

Chapter 5 Is Work-Home Interference a Predictor or Outcome of Burnout and Engagement?⁸

5.1 Abstract

This paper describes a two-wave panel study that was carried out to examine reciprocal relationships of job demands/resources and Work-Home Interference (WHI) with job burnout and job engagement. Specifically, a job demands and job resources model was examined separately to investigate the causal role of WHI. Hypotheses were tested in a sample of 193 employees from a pension fund company, using SEM. Participants filled out the questionnaire twice, with a two-year time lag in-between. The results primarily showed that Time 1 job demands were causally related to WHI-negative and burnout at Time 2. Furthermore, reversed causal effects were found for engagement at Time 1, which was causally related to WHI-positive at Time 2. The mediational effect of WHI was also tested. WHI-positive at Time 2 was found to mediate between job resources at Time 1 and Engagement at Time 2. Conclusions and implications are discussed in relation to the WHI literature.

5.2 Introduction

Ample evidence attests to the fact that the interaction of work and home (or non-work) presents challenging problems to individuals (Allen, Herst, Bruck, & Sutton, 2000; Kossek & Ozeki, 1998). It has been established that both work and home demands are potentially stressful (Cooper, Dewe & O'Driscoll, 2001). The emotional, physical, and mental demands of roles within either domain may exceed an individual's resources. Indeed, interference between work and home responsibilities has been associated with adverse psychological and physical outcomes for employees (Frone, 2000; Greenhaus & Parasuraman, 1986) and their families (Frone, Russell, & Cooper, 1992, 1997). While the importance of such interference has been established, one central concern has limited a growing body of knowledge. This concern relates to the temporal ordering of Work-Home Interference (WHI) and individual psychological functioning (Kelloway, Gottlieb & Barnham, 1999). Most of the existing literature on WHI has relied on cross-sectional data, thereby prohibiting the assessment of causal relationships. A need for longitudinal research in the job stress

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area is noted by Zapf, Dormann and Frese (1996), who suggest that examples of good longitudinal studies and/or sophisticated statistical models (e.g., covariance structure models) on job characteristics and job stress are scarce. The present study will help to address this deficiency by testing and evaluating the direction of relationships between job demands/resources, WHI and burnout/engagement.

5.2.1 Theoretical and Empirical Background

Work-Home Interference (WHI) is experienced negatively 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 & Beutell, 1985), and positively when positive experiences from one role make it easier or enhance participation in the other role (e.g., Grzywacz & Marks, 2000). 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 (role scarcity hypothesis; Greenhaus & Beutell, 1985). A parallel, but opposite, 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 (role expansion hypothesis; Marks & MacDermid, 1996; Sieber, 1974). 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). Indeed, Grzywacz and Marks (2000), using data from a large national survey in the US, showed that positive spillover was related to factors that facilitated development (e.g., decision latitude, family support). Such evidence means that any attempt to measure a balanced picture of work and home needs to account for positive aspects as well.

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 (JD-R) model (Bakker, Demerouti, De Boer & Schaufeli, in press; Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Theoretically speaking, the JD-R model assumes two processes: (1) a stress (or energy depletion) process of overtaxing and wearing out in which high job demands exhaust the employee’s energy backup; (2) a motivational process in which resources help to deal effectively with high job demands and foster mental engagement. 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. In the present research, the JD-R model is the theoretical background to how demands can influence burnout and resources can influence engagement. Recently, Schaufeli and Bakker (2002), using data from four occupational samples (N = 1,698), tested the JD-R model and found that burnout was predominately predicted by job demands, whereas engagement was exclusively predicted by job resources, suggesting two different pathways.

It follows logically that WHI is 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 hypotheses (see the recent meta-analysis by Allen et al., 2000). This study builds on earlier cross-sectional studies that have found empirical support for the influence of job characteristics on work-related psychological well-being and what prominent theoretical models have postulated to be the causal ordering among job characteristics and outcomes (see Bakker et al., in press, Demerouti et al, 2001; Karasek & Theorell, 1990; Siegrist, 1998). In addition, it builds on the existing cross-sectional evidence regarding the role of WHI as a mediator between job demands/resources and outcomes (Geurts, Rutte & Peeters, 1999; Kinnunen & Mauno, 1998; Montgomery, Peeters, Schaufeli & Den Ouden, in press; Parasuraman, Purohit & Godschalk, 1996). Given that Schaufeli and Bakker (2002) found that job demands influence burnout and that job resources influence engagement in relatively independent ways, it was decided to examine the role of WHI in a job-demands/burnout and in a job resources/engagement model separately (see Figure 5.1). In addition, parsimony dictated that examining demands and resources in separate models would be the most effective approach in terms of simplifying conceptualization, detecting causality, and statistical considerations with regard to estimating overly complex models.

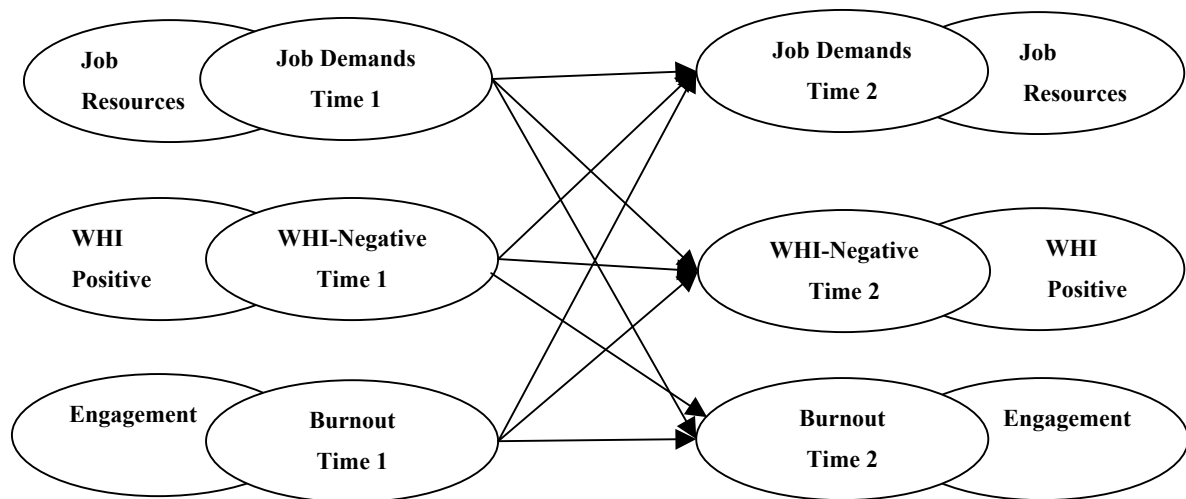


Figure 5.1 Job demands/resources model

Such an approach allows us to generate clear and testable hypotheses.

5.2.2 Job Demands

Traditional job stress models (e.g., the Demand-Control-Support (DCS) model; Karasek & Theorell, 1990) have not adequately attended to the potentially multifaceted nature of job demands (with the exception of De Jonge, Mulder & Nijhuis, 1999; Söderfeldt et al., 1997). In our view, a more comprehensive picture of job demands will be ascertained by also evaluating emotional and mental demands. Although rarely studied, some studies have demonstrated both emotional demands (Le Blanc, Bakker, Peeters, Van Heesch & Schaufeli, 2001; Pekrun & Frese, 1992) and mental demands (Cooper & Kelly, 1984; Kahn & Boysoiere, 1992) as important antecedents of job stress. In the present study, job demands will be operationalised by three sub-scales; quantitative job demands, emotional job demands and mental job demands. Quantitative job demands or work pressure refers to a situation where a person has too much work to do and too little time to do it in (e.g., meeting deadlines); emotional job demands refer to the extent to which one's work puts one in emotionally stressful situations (e.g., difficult clients or colleagues); and mental demands refers to the degree to which work tasks call upon you to expend sustained mental effort in carrying out your duties (e.g., continuous concentration on a single task). The general definition of demands employed refers to the extent to which the working environment contains stimuli that require some effort (Jones & Fletcher, 1996), and encapsulates the idea that job demands lead to negative consequences if

they require additional effort beyond the usual way of achieving the work goals (see Demerouti et al., 2001).

5.2.3 Job Resources

The present study examines a range of job resources as well, namely support, supervisory coaching, communication and control. 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), support and coaching have been viewed as significant resources that can promote effective coping and enhance employee well-being in the face of work-family stress (Repetti, 1989; Thomas & Ganster, 1995; Weiss, 1990).

Traditionally, WHI has been studied as a negative experience (Greenhaus, 1989), but the idea of positive spillover has rarely been studied. Piotrkowski (1978), in a study of male employees, found that husbands' who enjoyed their work and experienced feelings of self-enhancement from the working day, came home cheerful and emotionally available to their families. Additionally, Grzymacz and Marks (2000) found that those factors that facilitated development (e.g., decision latitude, support) were associated less with negative spillover and more with positive spillover between work and home. This suggests that the effects of resources at work can be gauged best by looking at positive (as opposed to negative) spillover. Theoretically, assessing both allows us to examine both the scarcity and enhancement hypotheses.

The aforementioned empirical and conceptual evidence leads to the conclusion that job resources are important antecedents of WHI-positive. The role of social support has been well established as such an antecedent. In addition to support, job flexibility or control (Hammer, Allen & Grigsby, 1997; Marshall & Barnett, 1994) and communication with colleagues (Swanson, Power & Simpson, 1998) have been significantly associated with WHI-positive. Job flexibility or control is a resource that is critical to better work-home integration. Through alternative work arrangements, employers furnish the time and flexibility employees need to juggle work and home responsibilities (Friedman & Greenhaus, 2000). Communication with colleagues helps to provide the information and advice that comes from networking and feeling accepted by colleagues within an organization. Therefore, in the present study, job resources will be operationalised by four sub-scales: social support, supervisory coaching, control and communication.



5.2.4 Burnout and Engagement

Burnout, referring to the draining of energy and resources caused by chronic job stress is considered a work-related indicator of psychological health (Cooper, Dewe & O'Driscoll, 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, Walkey & Taylor, 1991), whereas several scholars have argued that professional efficacy reflects a personality characteristic rather than a genuine burnout-component (Cordes & Dougherty, 1993; Shirom, 1989). Empirically, this is reflected by the relatively low correlation of professional efficacy with both of the other burnout dimensions (Lee & 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).

Engagement 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 & Csikszentmihalyi, 2000). Theoretically, Schaufeli and Bakker (2002) have identified two underlying dimensions of work-related well-being that encompass the burnout and engagement constructs: (1) activation, ranging from exhaustion to vigor, and (2) identification, ranging from cynicism to dedication. Thus, burnout is characterised by a combination of exhaustion (low activation) and cynicism (low identification), whereas engagement is characterised by vigor (high activation) and dedication (high identification). As such, Schaufeli, Salanova, Gonzalez-Roma and Bakker (2002) argue that engagement is not adequately measured by the opposite profile of burnout scores, and suggest that burnout and engagement are opposite concepts that should be measured independently and with different instruments.

Accordingly, in the present research, engagement will be operationalised as vigour and dedication. In addition, the third component, absorption, will also be measured. Absorption is characterised by being fully concentrated and happily engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work (Schaufeli et al., 2002). Absorption was found to be a relevant aspect of engagement after some 30 in-depth interviews were carried out (Schaufeli et al., 2001). Engaged employees are assumed to have a sense of energetic



and effective connection with their work activities and are characterised by a sense of significance, enthusiasm, inspiration, pride, and challenge. In addition, they are deeply engrossed in their work. Within the framework of WHI, it is plausible that positive interference may lead to feelings of engagement in employees (positive spillover).

5.2.5 Direction of WHI

The available literature on WHI has mainly been based on cross-sectional data and the implicit assumptions in such models is that work and home constitute a potential stressor that leads to various forms of psychological and behavioural strain. However, it has also been suggested that WHI may be an outcome rather than a predictor of strain (Higginbottom, Barling & Kelloway, 1993; Kelloway & Barling, 1994). In their review of longitudinal studies, Zapf, Dormann and Frese (1996) located six out of sixteen longitudinal studies on organizational stress, which tested and provided evidence for reversed causality. More recent studies provide additional evidence. For example, reversed causal effects have been between financial prospects and health (Gorgievsky-Duijvesteijn, Giessen, & Bakker, 2000; Gorgievski-Duijvesteijn, Bakker, Schaufeli, & Van der Heijden, 2002), and between job characteristics (like job complexity, job pressure, social support and boundary spanning) and exhaustion or satisfaction (Demerouti, Bakker & Bulters, in press; Houkes, Janssen, De Jonge & Bakker, 2003; James & Tetrick, 1986; Wong, Hui, & Law, 1998). In general, results suggest that stress and reduced motivation or dissatisfaction can be outcomes and predictors of job demands and resources, such that higher stress and impaired motivation results over time in less favorable working conditions. Moreover, the evidence for reversed causal effects has been found in studies using time lags of five and even ten years of time (Bakker, Schaufeli, Sixma, Bosveld, & Van Dierendonck, 2000; Gorgievsky-Duijvesteijn et al., 2000). As previously mentioned, engagement can be considered to be the opposite of burnout (Schaufeli et al., 2002), so it is logical that similar, but reversed effects should be postulated for our resources model.

5.2.6 Hypotheses

Demands Model

- *Hypothesis 1: Time 1 job demands increase Time 2 WHI-negative and burnout (causality model).*



- *Hypothesis 2: Time 1 WHI-negative and burnout increase Time 2 job demands, and Time 1 burnout increases Time 2 WHI-negative (reversed causality model).*

Resources Model

- *Hypothesis 3: Time 1 job resources increase Time 2 WHI-positive and engagement (causality model).*
- *Hypothesis 4: Time 1 WHI-positive and engagement increase Time 2 job resources, and Time 1 engagement increases Time 2 WHI-positive (reversed causality model).*

5.2.7 Mediation Analysis

A major component of theory design and development is the concept of mediation (Brown, 1997). The role of WHI as a mediator has been suggested by various studies (Bakker & Geurts, in press; Frone et al., 1992; Geurts, Rutte & Peeters, 1999; Kinnunen & Mauno, 1998; Parasuraman, Purohit, Godschalk & Beutell 1996; Stephens, Franks, & Atienza, 1997). The basic idea of mediation is that a mediating variable should account for the relationship between the predictor and criterion (in statistical terms). However, Baron and Kenny (1986) note that because most phenomena in psychology have multiple causes, a more realistic goal may be to seek mediators that significantly decrease the strength of the relationship between predictor and criterion. However, a review of the literature indicates that studies have not done an adequate job in either assessing mediation or distinguishing between full and partial mediation (Brown, 1997; Holmbeck, 1997). It is important to distinguish between full and partial mediation, as there are strong grounds for believing that WHI may only play a partially mediating role.

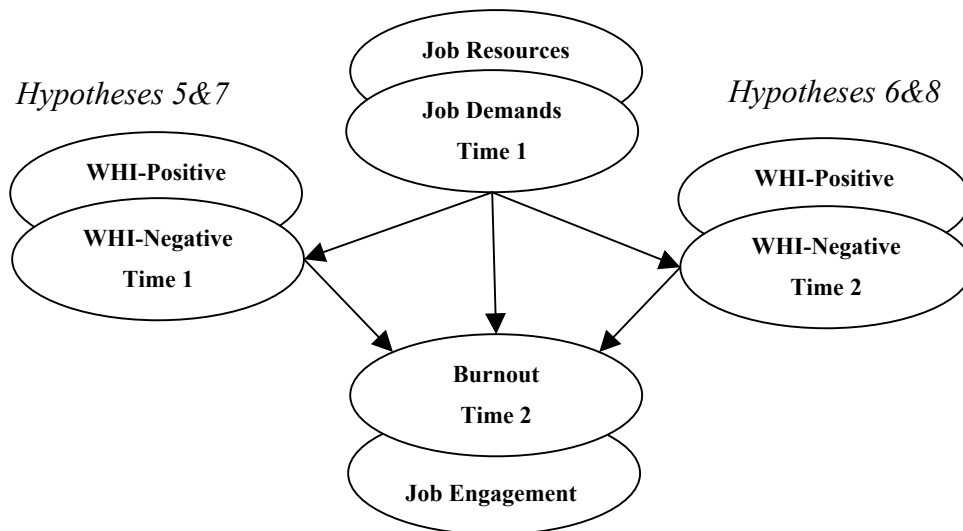


Figure 5.2 Rival hypotheses for the mediation of WHI

Firstly, given the fact that some job demands are contextual (e.g., dealing with colleagues/supervisors at the workplace, conducting oneself in a professional manner) it is less likely that all job demands will interfere with home. Secondly, there is accumulating evidence to suggest that job demands have a strong and direct relationship with outcomes such as burnout (see meta-analysis of Lee & Ashforth, 1996). Thirdly, anthropological studies of the way that people separate work and home suggest that some people separate and compartmentalise aspects of their work and home domains (Nippert-Eng, 1996), arranging their lives so that aspects of one domain do not interfere with the other.

The present research provides the opportunity to examine rival hypotheses regarding the ability of Time 1 and Time 2 WHI (see Figure 5.2) to mediate the relationship between work antecedents (demands, resources) and outcomes (burnout, engagement). Theoretically, it is plausible that WHI at both Time 1 and Time 2 could mediate the relationship between predictor and criterion (see Figure 5.2). Such a relationship is dependent on the time it takes for job demands to produce WHI-negative, and for the accumulation of positive job resources to lead to WHI-positive. In terms of conceptualizing time models of stress effects, Frese and Zapf (1988) make a distinction between the initial impact and the exposure time effect.

In general terms, the initial impact effect is based on the idea that people have an initial reaction to a new stressor, a kind of 'reality shock'. The initial impact concept implies that the measurement points are relatively near to each other. Although Frese and Zapf (1988) suggested that this would be a couple of months

apart, for the purposes of this study, we conceptualise Time 1 WHI to represent the initial impact time. Additionally, the exposure time effect assumes implicitly that the longer a stressor impacts on the person, the more intense should be the effect. In the present study, WHI at time 2 will represent the exposure time effect.

Demands Model

- *Hypothesis 5: Time 1 WHI-negative mediates the relationship between Time 1 Job demands and Time 2 burnout (initial impact effect)*
- *Hypothesis 6: Time 2 WHI-negative mediates the relationship between Time 1 Job demands and Time 2 burnout (exposure time effect).*

Resources Model

- *Hypothesis 7: Time 1 WHI-positive mediates the relationship between Time 1 Job resources and Time 2 engagement (initial impact effect).*
- *Hypothesis 8: Time 2 WHI-positive mediates the relationship between Time 1 Job resources and Time 2 engagement (exposure time effect).*

5.3 Method

5.3.1 Participants and Procedure

A full panel design with two waves was conducted. Participants supplied data at two time points, with a two-year interval between the two time points. This interval is long enough for possible changes to occur, but not too long for too much non-response to occur (Frese & Zapf, 1988). Additionally, a two-year time lag allowed us to even out the effects of seasonal fluctuations.

Initially, 611 employees of a pension fund company were mailed questionnaires and invited to take part in the study. The main activities of the employees in this organization were to collect premiums, to administrate and to pay out monthly allowances and pensions. At Time 1, 507 employees responded to the survey (response = 83%). At Time 2, 486 employees responded to the survey (response rate = 80%). All analyses are based on 193 participants for whom complete data sets are available from both time points (32%). Since participation in the study was on an anonymous basis, participants' responses to questionnaire 1 were related to those on questionnaire 2 by using their unique demographic information. With regard to this final sample for analysis, 61% were male. The mean age of the sample was 35 years ($sd = 8.0$), 13% has a supervisory position. No gender difference for WHI-negative was found, but females reported higher levels of WHI-positive at Time 1, ($t(190) = 2.97, p < .01$).

Analysis between the initial sample ($N = 507$) and Time 1 data of the panel group ($N = 193$) indicated that the two groups did not significantly differ on the following variables: gender ratio, mean age, percentage of respondents who held a supervisory position, and the model variables, with one exception. The only difference found indicated that the initial sample ($N = 507$) reported higher levels of cynicism, ($t(698) = 2.26, p < .05$). Taken together, these results suggest that the panelgroup can be assumed to be representative of the initial sample.

5.3.2 Measures

Work-Home Interference (WHI). WHI-negative and WHI-positive were measured using items from the Survey Work-Home Interference Nijmegen (SWING; Wagena & Geurts, 2000). WHI-negative, referring to the negative impact of the work situation on one's functioning at home (e.g., "your work schedule makes it difficult



for you to fulfill your domestic obligations”) was measured by three items. WHI-positive, referring to a positive impact of the work situation on one’s functioning at home (e.g., “you come home cheerfully after a successful day at work, positively affecting the atmosphere at home”) was measured by two items. All items are scored on a 4-point scale from ‘1’ (never) to ‘4’ (always). The internal consistencies (Cronbach’s alpha’s) of all scales are displayed in Table 5.1.

Burnout. The Maslach Burnout Inventory-General Survey (MBI-GS) was used to assess burnout (Schaufeli, Leiter, Maslach, & Jackson, 1996). The MBI-GS includes the two sub-scales used in the present study: Exhaustion (five items; e.g., ‘I feel used up at the end of the workday’), and Cynicism (five items; e.g., ‘I have become less enthusiastic about my work’). All items are scored on a 7-point frequency scale ranging from ‘0’ (never) to ‘6’ (daily). High scores on the exhaustion and cynicism sub-scales are indicative of burnout.

Engagement. Engagement was measured with items reflecting three underlying dimensions (Schaufeli et al., 2002): Vigour (5 items; e.g., ‘when I get up in the morning, I feel like going to work’), Dedication (5 items; e.g., ‘I’m enthusiastic about my job’) and Absorption (7 items; e.g., ‘When I’m working, I forget everything around me’). Engagement scales are similarly scored in the same way as the MBI-GS.

Job demands. Three types of job demands were included: quantitative (i.e. work pressure), emotional, and mental demands. Work pressure was assessed with a three-item scale developed by Bakker, Demerouti, Schaufeli, Taris and Schreurs (in press). The items refer to quantitative, demanding aspects of the job (time pressure, working hard); e.g. ‘My job requires working very hard’. Items were scored on a four-point frequency scale, ranging from 1 (‘never’) to 4 (‘always’).

Emotional demands were assessed utilising a three-item scale from the emotional demands scale developed by Van Veldhoven and Meijman (1994; see also Van Veldhoven, De Jonge, Broersen, Kompier & Meijman, in press). An example item is: ‘Is your work emotionally demanding?’. Items were scored in a similar way as the previous scale.

Mental demands were assessed by a four-item scale developed by the researchers and comparable with the mental demands scale of the Dutch Questionnaire on the experience and evaluation of work (Van Veldhoven & Meijman, 1994). An example item is; ‘Do you have to do many things at the same time at

work?'. Items were scored in a similar way to the workload and emotional demands scales.

Job resources. Four job resources were included in the questionnaire. Control was assessed with a Dutch version (Furda, 1995) of Karasek's (1985) job content instrument. It includes four items concerning decision authority (i.e., freedom of action in accomplishing the formal work task). A sample item is: "I can decide myself how I execute my work". Items were scored on a four-point frequency scale, ranging from 1 ('never') to 4 ('always'). Social support was measured with a four-item scale developed by Van Veldhoven and Meijman (1994). A sample item is: 'Can you ask your colleagues for help if necessary?'. Items were scored in a similar way as the previous scale (see also Van Veldhoven et al., in press). Supervisory coaching was measured using a seven item scale which was a Dutch adaptation of Graen and Uhl-Bien's (1991) Leader-Member exchange scale (Le Blanc, 1994); e.g., 'My supervisor uses his/her influence to help me solve my problems at work'. Items were scored in a similar way as both previous scales. Communication was measured with a self-constructed seven-item scale. An example item is: "The communication between the different departments of my company is good" (1 = totally disagree, 5 = totally agree).

5.3.3 Strategy of Analyses

The data analysis procedure adopted was based on the work of De Jonge et al. (2001) and Pitts, West and Tein (1996). Covariance structural modeling (Jöreskog & Sorböm, 1993) was performed in order to analyze the panel data. Due to the large numbers of items used to operationalise all the variables, simultaneous consideration of all observed variables would result in unreliable parameter estimates and insufficient power (Bentler & Chou, 1987; Jaccard & Wan, 1996). Therefore, each of the components of both the job demands and job resources models were included in the structural equation analyses as a latent variable. Furthermore, a two-step approach was followed (Anderson & Gerbing, 1988), with initially the measurement models tested, and following this structure equation models are tested. All measurement models were examined for invariance over time (stationarity) and invariance within time (tau equivalence). All measurement models satisfied the criteria for stationarity but not for tau equivalence (results can be obtained from the first author). According to Pitts et al. (1996), establishing stationarity is considered adequate to make meaningful inferences about longitudinal relationships.

Using structural equation modelling may lead to a slightly complex variant of the general panel model (e.g., Finkel, 1995). By means of a cross-lagged structural model (see Figures 5.1 and 5.2), a number of competing structural equation models were fitted to the data in several steps. First of all, a job demands model without cross-lagged structural paths but with temporal stabilities (model M1) was specified. Second, this so-called “stability model” was compared with three more complex models that were nearest in likelihood to the hypothesized structural model:

1. Causal Model: A model with cross-lagged structural paths from Time 1 job demands to Time 2 WHI-negative and burnout.
2. Reversed Causal Model: A model with cross-lagged structural paths from Time 1 WHI-negative and burnout to Time 2 job demands.
3. Reciprocal Model: A model with both cross-lagged structural paths representing reciprocal effects.

Similarly, a job resources model was tested in the same systematic fashion. First of all, the model without cross-lagged structural paths but with temporal stabilities was specified. Second, this stability model was compared with three more complex models that were nearest in likelihood to the hypothesized structural model:

1. Causal Model: A model with cross-lagged structural paths from Time 1 job resources to Time 2 WHI-positive and engagement.
2. Reversed Causal Model: A model with cross-lagged structural paths from Time 1 WHI-positive and engagement to Time 2 job resources.
3. Reciprocal Model: A model with both cross-lagged structural paths representing reciprocal effects.

Analysis of the modification indices for our stability model indicated that the model would be improved by reducing the amount of parameters to be estimated. Therefore, it was decided to use single indicators for the WHI-negative and WHI-positive latent variables. Given this decision, we corrected for random measurement error by setting the random error variance associated with each construct equal to the product of its variance and the quantity one minus its estimated reliability (Bollen,

1989). This approach has been used in several other studies (Bacharach, Bamberger & Conley, 1991; Frone, Russell & Cooper, 1992; Wayne & Ferris, 1990).

5.4 Results

5.4.1 Data screening

Prior to the AMOS analyses, the means, standard deviations, coefficient alphas and Pearson correlations were computed (see Tables 5.1 and 5.2). All measurement instruments used had a Cronbach's alpha coefficients equal to or higher than .70. Table 5.1 indicates mean differences between Time 1 and Time 2. Results show that mean cynicism levels decreased and mean engagement levels increased between the two years. In a similar vein, mean work pressure and WHI Positive decreased, and mean levels of control increased. Table 5.2 shows that the zero order correlations of corresponding variables between Time 1 and Time 2 variables were all significant and consistent with our theoretical expectations.

5.4.2 Model Comparisons

Our first hypothesis was that Time 1 job demands increase Time 2 WHI-negative and burnout.

Table 5.1 Means, standard deviations (SD) and coefficient alphas

Variable	Time 1			Time 2			t
	α	M	SD	α	M	SD	
WHI Negative	.74	1.73	.63	.71	1.84	.59	ns
WHI Positive	.79	2.72	.97	.85	2.51	.87	2.24 ^a
Emotional Demands	.84	1.87	.60	.79	1.95	.64	ns
Mental Demands	.75	3.11	.48	.76	3.04	.49	ns
Work Pressure	.84	2.80	.59	.80	2.59	.58	3.53 ^c
Coaching	.89	3.02	.96	.87	2.97	.95	ns
Control	.72	2.78	.53	.79	2.95	.50	3.24 ^b
Social Support	.73	3.83	.67	.79	3.71	.75	ns
Communication	.78	2.87	.61	.67	2.93	.50	ns
Exhaustion	.85	1.56	.93	.87	1.45	1.03	ns
Cynicism	.71	1.24	.92	.80	0.96	.88	3.06 ^b
Vigor	.70	4.04	1.43	.86	4.65	1.06	4.76 ^c
Dedication	.79	4.01	1.18	.88	4.80	1.07	6.89 ^c
Absorption	.81	3.64	1.08	.78	4.25	1.23	5.18 ^c

Note. α = Cronbach's alpha; ns = not significant. ^a $p < .05$, ^b $p < .01$, ^c $p < .001$

Table 5.3 presents the results for competing versions of the job demands model. The chi-square difference test (Bentler & Bonnett, 1980; Jöreskog & Sorböm, 1993) revealed significant differences between the stability model and the causal model (M1 versus M2: $\Delta \chi^2 (3) = 14.09, p < .01$); the unconstrained model with cross-lagged effects better accounted for the data than the stability model. Thus support was found for Hypothesis 1, indicating that Time 1 job demands influence Time 2 WHI-negative and burnout.

The chi-square difference test between the stability model and the reversed causal model was significant as well (M1 versus M3: $\Delta \chi^2 (3) = 11.57, p < .05$). Thus, support was found for Hypothesis 2, indicating that Time 1 WHI-negative and burnout increased Time 2 job demands. Furthermore, the chi-square difference test revealed significant differences between the stability model and the reciprocal model (M1 versus M4: $\Delta \chi^2 (6) = 19.44, p \leq .01$). However, the difference between the causal model and the reciprocal model was non-significant, suggesting that the addition of extra paths did not improve the fit of the model. So, the simpler causal model indicated relatively better fit indices than the competing models (i.e. AGFI = .89, RMSEA = .07, NNFI = .91, ECVI = .76), according to the criteria suggested by Hu and Bentler (1998) or by Schumaker and Lomax (1996). In addition to this, Browne and Cudeck (1989, 1993) have suggested that the cross-validation index (ECVI) can be used to assess the robustness of the ultimate model, when it is undesirable to split data into two (or more) sub-samples. The ECVI index for Model M2 (ECVI = .76) is lower than the ECVIs for all the other lagged models. Therefore, the causal model seems to be the most stable and most parsimonious model.

Table 5.2 Pearson correlations of the study variables

	1	2	3	4	5	6	7	8	9
1 WHI Negative (1)									
2 WHI Positive (1)	-.02								
3 Emotional Demands (1)	.39**	-.01							
4 Mental Demands (1)	.22**	.05	.14						
5 Work Pressure (1)	.30**	-.08	.31**	.47**					
6 Coaching (1)	-.05	.38**	-.12	.03	-.11				
7 Control (1)	.07	.31**	.06	.06	.01	.42**			
8 Social Support (1)	-.14	.33**	-.21**	.11	-.07	.29**	.09		
9 Communication (1)	-.23**	.21**	-.39**	-.00	-.28**	.29**	.08	.30**	
10 Exhaustion (1)	.44**	-.16*	.30**	.17*	.19**	-.08	-.08	-.25**	-.20**
11 Cynicism (1)	.17**	-.19**	.23**	-.14	.08	-.38**	-.28**	-.33**	-.24**
12 Vigour (1)	-.02	.10	-.08	.08	.07	.25**	.26**	.21**	.17*
13 Dedication (1)	.04	.33**	.06	.20**	.14*	.40**	.43**	.30**	.13
14 Absorption (1))	.13	.33**	.05	.18*	.13	.36**	.34**	.26**	.19*

		1	2	3	4	5	6	7	8	9
15	WHI Negative (2)	.54**	-.03	.24**	.05	.09	-.03	.00	-.16*	-.24**
16	WHI Positive (2)	-.01	.28**	.12	.13	.12	.22**	.18*	.07	-.06
17	Emotional Demands (2)	.22**	.11	.40**	.07	.18*	-.00	.11	-.15*	-.16*
18	Mental Demands (2)	.23**	.12	.09	.44**	.35**	.01	.09	.04	-.12
19	Work Pressure (2)	.25**	-.00	.11	.14	.34**	-.02	.12	-.13	-.08
20	Coaching (2)	-.00	.23**	-.06	.01	-.09	.36**	.11	.30**	.18*
21	Control (2)	.07	.21**	-.02	.01	-.06	.26**	.47**	.14	.09
22	Social Support (2)	-.17*	.26**	-.19**	-.02	-.05	.25**	.09	.43**	.25**
23	Communication (2)	-.03	.12	-.22**	-.14	-.25**	.26**	.01	.17*	.42**
24	Exhaustion (2)	.33**	-.03	.17*	.10	.12	-.04	-.04	-.15*	-.19**
25	Cynicism (2)	.12	-.14	.12	-.13	-.00	-.22**	-.16*	-.23**	-.19**
26	Vigour (2)	-.01	.20**	-.01	-.15*	.10	.18*	.32**	.12	.08
27	Dedication (2)	-.02	.27**	.04	.28**	.17*	.24**	.28**	.19**	.17*
28	Absorption (2)	.05	.30**	.07	.18*	.16*	.22**	.22**	.15*	.11



		10	11	12	13	14	15	16	17	18
11	Cynicism (1)	.36**								
12	Vigour (1)	-.31**	-.32**							
13	Dedication (1)	-.26**	-.56**	.59**						
14	Absorption (1))	-.21**	-.35**	.59**	.79**					
15	WHI Negative (2)	.26**	.09	.10	.05	.12				
16	WHI Positive (2)	-.05	-.22**	.12	.25**	.26**	.05			
17	Emotional Demands (2)	.10	.04	.09	.11	.14	.37**	.14		
18	Mental Demands (2)	.09	-.09	.06	.16*	.22**	.24**	.16*	.21**	
19	Work Pressure (2)	.06	-.03	.13	.14	.22**	.40**	.08	.28**	.42**
20	Coaching (2)	-.16*	-.13	.04	.13	.11	-.09	.17*	-.03	.08
21	Control (2)	-.05	-.13	.07	.22**	.18*	-.00	.04	-.03	.05
22	Social Support (2)	-.18*	-.16*	.03	.16	.12	-.26**	.12	-.15*	.03
23	Communication (2)	-.08	-.16*	.06	.10	.10	-.05	.10	-.11	-.15*



		10	11	12	13	14	15	16	17	18
24	Exhaustion (2)	.52**	.27**	-.18*	.17*	-.09	.42**	-.16	.29**	.20**
25	Cynicism (2)	.23**	.36**	-.26**	-.30**	-.25**	.09	-.21**	.12	-.08
26	Vigour (2)	-.27**	-.31**	.43**	.45**	.51**	.02	.45**	.07	.24**
27	Dedication (2)	-.26**	-.35**	.37**	.52**	.53**	.02	.42**	.05	.27**
28	Absorption (2)	-.19*	-.24**	.43**	.45**	.57**	.17*	.43**	.17*	.28**

	19	20	21	22	23	24	25	26	27
20 Coaching (2)	-.03								
21 Control (2)	.11	.26**							
22 Social Support (2)	-.13	.43**	.35**						
23 Communication (2)	-.10	.27**	.09	.26**					
24 Exhaustion (2)	.26**	-.11	-.04	-.29**	-.17*				
25 Cynicism (2)	-.00	-.20	-.22**	-.23**	-.24**	.49*			
26 Vigour (2)	.19*	.18*	.16*	.19**	.09	-.41**	-.48**		
27 Dedication (2)	.16*	.25**	.18*	.24**	.16*	-.35**	-.62**	.80**	
28 Absorption (2)	.24*	.14	.08	.14	.11	-.20**	-.36**	.77**	.81**

Note. * $p < .05$, ** $p < .01$



Analysis of explained variance for the this model indicated that the model variables explained 87% of the variance in WHI-negative at Time 2, and 50% of the variance in burnout at Time 2. Our third hypothesis was that Time 1 job resources increase Time 2 WHI-positive and engagement. Table 5.4 presents the results for the resources model. No significant difference in chi-square was found between the stability model and the causal model (M2), meaning that the cross-lagged model does not better account for the data than the stability model. Thus Hypothesis 3 was rejected, indicating that job resources at Time 1 do not influence WHI-positive and engagement at Time 2. However, the chi-square difference test between the stability model and the reversed causal model was significant (M1 versus M3: $\Delta \chi^2 (3) = 10.97, p < .05$). Thus, support was found for Hypothesis 4, indicating that Time 1 engagement and WHI-positive influenced job resources at Time 2. The chi-square difference test between the stability model and the reciprocal model was significant (M1 versus M4: $\Delta \chi^2 (3) = 12.96, p < .05$). However, the chi-square difference between the model with reversed paths and with all cross-lagged paths was non-significant, suggesting that the addition of extra paths did not improve the fit of the model. Taken together, the reversed causal model indicated relatively better fit indices than the competing models (i.e. AGFI = .90, RMSEA = .04, NNFI = .97, ECVI = 1.09), according to the criteria suggested by Hu and Bentler (1998) or by Schumaker and Lomax (1996). The ECVI index for Model M3 (ECVI = 1.09 is less than the ECVIs for all the other lagged models. Therefore, the reversed causal model seems to be the most stable and most parsimonious model. Analysis of explained variance for the this model indicated that the model variables explained 15% of the variance in WHI-positive at Time 2, and 49% of the variance in engagement at Time 2.

The specific causal effects should be examined as well. Figure 5.3 represents the estimated structural coefficients of the causal model for the data relating to the demands model. Significant relationships were found between Time 1 job demands and Time 2 WHI-negative ($\beta = -.65, p < .01$), and between Time 1 WHI negative and Time 2 burnout ($\beta = -.40, p < .01$). However, the existence of negative relationships clearly suggests a so-called suppressor effect in the data (Maassen & Bakker, 2001). Indeed, the probability of their occurrence is relatively high in models with latent variables, in which the suppressed variable is corrected for measurement error. If a suppressor variable is involved, the interpretation of the effects of an independent

variable on the dependent variable in a path model (Pedhazur, 1982) requires reassessment. Maassen and Bakker (2001) suggest that when a suppressor and another explanatory variable measure the same thing, but at different times, an interpretation in terms of change is meaningful. Such a change effect can be assessed using equations to assess change (see Maassen & Bakker, 2001, for a full discussion). An example of such equations for Figure 3 is as follows:

$$\text{WHI-negative } t_2 = a * \text{JD}t_1 + b * \text{JD}t_2 + e_1$$

$$\text{Burnout } t_2 = a * \text{WHI}t_1 + b * \text{WHI}t_2 + e_2$$

where e_1 and e_2 are the error terms of WHI-negative and burnout, respectively. From Figure 3, suppressor effects are indicated along two paths; from Time 1 job demands to time 2 WHI-negative ($\beta = -.65$) and from Time 1 WHI-negative to Time 2 burnout ($\beta = -.40$). These paths are of a similar magnitude to their respective simultaneous paths (i.e. from Time 2 job demands (.73) to Time 2 WHI-negative and from Time 2 WHI-negative (.45) to Time 2 burnout).

Table 5.3 Demands Model: Goodness-of-Fit Indices and Chi-square Difference Tests of Nested Structural Models, N=193

Model	χ^2	df	Comparison	$\Delta \chi^2$	Δ df	AGFI	RMSEA	NNFI	ECVI
Stability Model (M ₁)	89.68	45				.88	.07	.88	.81
Causal Model (M ₂)	75.59	42	M ₁ vs. M ₂	14.09**	3	.89	.07	.91	.76
Reversed Causal Model (M ₃)	78.11	42	M ₁ vs. M ₃	11.57*	3	.89	.07	.90	.78
Reciprocal Model (M ₄)	70.24	39	M ₁ vs. M ₄	19.44**	6	.89	.07	.91	.77
			M ₂ vs. M ₄	5.35	3				
			M ₃ vs. M ₄	7.87*	3				

Note. * $p < .05$; ** $p < .01$; *** $p < .001$, χ^2 = chi-square, df = degrees of freedom; AGFI = adjusted goodness of fit index; RMSEA = root mean square of approximation; NNFI = non-normed fit index; ECVI = Expected cross-validation index



Table 5.4 Resources Model: Goodness-of-Fit Indices and Chi-square Difference Tests of Nested Structural Models, N=193

Model	χ^2	df	Comparison	$\Delta \chi^2$	Δ df	AGFI	RMSEA	NNFI	ECVI
Stability Model (M ₁)	126.24	92				.89	.04	.96	1.12
Causal Model (M ₂)	120.66	89	M ₁ vs. M ₂	5.58	3	.89	.04	.97	1.12
Reversed Causal Model (M ₃)	115.27	89	M ₁ vs. M ₃	10.97*	3	.90	.04	.97	1.09
Reciprocal Model (M ₄)	113.28	86	M ₁ vs. M ₄	12.96*	6	.89	.04	.97	1.11
			M ₂ vs. M ₄	7.38	3				
			M ₃ vs. M ₄	1.99	3				

Note. * $p < .05$; *** $p < .001$, χ^2 = chi-square, *df* = degrees of freedom; AGFI = adjusted goodness of fit index; RMSEA = root mean square of approximation; NNFI = non-normed fit index; ECVI = Expected cross-validation index



In both situations, if we constrain the magnitude of both relationships to be equal, but with opposite signs, the fit to the data does not change for job demands and WHI-negative ($\Delta \chi^2 (2) = 1.21$, n.s.), suggesting that both the current level and the changing level of job demands played a role in influencing WHI-negative at Time 2. Additionally, there is a small change in chi-square for WHI-negative and burnout ($\Delta \chi^2 (2) = 9.43$, $p < .01$). Although significant, the small chi-square difference allows us to conclude that both current and changing levels of WHI-negative played a role in influencing burnout at Time 2.

De Jonge (1995) suggests a remedy to the suppressor effect is to simply look at the total effects, which involves summing the direct and indirect effects to arrive at the total effect. Analysis of the output indicated that the total effect of time 1 job demands on time 2 WHI-negative is .23 (or 23% of explained variation) accordingly. This suggests that higher levels of job demands cause higher levels of WHI-negative. In a similar vein, the total effect of Time 1 WHI-negative on Time 2 burnout is .65. Higher levels of WHI-negative lead to higher levels of burnout.

Figure 5.4 represents the estimated structural coefficients of the reciprocal model for the data relating to the resources model. As can be seen, engagement at Time 1 influences WHI-positive at Time 2 ($\beta = .22$, $p < .01$) suggesting that higher levels of engagement at Time 1 lead to higher levels of WHI-positive interference at Time 2. Therefore, the evidence suggests that reported engagement at Time 1 is a causal factor.

5.4.3 Mediation Analysis

Mediation is typically assessed by using a sequence of independent regression equations to measure the various paths in a complex model, as initially suggested by Judd and Kenny (1981). The present approach taken to the assessment of mediation is the one recommended by Holmbeck (1997). According to this approach, there is a latent predictor variable (A), a hypothesized mediator variable (B), and a latent outcome variable (C). Firstly, one assesses the fit of the direct path between predictor and criterion (A to C).

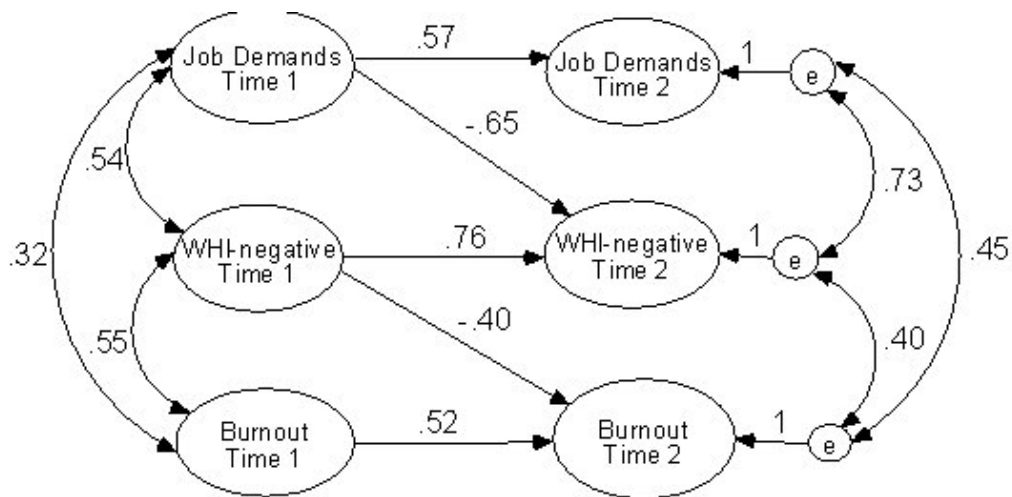


Figure 5.3 Estimated structural coefficients of the causal model

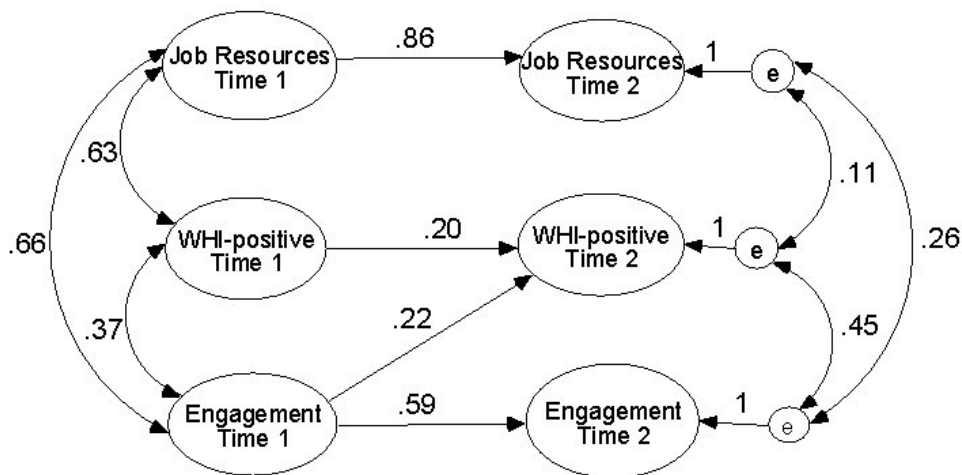


Figure 5.4 Estimated structural coefficients of the reciprocal model

Assuming the overall fit provides an adequate fit to the data, the A to B and B to C paths are examined. A to C, A to B, and B to C should all be significant in the direction predicted. The final step in assessing whether there is a mediational effect is to assess the fit of the A to B to C model under two conditions: (1) when the A to C path is constrained to zero, and (2) when the A to C path is not constrained. One then examines whether the second model provides a significant improvement in fit over the first model. If there is a mediational effect, the addition of the A to C path to the constrained model should not improve the fit.

Hypotheses 5, 6, 7 and 8 were tested by examining parsimonious models with WHI-negative/WHI-positive as the mediator between job demands/job resources and burnout/engagement. Initial analysis indicated that the criteria for models to test

Hypotheses 5, 6, and 7 were not met, in that, there were not significant paths between the predictor, mediator and criterion (paths A, B and C in our theory). These hypotheses were therefore rejected. Hypothesis 8, which stated that Time 2 WHI-positive mediates the relationship between Time 1 job resources and Time 2 engagement (exposure time effect), was tested, and met all the criteria described by Holmbeck (1997). In accordance with the criteria, the model was calculated with the path from the predictor to the criterion constrained to zero ($\chi^2(19) = 44.294$, AGFI = .895, RMSEA = .083, NNFI = .936, ECVI = .408). In the next step, this path was unconstrained and the model was estimated ($\chi^2(18) = 37.962$, AGFI = .903, RMSEA = .076, NNFI = .946, ECVI = .385).

Comparison between the two models suggests that allowing the path from predictor to criterion to be unconstrained improves the fit of the model ($\Delta \chi^2(1) = 6.33$, $p < .05$). However, Holmbeck (1997) also suggests that partial mediation can be indicated by examining the A to C path coefficients for when the proposed mediator is and is not included. Using this approach, it was found that the path coefficient from job resources at Time 1 to engagement at time 2 reduced with the inclusion of the mediator WHI-positive at Time 2; (from $\beta = .37$ to $\beta = .23$). In addition, analysis of the direct and indirect effects (as suggested by Brown, 1997) indicates that the direct effect between job resources and engagement accounted for 62% of the covariation between the two. This indicates that the more resources that people had at Time 1, the more engaged they felt at Time 2, independent of WHI-positive at Time 2. Overall, no support was found for the role of WHI-negative as mediator, but partial support was found for the role of WHI-positive as a mediator between job resources and feelings of engagement.

5.5 Discussion

The main purpose of the present study was to test whether WHI was a predictor or outcome of burnout and engagement. In addition, a job demands-burnout model and a job resources-engagement model of job stress were examined.

In terms of the demands model, support was found for Hypothesis 1, indicating that Time 1 job demands increased WHI-negative at Time 2, and WHI-negative at Time 2 increased burnout at Time 2. This means that employees who were confronted with work overload, emotional demands, and mental demands at T1, experienced WHI two years later, which, in turn, coincided with feelings of burnout



(exhaustion and negative attitudes towards work). However, analysis of the coefficients indicated a suppressor effect was present and, consequently, we needed to look at the total effects as an indicator of the relationship. The total effects were significant, suggesting they were causally related. The practical significance of the suppressor effect is that it suggests that both current and changing levels of job demands played a part. Such an interpretation is consistent with advice offered by Maassen and Bakker (2001), who suggest that when a suppressor and another explanatory variable measure the same thing but at different times, an interpretation in terms of change is meaningful. In addition, the present study did not find support for reversed causal effects in disagreement with previous studies that found burnout to be a predictor (Leiter & Durrup, 1996; Shirom & Oliver, 1986). We can only speculate as to the reasons. It might be that the effects of WHI-negative and burnout take place within a year rather than the two-year period used in this study.

In terms of the resources model, no support was found for Hypothesis 3, which stated that job resources at Time 1 increases WHI-positive and engagement at Time 2. It may be that resources only have an impact upon WHI-positive when people feel engaged in their work to begin with. Consistently, support was found for Hypothesis 4, reversed effects, indicating that engagement at Time 1 increased WHI-positive at Time 2. Engagement is defined as a positive, fulfilling, work-related state of mind (Schaufeli et al., 2002) and appears to be causally related to the ability of work to have positive influence on home life. Thus positive experiences at work gives energy that can lead to positive spillover from work to home. Employees who feel vital and strong, and are dedicated to their work probably bring this positive mood home with them. Additionally, it is conceivable that there is transference of skills from work to the home setting as well. This finding is consistent with previous studies that found theoretically similar effects (e.g., Grzywacz & Marks, 2000). Crouter (1984), for example, showed that workers who developed decision making skills at work began to use these newly developed skills to deal more effectively with their children.

The innovation of the present study concerned the measurement of positive aspects of work. However, the disadvantage of such newness is that discussion of our reversed effects can only be contrasted with previous literature on reversed effects, which primarily examined negative (stress) processes. In terms of finding reversed effects, such effects have been found by other researchers. For example, using longitudinal data, both Kelloway and Barling (1994) and Higginbottom, Barling and



Kelloway (1993) found that general measures of strain predicted perceptions of role characteristics (e.g., marital satisfaction). Kelloway, Gottlieb and Barnham (1999) suggest that it is equally plausible that perceptions of WHI would be influenced by individuals' experience of stress and found evidence that WHI at Time 2 was predicted by a stress reaction (i.e., stress symptomatology scale) at Time 1. There is evidence that affective states (e.g., depressed mood) may increase the availability of thoughts and information that will be consistent with the mood state (e.g., Bower, 1981). Thus, an empirical association between strain and WHI might be a function of selective recall or attention as individuals search for the 'causes' of their affective states. In such a scenario, it is plausible that perceptions of interference (both positive and negative) between work and home could be influenced by individuals' experience of positive and negative experiences. In terms of positive experiences, Hobfoll's (1989) conservation of resources theory, suggests that such positive experiences at work can offer resources (e.g., support or self-esteem) that help individuals to deal with other demands associated with the fulfillment of roles.

Moreover, the idea that stressors (or resources) could be influenced by strains (or feelings of engagement) finds support in the current transactional model of Edwards (1998). This cybernetic model of stress emphasizes the reciprocal nature of the stress process, and as such suggests that WHI and burnout/engagement can also influence job demands and job resources. In terms of burnout, reversed effects between emotional exhaustion and (perceived) job demands have been found (Leiter & Durrup, 1996; Shirom & Oliver, 1986), suggesting that burnout can be a predictor as well as a consequence. The present study adds to the literature on reversed effects by indicating that reversed effects can also occur between positive outcomes and positive interference.

The majority of research on the relationship between the work-home interface has focused on WHI-negative (Greenhaus, 1989), as opposed to WHI-positive, and as such the present research represents an extension of previous cross-sectional research that has examined WHI-positive (Grywacz & Marks, 2000). Although the positive consequences of WHI (and Home-Work Interference) have occasionally been discussed (Kanter, 1977), very little research has identified such positive linkages. Indeed, the present research is timely given the recommendations made by a recent review of the area (Geurts & Demerouti, 2003), which suggests that it is functional to consider how work positively affects the home domain. The present study adds to an



already growing trend towards interest in human strengths and optimal functioning rather than on weaknesses and malfunctioning.

The fact that we found no evidence of a mediational role for WHI-negative is inconsistent with other cross-sectional studies in the field (Frone et al., 1992; Geurts, Rutte & Peeters, 1999; Kinnunen & Mauno, 1998; Parasuraman, Purohit, & Godschalk, 1996; Stephens, Franks, & Atienza, 1997). Given that we examined longitudinal data, this may suggest that our time lag of two years was long enough for individuals to recover from the effects of WHI-negative. This all suggests that we need to look at WHI in a more dynamic format, in order to chart the way in which people experience such interference over a pro-longed time period. On the other hand, the positive finding with regard to the mediational role of WHI-positive suggests that job resources can have a long-term effect of the positive feelings that people bring from their job into their home domain. A more fine grained analysis of the relationships between the specific antecedents and WHI (see Table 5.2), indicated that work pressure and emotional demands were most strongly associated with WHI-negative (at both time points) and coaching was most strongly associated with WHI-positive (at both time points). Such results are consistent with the idea that WHI-negative is driven by a high workload coupled with demanding client interactions, while WHI-positive is dependent on a supporting supervisor.

5.5.1 Comparison between the Demands and Resources Models

Within both the demands and resources models, different processes are involved. It is important to recognise that the WHI-negative model was more stable over time and accounted for more explained variance than WHI-positive model. Such a fact suggests that WHI-negative can have a more considerable negative impact in comparison with the potential positive impact of WHI-positive. So, the bad aspects of work spillover are more reliably than the positive ones. In agreement with Schaufeli et al. (2002), engagement is not simply the ‘opposite’ of burnout, but the process appears to be very different with the reversed effects suggesting that individuals need to be engaged at work before positive spillover has an effect. This all adds weight to the suggestion by Schaufeli et al. (2002) that engagement needs to be studied as an independent construct from burnout. This result represents a further explication of the Job-Demand Resources theory (Demerouti et al., 2001) by extending the model with the inclusion of engagement (in agreement with Schaufeli & Bakker, 2002). In

addition, the differential results between our demands and resources model indicate that these processes work in a different way and need to be understood in this light. Indeed, it is appropriate to recognise that the explained variance between both models suggest that the relationship between demands, WHI-negative and burnout is more robust and predictive than the relationships contained within the resources model.

5.5.2 Limitations

The first issue concerns our study population. While studying people in just one occupation does have the advantage of helping to reduce confounding that could be associated with socio-economic status, a more substantial disadvantage is the difficulty in generalising the results to other occupations. Therefore, we have to be cautious in generalising our findings to a wider (and more diverse) sample of employees.

The second limitation relates to the time-lag used in this study. Two of the important assumptions of cross-lagged panel analysis concern congruencies of measurement/causal lags and equality of causal lags (Shingles, 1985). The first assumption refers to the fact that the interval between the observations must be approximately of the same length as the ‘true’ causal lag—that is the period it takes for the cause to take effect. However, as the length of this causal lag is unknown, it may be difficult to satisfy this assumption. In the present study, two years were chosen to even out the effects of seasonal variation. SO? The second assumption concerns the equality of causal lags. In essence, the time that variable A needs to affect variable B may be shorter or longer than the time B needs to affect A. Once again, it is difficult to know to what extent the causal lags differ. In this sense, a multi-wave study with shorter and longer time lags might have been more revealing.

5.5.3 Practical implications

Evaluating models of both demands and resources helps to inform organisational interventions. The data suggest that reducing job demands can help to reduce WHI-negative, and in turn reducing WHI-negative can help to lessen burnout. The results in the present study are consistent with research among white-collar professionals, whereby some of the roots of burnout can be located in boundary crossing problems between work and home and high workload (Winnubust, 1993).

Given that job demands are theorised to play a central role in the hypothesised energetic process that could lead to burnout (Demerouti et al., 2001; Schaufeli &



Bakker, 2002), reducing such demands is desirable. Preventive strategies and interventions exist to tackle high job demands (Quick, Nelson & Hurrell, 1997) and reduce symptoms of burnout (Schaufeli & Enzmann, 1998). Results with regard to the resources model suggests that individuals who are highly engaged with their careers are also very engaged with their home domains. Perhaps a satisfying career enables us to relax and enjoy relationships with family members (Friedman & Greenhaus, 2000). Additionally, it may also be that people in supportive organisations are more likely to receive personal support from their partners/families because their work environment has prompted them to be more psychologically open to receiving such support.

5.5.4 Future research

At a conceptual level, we assessed a job demands and resources model separately. Such an approach was theoretically driven (Schaufeli, et al., 2002) and necessitated by the need to maximize the relationship between variables studied and the robustness of a SEM model. Future studies with bigger samples could examine a “grand model” that integrates and hypothesises about the relationships between demands and resources. Such research can help to further examine the factors responsible for positive and negative WHI.