

WORK–HOME INTERFERENCE AMONG NEWSPAPER MANAGERS: ITS RELATIONSHIP WITH BURNOUT AND ENGAGEMENT

A. J. MONTGOMERY^{a,b,*}, M. C. W. PEETERS^{a,b}, W. B. SCHAUFELI^{a,b} and M. DEN OUDEN^a

^a*Department of Social and Organizational Psychology, Utrecht University, P.O. Box 80140, 3508 TC Utrecht, The Netherlands;* ^b*Research Institute for Psychology and Health, PO Box 80140, 3508 TC Utrecht, The Netherlands*

(Received 15 January 2001; Revised 8 November 2001; In final form 2 July 2002)

Managers are increasingly concerned about managing the conflicts experienced in fulfilling the responsibilities of work and family. The problem of balancing these domains arises from work to home interference, which reflects a mutual incompatibility between the demands of the work role and the demands of the home life. The central idea underlying the theoretical model of this study, is that work and home demands lead to work strain and decreased feelings of engagement, while work and home resources lead to increased feelings of engagement and reduced burnout. Work to home interference mediates these relationships. An innovation of the present study was to assess both home demands and positive aspects of work to home interference. Data were collected from 69 newspaper managers. Results indicated that negative interference mediated between demands and outcomes, and positive interference mediated between resources and outcomes. This study highlights the importance of measuring positive concepts in terms of constructing a more balanced picture of work and home interference.

Keywords: Work–home interference; Home demands; Engagement; Managers

Organizational stress research has consistently shown the negative effects of stressors upon different indicators of strain and in particular, the negative effect of stress on managers has been well documented (e.g. Turnage and Spielberger, 1991; Van der Pompe and De Heus, 1993). Feelings of being overwhelmed by perceived time pressures and deadlines, exorbitant work demands and informational overload are several aspects of excessive quantitative job demands that managers can suffer from (Parasuraman and Alutto, 1981). Stress may affect managers, and through the diminution of their performance, may decrease the effectiveness and efficiency of their employing organizations (Greenglass, 1993). The pivotal position that managers play in the overall functioning of an organization within an increasingly competitive business environment (globalization) means that managers with many work demands are at risk of work interfering with home and vice-versa.

*Corresponding author. Tel.: +31 30 253 4705.
E-mail: a.montgomery@fss.uu.nl.

EMPIRICAL AND THEORETICAL BACKGROUND

Work and family constitute the dominant life roles for most employed adults in contemporary society. Thus, employed men and women are increasingly concerned about managing the conflicts experienced in fulfilling the dual demands and responsibilities of work and family roles. Work-home interference (WHI)¹ and Home-Work Interference (HWI) is experienced when pressures from the work and family roles are mutually incompatible, such that participation in one role makes it difficult to participate in the other (Greenhaus and Beutell, 1985). A large body of literature has identified WHI/HWI as being associated with reduced job and life satisfaction (see Kossek and Ozeki, 1998, for discussion). In contrast with this, organizational policies designed to help employees integrate work and family roles do not necessarily reduce WHI (Barling, 1994) and are marginally effective at best (Solomon, 1994). This all suggests that research has an important role to play in identifying the processes through which WHI and HWI affects employee health and well-being.

Theoretically, WHI research has been dominated by the role strain perspective, which suggests that the responsibilities from both domains compete for limited amounts of time and energy (Greenhaus and Beutell, 1985). A parallel body of theory to the role strain approach suggests that participation in multiple roles provides a greater number of opportunities and resources to the individual that can be used to promote growth and better functioning in other life domains (Sieber, 1974; Marks and MacDermid, 1996). Therefore, despite a large focus in the literature on interference or conflict, separate but related bodies of research suggest that work can benefit home life (e.g. via work skills generalizing to the home environment) and that home can benefit work (e.g. via the buffer role of support). A good example of this positive interference or positive spillover can be found in Grzywacz and Marks (2000), who found that positive spillover was related to factors that facilitated development (e.g. decision latitude, family support). The evidence for positive spillover (i.e. work-home enhancement) means that any attempt to measure a balanced picture of work and home needs to account for positive aspects. Therefore, an innovation of the present study will be to also measure WHI-positive and HWI-positive (in addition to the more traditional WHI-negative and HWI-negative).

Frone *et al.* (1992, 1997) have demonstrated most clearly the need to examine domain specific models that examine both work and home in equal detail. The need to build a more balanced picture of the stress process and to account for 'positive' interference can also be seen in the recent Job Demands-Resources Model (JD-R) (Demerouti *et al.*, 2001). The model is concerned with the development of burnout and makes a good case for the antecedents of stress outcomes to be rooted in the combination of high demands and poor resources. The JD-R model makes the assumption that whereas every occupation may have specific antecedents associated with burnout, these factors can be classified into two general categories (i.e. job demands and job resources). Conceptually, the JD-R can be found to be rooted in Karasek's Job-Demands-Control model (JD-C) (Karasek and Theorell, 1990) and

¹ Within the literature the word conflict and interference are used interchangeably. For the sake of simplicity, we will use the word interference throughout the article.

Hobfoll's (1989) Conservation of Resources theory (COR). In the present research the JD-R model is the theoretical background to how demands and resources can influence burnout. Job demands refer to those physical, social and organizational aspects that require sustained physical and/or mental effort and are therefore associated with certain physiological and psychological costs (e.g. exhaustion). Job resources refer to those physical, psychological, social or organizational aspects of the job that are either/or (1) functional in achieving work goals, (2) reduce job demands at the associated physiological and psychological costs, (3) stimulate personal growth and development. Demerouti *et al.* (2001) suggest that there is little evidence to support an interaction between job demands and job resources, and therefore the theory concentrates on the specific contribution of job demands and job resources to job burnout. It follows logically that WHI and HWI are rooted in the interference caused by having too many demands and not enough resources, and consistently that such interference can exacerbate feelings of burnout. Research examining the relation between WHI and burnout has yielded consistent and significant support for these expectations (see the recent meta-analysis by Allen *et al.*, 2000).

DEMANDS

One of the most promising models of the relationship between work characteristics and psychological health is the demand-control-support (DCS) model (Karasek and Theorell, 1990). One aspect of the model that has received critical attention is the possible multifaceted nature of job demands. Different types of job demands have been rarely examined within the framework of the model (with the exception of: Söderfeldt *et al.*, 1997; De Jonge *et al.*, 1999). Given this background, and the fact that research suggests that overload is one of the most important factors determining WHI (Voydanoff, 1988; Geurts *et al.*, 1999; Wallace, 1999), the role of demands as an important variable and the need to measure a range of demands will be addressed. A more comprehensive picture of job and home demands will be ascertained by also evaluating emotional and mental demands. Although rarely studied, some studies have demonstrated both emotional demands (Pekrun and Frese, 1992; Le Blanc *et al.*, 2001) and mental demands (Cooper and Kelly, 1984; Kahn and Byosiere, 1992) as important components of job stress. In the present study, job demands will be operationalized by three sub-scales; quantitative job demands, emotional job demands and mental job demands.

Conversely, and symmetrically, home demands will be operationalized by three sub scales; quantitative home demands, emotional home demands and mental home demands. In the literature on WHI, there is little evidence on the potential impact of home characteristics on WHI (e.g. Kopelman *et al.*, 1983; Voydanoff, 1988). Traditionally, the WHI literature has measured more structural home characteristics such as number of children, whether the partner has a job and child care arrangements. The present study aimed at providing a more balanced view of work and home by measuring job and home demands. This does not imply that the more traditionally characteristics are less important, but it merely signifies a desire to examine the home side of the work-family nexus in more psychological detail.

In summary, the present study proposes that:

Hypothesis 1 WHI-negative will mediate the relationship between work demands and outcomes.

Hypothesis 2 HWI-negative will mediate the relationship between home demands and outcomes.

Hypothesis 3 WHI-positive will mediate the relationship between work resources and outcomes.

Hypothesis 4 HWI-positive will mediate the relationship between home resources and outcomes.

RESOURCES

In the present research, social support is the resource that is being studied. From Rapoport and Rapoport's (1971) early identification of the facilitating husband to the more recent assertions regarding the importance of family-responsive employers (Friedman, 1990), social support has been viewed as a significant resource that can promote effective coping and enhance employee well-being in the face of work-family stress (Repetti, 1989; Weiss, 1990). Support from work and family can reduce demanding aspects of a job. For example, a supervisor who extends a project deadline or a co-worker who takes on additional work (Greenhaus and Parasuraman, 1994). Adams *et al.* (1996) found a negative relation between family support and HWI, while additionally, Thomas and Ganster (1995) found that supervisor support was negatively related to WHI. Research on occupational and family stress often distinguishes support from the work domain (supervisor, co-worker) and support from the family domain (spouse, friends). The present study acknowledges this important difference between work support and family support, and will assess their differential influence on the outcomes. Literature concerning social support suggests that it can work either as a 'buffer' or main effect (Greenhaus and Parasuraman, 1994). As already stated, the JD-R model doesn't support the idea of an interaction between resources and demands. Therefore we formulate the following hypothesis:

Hypothesis 5 Social support will only have a main effect on burnout and engagement.

However, in the interest of empiricism, moderation or 'buffer' effects were tested in addition to main effects.

ENGAGEMENT AND BURNOUT

Engagement, as a measured concept, is a relatively new addition to the occupational field and should be viewed as part of a more general emerging trend towards a 'positive psychology' that focuses on human strengths and optimal functioning rather than on weaknesses and malfunctioning (Seligman and Csikszentmihalyi, 2000). In the view of Maslach and Leiter (1997), engagement is characterized by energy, involvement and

efficacy which are postulated as the direct opposites of the three burnout dimensions; exhaustion, cynicism and lack of professional efficacy. Engaged employees are assumed to have a sense of energetic and effective connection with their work activities and they see themselves as able to deal completely with the demands of work. Within the framework of WHI/HWI, it is plausible that positive interference may lead to feelings of engagement in employees.

Burnout, referring to the draining of energy and resources caused by chronic job stress is considered a work related indicator of psychological health (Cooper *et al.*, 2001). In the present study, we restrict ourselves to the exhaustion and cynicism dimensions of burnout. These two dimensions are generally considered as the 'core of burnout' (Green *et al.*, 1991), whereas professional efficacy reflects a personality characteristic rather than a genuine burnout-component (Shirom, 1989, Coders and Dougerthy, 1993). Empirically, this is reflected by the relatively low correlation of professional efficacy with both of the other burnout dimensions (Lee and Ashforth, 1996) and by the fact that cynicism seems to develop in response to exhaustion, whereas professional efficacy seems to develop independently and in parallel (Leiter, 1993). Therefore it was decided to also measure the vigour and dedication aspects of engagement. Schaufeli *et al.* (2002) suggest that vigour and dedication can be viewed as being the opposite of exhaustion and cynicism, respectively. While, the fact that burnout has been consistently related to various negative demands and outcomes (for a review, see Schaufeli and Enzmann, 1998), it is important and interesting to examine whether positive outcomes such as engagement are related to similar demands and resources.

HYPOTHETICAL MODEL

When integrating all the hypotheses that are formulated, the following model emerges (see Fig. 1). The central idea underlying the model is that job and home demands lead to work strain (i.e. burnout) and decreased feelings of engagement (i.e. dedication and vigour), while job and home resources (i.e. social support) lead to increased feelings of engagement and reduced burnout.

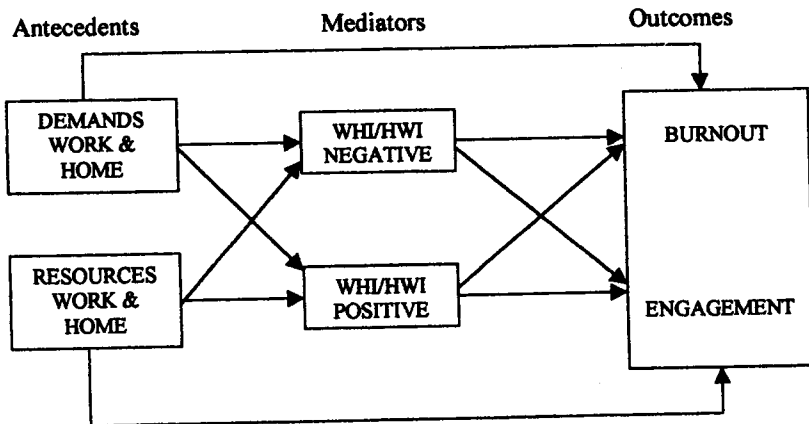


FIGURE 1 Conceptual model.

METHOD

Procedure

A cross-sectional study was conducted among a selection of newspaper managers attending a management-training workshop ($n = 127$). The managers were informed of the study at the training workshops and were given the questionnaires, while attending these workshops. Sixty-nine employees responded to the survey (response rate = 54%). This compares favourable with the average response rate for published research in the managerial and behavioural sciences (55.6% overall and 36.1% for studies concerning top managers or organizational representativeness, see Baruch, 1999, for review).

Participants

The sample was predominately male (81%) and the average age was 45 years ($SD = 8$, range = 29–59). The average length of time spent working at their present employer was 17 years ($SD = 9$, range = 1–40). All of the subjects involved in the study held a supervisory position. The average number of persons under their supervision was 19 ($SD = 30$, range = 1–180). The majority of managers lived at home and were married (90%) and over half of them had children living at home (61%).

Demographic data on the total population of managers, available to be surveyed, indicated that the average age was 45 years and the gender breakdown was 81% men and 19% women. Therefore, the study sample was taken as representative of the total population of managers at the newspaper firm.

Measures

WHI and HWI WHI and HWI was measured using the Survey Work-home Interference Nijmegen (SWING): The SWING is a 27-item work-home interference measure developed by researchers in the Netherlands (Wagena and Geurts, 2000). It measures four types of work-home Interference (WHI): (1) negative interference from 'work' with 'home' (negative WHI), referring to a negative impact of the work situation on one's functioning at home (nine items: e.g. 'your work schedule makes it difficult to fulfil domestic obligations', $\alpha = 0.75$); (2) negative interference from 'home' with 'work' (negative HWI), referring to a negative impact of the home situation on one's job performance (six items: e.g. 'you have difficulty concentrating on your work because you are preoccupied with domestic matters', $\alpha = 0.75$); (3) positive interference from 'work' with 'home' (positive WHI), referring to a positive influence of the work situation on one's functioning at home (six items: you come cheerfully home after a successful day at work, positively affecting the atmosphere at home, $\alpha = 0.89$); (4) positive interference from 'home' with 'work' (positive HWI), referring to a positive impact of the home situation on one's job performance (six items: you are better able to interact with your colleague/supervisor as a result of the environment at home, $\alpha = 0.92$). All items are scored on a 5-point frequency rating scale ranging from '1' (never) to '5' (always).

Burnout The Maslach Burnout Inventory: General Survey (MBI-GS) was used to assess burnout (Schaufeli *et al.*, 1996). The MBI-GS includes three sub-scales:

Exhaustion (five items; e.g. 'I feel used up at the end of the workday'), Cynicism (five items; e.g. 'I have become less enthusiastic about my work') and Professional Efficacy (which was not included in this study). All items are scored on a 7-point frequency rating scale ranging from '0' (never) to '6' (daily). High scores on the exhaustion and cynicism sub-scales are indicative of burnout. In this study, exhaustion ($\alpha = 0.87$) and cynicism ($\alpha = 0.76$) were measured by five and four items, respectively, of the Dutch version of the MBI-GS.

Engagement The Engagement measure used in this study was developed by Schaufeli *et al.* (2002) and consists of three sub-scales; vigour, dedication and absorption. Dedication and Vigour are the sub-scales used in this study. Vigour (e.g. 'I feel vital and strong when I work') and Dedication (e.g. 'My work still inspires me') items are scored the same as the MBI-GS, on a 7-point frequency rating scale ranging from '0' (never) to '6' (daily). In the present study, Dedication ($\alpha = 0.91$) and Vigour ($\alpha = 0.89$) were measured with 6 and 5 item sub-scales, respectively.

Social support Social support was measured using a scale developed by Peeters *et al.* (1995). This scale was divided into four sub-scales: social support from your colleagues (four items; e.g. 'My work colleagues pay attention to my feelings and problems', $\alpha = 0.75$), social support from your supervisor (four items; e.g. 'My supervisor/boss shows that s/he appreciates the way I do my job', $\alpha = 0.92$), social support from your family (four items; e.g. 'If it is necessary, my family helps me with a certain task', $\alpha = 0.84$) and social support from your friends (four items; e.g. 'If it is necessary, my friends give me advice on how to handle things', $\alpha = 0.87$). Responses ranged from 1 (never) to 5 (always). Each sub-scale comprised of all the same items.

Job demands Job demands were measured using three scales taken from the Dutch Questionnaire on the Experience and Evaluation of Work (VBBA; Van Veldon and Meijman, 1994); quantitative job demands, emotional job demands and mental job demands. Internal consistency for the emotional job demands scale was acceptable ($\alpha = 0.74$). The internal consistency of the mental job demands scale was improved by removing one item ($\alpha = 0.76$, based on three items). The alpha level for the quantitative job demands scale was less than satisfactory ($\alpha = 0.56$). Removal of items did not influence the alpha level, so it was decided to use the 5-item scale, while accepting that the internal consistency was less than good.

Home demands Given that no suitable instrument was identified by the researchers for the measurement of home demands, it was decided to construct a home demands scale for the purposes of this study. The scale was constructed in such a way as to conceptually mirror the sub-scales of the work demands scale. Therefore, the home demands scale consisted of a quantitative home demands scale (six items; e.g. 'Do you find that you are busy at home'), an emotional home demands scale (three items; e.g. 'How often do emotional issues arise at home?'), a mental home demands scale (three items; e.g. 'Do you find that you have to plan and organize a lot of things in relation to your home life').

In the piloting stages of the research, ten newspaper managers were interviewed using a semi-structured format. The purpose of these interviews was to assess the face validity

of the measures. Managers rated the home demands scale items in a systematic way according to the dimensions of clarity, relevance and preciseness (Panagopoulou and Maes, in press). The items of the home demands scales were rated at an adequate level in all three categories.

Reliability and factor analyses were carried out to assess the dimensions of the home demands scales. Internal consistencies of the quantitative home demands scale and the mental home demands scales were acceptable ($\alpha = 0.79$ and $\alpha = 0.67$, respectively). The internal consistency of the emotional home demands scale was low ($\alpha = 0.50$), and therefore it was decided to measure emotional demands using one item (i.e. 'Does your housework confront you with things that touch you personally'). This item was chosen as having the best face validity.

RESULTS

Table I shows the mean, standard deviation and correlations of the study variables. WHI-negative was reported at higher levels than HWI-negative, but differences were not statistically significant. Higher levels of HWI-negative were reported for managers whose partner had a job (compared with managers who had a partner, but she/he didn't have a job) ($t(60) = 2.45, p < 0.05$). Comparison between mean levels of burnout of the managers in this study and 190 Dutch managers from the Utrecht Burnout Manual (Schaufeli and Van Dierendonck, 2000) indicates that the managers in the present study had a lower mean level of cynicism (0.87 vs. 1.42, $t(257) = 3.61, p < 0.001$) and exhaustion (1.16 vs. 1.71, $t(257) = 3.56, p < 0.001$). Analysis of mean levels for both job and home demands indicates that mental job demands were higher than mental home demands ($t(136) = 25.30, p < 0.001$) and quantitative job demands were higher than quantitative home demands ($t(136) = 6.37, p < 0.01$).

As expected, WHI-negative was correlated with HWI-negative ($r = 0.28, p < 0.05$), suggesting that they are related but separate domains. Due to the high correlation between the positive sub-scales ($r = 0.73, p < 0.01$), principal component factor analysis was carried out on WHI-positive and HWI-negative. Both sub-scales loaded heavily on one factor, and coupled with the high correlation this suggested that regression analysis would suffer from multi-collinearity. Therefore, it was decided to treat them as one scale, positive interference between home and work ($\alpha = 0.94$). Also, social support from the family and social support from friends was highly correlated ($r = 0.61, p < 0.01$). Given this high association, it was decided to collapse these scales into one scale for the purposes of analysis, referred to as social support from family and friends ($\alpha = 0.89$).

In terms of the outcomes, WHI-negative was correlated with both exhaustion ($r = 0.70, p < 0.01$)² and cynicism ($r = 0.40, p < 0.01$) and HWI-negative was correlated with vigour ($r = -0.24, p < 0.01$). Positive Interference was correlated with exhaustion ($r = -0.37, p < 0.01$), cynicism ($r = -0.36, p < 0.01$) and dedication ($r = 0.26, p < 0.05$). In terms of relationships between the four outcomes and as hypothesized by the

² Factor analysis was inconclusive and did not suggest one factor. Therefore, on theoretical grounds, it was decided to treat both variables as separate entities even though they had a high correlation ($r = 0.70, p < 0.01$).

TABLE I Means, standard deviations and correlations

	<i>Mean</i>	<i>SD</i>	2	3	4	5	6	7	8
1 WHI-Negative	1.70	0.44	0.28*	-0.21	-0.37**	0.39**	0.42**	0.04	0.70**
2 HWI-Negative	1.18	0.25		0.18	0.00	0.02	0.17	0.13	0.08
3 WHI-Positive	2.43	0.94			0.73**	-0.05	-0.09	-0.06	-0.31**
4 HWI-Positive	2.50	1.08				-0.06	-0.09	0.23	-0.37**
5 Quantitative job demands	2.63	0.43					0.28*	0.18	0.21
6 Emotional job demands	1.85	0.39						-0.21	0.36**
7 Mental job demands	3.52	0.45							0.10
8 Exhaustion	1.16	0.87							
9 Cynicism	0.87	0.61							
10 Vigour	4.26	0.96							
11 Dedication	4.61	0.91							
12 Social support (colleagues)	3.08	0.69							
13 Social support (supervisor)	2.77	0.90							
14 Social support (family)	3.19	0.97							
15 Social support (friends)	2.75	0.92							
16 Quantitative home demands	2.13	0.49							
17 Emotional home demands	2.00	0.51							
18 Mental home demands	1.56	0.46							
19 Positive Interference	2.47	0.94							
20 Social support (family and friends)	2.97	0.85							

	9	10	11	12	13	14	15	16	17
1 WHI-Negative	0.40**	-0.17	-0.17	-0.19	-0.18	-0.05	-0.01	0.08	0.08
2 HWI-Negative	0.08	-0.24*	-0.01	0.19	0.14	0.10	0.16	0.29**	0.35**
3 WHI-Positive	-0.35**	0.06	0.27*	0.35**	0.25*	0.01	0.17	-0.09	0.06
4 HWI-Positive	-0.32**	0.27*	0.23	0.34**	0.26	0.17	0.21	-0.18	-0.11
5 Quantitative job demands	0.12	0.20	0.05	-0.03	-0.01	0.05	0.02	0.21	0.20
6 Emotional job demands	0.33**	0.11	-0.10	-0.06	0.06	0.14	0.20	0.02	0.02
7 Mental job demands	0.05	0.15	0.19	0.03	-0.11	-0.09	-0.09	0.17	-0.08
8 Exhaustion	0.35**	-0.26*	-0.09	-0.18	-0.18	-0.09	-0.08	0.08	-0.03
9 Cynicism		-0.18	-0.49**	-0.29*	-0.35**	-0.13	-0.12	-0.15	0.12
10 Vigour			0.59**	0.25*	-0.14	0.20	0.21	-0.17	-0.15
11 Dedication				0.27*	0.17	0.07	0.04	0.04	0.12
12 Social support (colleagues)					0.31*	0.35**	0.44**	0.02	0.30*
13 Social support (supervisor)						0.10	0.12	0.19	0.24*

TABLE I (Continued)

	9	10	11	12	13	14	15	16	17
14 Social support (family)							0.61**	-0.00	-0.15
15 Social support (friends)								-0.04	-0.02
16 Quantitative home demands									0.48**
17 Emotional home demands									
18 Mental home demands									
19 Positive Interference									
20 Social support (family and friends)									
		18	19	20					
1 WHI-Negative	0.24*	-0.31**	0.03						
2 HWI-Negative	0.39**	0.09	0.14						
3 WHI-Positive	-0.09	0.92**	0.10						
4 HWI-Positive	-0.10	0.94**	0.21						
5 Quantitative job demands	0.15	-0.06	0.06						
6 Emotional job demands	0.27*	-0.10	0.18						
7 Mental job demands	-0.08	-0.16	-0.09						
8 Exhaustion	0.14	-0.37**	0.01						
9 Cynicism	0.14	-0.36**	-0.14						
10 Vigour	-0.05	0.18	0.23						
11 Dedication	-0.01	0.26*	0.06						
12 Social support (colleagues)	0.03	0.37**	0.44**						
13 Social support (supervisor)	0.05	0.28*	0.12						
14 Social support (family)	-0.06	0.10	0.90**						
15 Social support (friends)	-0.02	0.20	0.89**						
16 Quantitative home demands	0.53**	-0.11	0.02						
17 Emotional home demands	0.37**	-0.03	-0.09						
18 Mental home demands		-0.11	-0.04						
19 Positive Interference			0.17						
20 Social support (family and friends)									

Note: * $p < 0.05$; ** $p < 0.01$.

work of Schaufeli *et al.* (2002), exhaustion was correlated with vigour ($r = -0.26, p < 0.05$), and cynicism was correlated with dedication ($r = -0.49, p < 0.01$). Vigour was correlated with dedication ($r = 0.59, p < 0.01$).

The small sample size ($n = 69$) precluded the use of structural equation modelling to examine the different paths in the model. Multiple regression was used to explore the different associations between the various mediation paths (see Tables II and III).

Mediation paths

Tables II and III show the results of mediation analyses, carried out in line with methodology suggested by Baron and Kenny (1986). Accordingly, a prerequisite for mediation is that the predictor, mediator and dependant variables must be significantly related. Mediation is demonstrated by a reduction in the impact of the predictor on the dependant measure after controlling for the mediator (see Column B in Tables II and III). Mediation analysis was carried out for all proposed hypotheses (H1 to H4) between demands/resources and outcomes, with WHI-negative, HWI-negative and positive interference as potential mediators. As Baron and Kenny (1986) discussed, it would be unusual in psychology for the coefficient to be reduced to 0 by the mediator, therefore the degree to which the effect is reduced (e.g. the change in regression coefficients) is an indicator for potency of the mediator. Using the methodology employed by Eckenrode *et al.* (1995) reduction of the coefficient to 0 equals full mediation and reduction of the coefficient, but still significant is equal to partial mediation. In the latter case, it is desirable to report indirect effects and estimate confidence intervals for the such effects (Sobel, 1988). However, Sobel (1988) recommends such an estimation only in large samples (> 100).

TABLE II Mediation analysis of WHI, HWI and positive interference between antecedents and burnout

	A	B	A	B
	β	β	β	β
Job demands	Exhaustion	Exhaustion	Cynicism	Cynicism
Quantitative job demands	0.09	-0.09	0.02	-0.07
Emotional job demands	0.37**	0.13	0.33**	0.21
Mental job demands	0.16	0.13	0.01	0.00
WHI-negative		0.67**		0.33*
r^2 (r^2 adjusted)	0.17 (0.14)	0.52 (0.49)	0.11 (0.07)	0.19 (0.14)
Home Demands	Exhaustion	Exhaustion	Cynicism	Cynicism
Quantitative Home demands	0.06	0.06	-0.27	-0.27
Emotional Home demands	-0.11	-0.13	-0.11	-0.14
Mental home demands	0.15	0.13	0.33*	0.30*
HWI-negative		0.06		0.11
r^2 (r^2 adjusted)	0.03 (-0.02)	0.03 (-0.03)	0.10 (0.06)	0.11 (0.05)
Resources	Exhaustion	Exhaustion	Cynicism	Cynicism
SS from Colleagues	-0.19	-0.08	-0.20	-0.12
SS from Supervisor	-0.13	-0.07	-0.29*	-0.24*
SS of Family/Friends	0.11	0.11	-0.02	-0.01
Positive Interference		-0.34**		-0.24*
r^2 (r^2 adjusted)	0.06 (0.02)	0.16 (0.10)	0.16 (0.12)	0.21 (0.16)

Note: * $p < 0.05$; ** $p < 0.01$; SS = Social Support.

TABLE III Mediation analysis of WHI, HWI and positive interference between antecedents and engagement

	A	B	A	B
	β	β	β	β
Job demands	Vigour	Vigour	Dedication	Dedication
Quantitative job demands	0.19	0.30*	0.10	0.17
Emotional job demands	0.08	0.21	-0.09	-0.02
Mental job demands	0.13	0.15	0.15	0.16
WHI-negative		-0.38**		-0.23
r^2 (r^2 adjusted)	0.07 (0.03)	0.18 (0.13)	0.05 (0.00)	0.09 (0.03)
Home Demands	Vigour	Vigour	Dedication	Dedication
Quantitative Home demands	-0.16	-0.15	0.01	0.01
Emotional Home demands	-0.10	-0.04	0.14	0.15
Mental home demands	0.07	0.12	-0.06	-0.05
HWI-negative		-0.22		-0.05
r^2 (r^2 adjusted)	0.04 (-0.01)	0.08 (0.02)	0.02 (-0.03)	0.02 (-0.04)
Resources	Vigour	Vigour	Dedication	Dedication
SS from Colleagues	0.26	0.21	0.27*	0.22
SS from Supervisor	-0.24	-0.26	0.10	0.06
SS of Family/Friends	0.14	0.14	-0.08	-0.07
Positive Interference		0.15		0.17
r^2 (r^2 adjusted)	0.13 (0.09)	0.15 (0.10)	0.09 (0.05)	0.11 (0.06)

Note: * $p < 0.05$; ** $p < 0.01$; SS = Social Support.

Table II indicates that WHI-negative is a partial mediator between emotional job demands and both burnout dimensions (H1). This indicates that emotional job demands increase WHI-negative, which in turn increases the exhaustion levels of the managers. In addition, HWI-negative partially mediated between mental home demands and cynicism, but this partial mediation was not considered significant, as HWI-negative and cynicism didn't correlate significantly (H2). Table II indicates that positive interference partially mediates between social support from supervisor and cynicism. This indicates that social support from one's supervisor can have a positive effect on a manager's level of cynicism (decreasing) via positive interference (H3). Although no support was found for H4, analysis of the mediational effect of positive interference between social support from colleagues and vigour/dedication shows that both beta-weights decreased enough to suggest positive interference may mediate between resources and engagement in a larger study.

Moderation between Resources and Demands

As stated in the introduction, we tested for possible moderating effects of social support. Empirically, it was appropriate to examine moderation by estimating interaction effects between resources and demands (using the methodology of Aiken and West, 1991). No conclusive evidence was found. The fact that a main effect was found for social support (on cynicism) and no conclusive evidence was found for moderation effects provides limited support for the fifth hypothesis (H5).

DISCUSSION

Overall, the current study examined what types of demands and resources were mediated by WHI/HWI in relation to burnout and engagement. In addition, this research provided an extension of previous studies of job demands by expanding the amount of job demands studied and by including a symmetrical set of home demands. The inclusion of positive measures of WHI/HWI was also an innovation.

The present research provided us with the following conclusions. Firstly, in terms of burnout it was found that WHI mediated between emotional job demands and exhaustion and cynicism. The fact that WHI didn't mediate quantitative or mental job demands suggests that certain demands are contextual in terms of their ability to influence WHI. This suggests that demands such as workload or the need to concentrate continuously are more specific to the work situation in comparison with emotional demands, which are more likely to be brought home. Therefore, strategies to reduce WHI should be careful to implement demand reduction strategies that actually influence WHI. The fact that HWI didn't play a significant role as a mediator may be related to the fact that the outcomes were work-specific. Such a conclusion is supported by the fact that none of the home demands indicated any direct relationship with the outcomes. Alternatively it may be possible that the respondents in the sample (which were predominately male) didn't carry the burden of their home-related demands to work with them. Secondly, the results of our study supported one of the main tenets of the JD-R model that demands and resources work in relatively independent paths. It is important to note that the JD-R model is a parsimonious model that is capable of integrating a wide range of potential job demands and resources. Accordingly, it can be useful in studying different profiles of demands and resources that might be typical for job-related outcomes in specific populations. This idea of different paths is congruent with the longitudinal study of burnout by Leiter (1990). Leiter found evidence that family coping resources and work-related coping resources influenced the burnout process in different ways, whereby family resources influenced emotional exhaustion more and work-related resources influenced depersonalization more. Interestingly, Leiter found independent paths from family/home and work to burnout, which may help to explain the observed independence of demands and resources in the present study. Thirdly, an innovation of the present study was the assessment of a broader set of both job and home demands. The inclusion of emotional and mental demands has helped to widen the debate surrounding demands and the inclusion of home demands has helped us to construct a more balanced picture of the work-home nexus. All three forms of home demands were significantly related to HWI, which strongly suggests that they have value in terms of elaborating the role of HWI in the future. Finally, a further innovation in this study was the measurement of positive outcomes, as a comparison and counter-balance to the more traditional negative ones. Much of the research on the relationship between work and family has been negative in that it has emphasized the dysfunctional consequences of work-family interactions (Greenhaus and Beutell, 1985). Although the positive consequences of the work-family relationship have been discussed (Kanter, 1977), very little research has sought to identify these positive linkages. Herzberg's (1966) two factor theory of work motivation proposes that different work characteristics produce job dissatisfaction and satisfaction. Given this need to also examine positive outcomes, the identification of factors that promote well-

being in employees is important. Our study found that positive interference was correlated with feelings of dedication. A human resources intervention which emphasizes the role of resources and uses the concept of engagement to characterize what makes successful employees function better, has a greater chance of organizational acceptance.

Limitations

This research has a number of significant limitations. Firstly, the present study had a cross-sectional design. In order to solve cause and effect issues and to disentangle the complex interplay between past experiences and psychological functioning, longitudinal research is needed. However longitudinal designs need to be reserved for circumstances when their considerable research power can be used to maximum advantage and not wasted on exploratory investigations in new research domains. Cross-sectional data cannot prove causation but can be a valuable method of sorting out which causal hypotheses are sufficiently plausible to warrant testing through longitudinal designs. They can also provide important initial tests of the causal hypotheses.

Secondly, the present analysis is based on a small sample size. Smaller sample sizes mean that researchers have to be careful in using parametric statistics. Assumptions of normality were checked with all statistical procedures in order to insure reliable results. Added to this, the fact that we carried out many multiple regression analyses means that the possibility of chance capitalization can't be completely ruled out.

Thirdly, the study relied exclusively on self-report measures that could increase the problem of common method variance. Unfortunately, we cannot test the strength of this type of variance, but several studies (Spector, 1992; Semmer *et al.*, 1996) have indicated that common method variance is not as troublesome as one might expect in these kind of studies. A related issue to common method variance is potential confounding effect of negative affectivity (NA) in self-report research (Watson and Clark, 1984). Recent research, however, justifies the omission of this potential confounder in research. Moyle (1995) in a study of possible influences that negative affectivity could have on the stressor-strain relationship concluded that NA cannot generally account for the observed correlations between work environment measures and strains. Similarly, Schonfield (1996) concluded that NA does not overly distort self-report measures and strain outcomes. Indeed, Dollard and Winefield (1998) even warn against that practice to control for the nuisance aspects of this trait as this may lead to underestimation of the impact of the work environment on strain. In addition to these three major limitations, the theoretical model (Fig. 1) and the desire to conceptualize a more balanced approach to the problem of balancing work and home, our model was a little "imbalanced" in that we only measure work-related outcomes. This fact was compounded by the need to collapse WHI-positive and HWI-positive into one scale (positive interference), which resulted in a loss of specificity. Also, more work needs to be done to increase the reliability of the home demands scale. For example, the emotional home demands scale was reduced to one item due to a poor alpha level among the items, however the use of one-item measures has not been dismissed as having no value (see Wanous *et al.*, 1997, for a discussion). Finally, the fact that the majority of the sample was male meant that comparisons between males and females would not have been meaningful.

WHI and HWI

This research established WHI as a reliable mediator for burnout (but not for engagement), in agreement with other studies that have found it to play a mediating role between work and home characteristics, on the one hand, and psychological indicators on the other (Parasuraman *et al.*, 1992; Stephens *et al.*, 1997; Geurts *et al.*, 1999). Given that burnout has been related to various negative health (e.g. depression) and organizational (e.g. absenteeism, job turnover, performance, and quality of services) outcomes (for a review see Schaufeli and Enzmann, 1998), the observed relationships between the interference variables and burnout means that human resources strategies need to be tailored to take account of both WHI and HWI. The fact that no mediational role was found for WHI/HWI between resources and engagement may be due to the fact that we had to collapse these into one single scale, and maybe lost specificity. These three groups of variables were significantly correlated and the mediator effects were suggested by reduced betas between the independent and dependent variables. Therefore, future research with more specific measures of positive interference and larger samples may indicate significant effects. The present study distinguished between partial and full mediation effects, and suggests that future researchers need to properly account for this. Although, many researchers have recommended the assessment of HWI (Frone *et al.*, 1992; Kossek and Ozeki, 1998; Kirchmeyer and Cohen, 1999), research has tended to concentrate on the role of WHI and the empirical evidence that does exist, has tended to support the preponderance of WHI as the most important variable (with the exception of Frone *et al.*, 1997), thereby suggesting they have asymmetrical importance. One of the implications of the present study is that it goes some way to re-establishing HWI as an important variable in the picture of work to home interference.

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