vitality (B)	-3.89	909	0*	-.42
	<i>PO</i> * CCR	Vitality (B)	1.18	190.50	.24	.02
	CCR * FIW	Vitality (B)	.48	909	.63	0
	<i>PO</i> * CCR * FIW	Vitality (B)	-4.75	897.51	0*	-.06

5.3	CCR	Vitality (B)	1.76	190.14	.08	.024
	FIW	Vitality (B)	-3.17	909	0*	-.11
	<i>CR</i>	Vitality (B)	.09	189.55	.93	.01
	<i>CR * FIW</i>	Vitality (B)	-3.75	909	0*	-.23
	<i>CR * CCR</i>	Vitality (B)	.32	185.68	.75	0
	<i>CCR * FIW</i>	Vitality (B)	1.16	904.95	.25	.01
	<i>CR * CCR * FIW</i>	Vitality (B)	-4.11	888.38	0*	-.03
5.4	CCR	Vitality (B)	.58	202.39	.56	0
	FEW	Vitality (B)	3.86	909	0*	.12
	<i>CR</i>	Vitality (B)	-.2	199.65	.79	-.02
	<i>CR * FEW</i>	Vitality (B)	1.29	909	.20	.06
	<i>CR * CCR</i>	Vitality (B)	.54	250.66	.59	.01
	<i>CCR * FEW</i>	Vitality (B)	-.99	886.51	.32	-.01
	<i>CR * CCR * FEW</i>	Vitality (B)	2.08	909	.04*	.02
6.1	Gender	Vitality (B)	.95	190.49	.34	.96
	FIW	Vitality (B)	-2.37	909	.02*	-.10
	<i>PO</i>	Vitality (B)	.17	191.80	.87	.02
	<i>PO * FIW</i>	Vitality (B)	-3.58	909	0*	-.50
	Gender* <i>P</i> <i>O</i>	Vitality (B)	-.62	199.73	.54	-.11
	Gender *FIW	Vitality (B)	-.73	909	.46	-.06
	Gender * <i>PO * FIW</i>	Vitality (B)	3.77	909	0*	.62
6.2	Gender	Vitality (B)	.61	188.00	.54	.06
	FEW	Vitality (B)	3.79	892.68	0*	.13
	<i>PO</i>	Vitality (B)	.26	188.76	.80	.03

	<i>PO</i> * FEW	Vitality (B)	1.79	909	.07	.13
	Gender * <i>PO</i>	Vitality (B)	-.63	197.27	.532	-.11
	Gender * FEW	Vitality (B)	-.18	909	.86	-.01
	Gender * <i>PO</i> * FEW	Vitality (B)	-2.45	909	.02*	-.31
6.3	Gender	Vitality (B)	.21	186.79	.84	.02
	WEF	Vitality (B)	10.88	931	0*	.42
	<i>PO</i>	Vitality (B)	.53	185.58	.60	.05
	<i>PO</i> * WEF	Vitality (B)	-.66	813.27	.51	-.04
	Gender * <i>PO</i>	Vitality (B)	-.42	187.88	.67	-.07
	Gender * WEF	Vitality (B)	-.78	931	.44	-.06
	Gender * <i>PO</i> * WEF	Vitality (B)	1.99	872.91	.05*	.21