

**JOB AND HOME CHARACTERISTICS ASSOCIATED WITH
WORK-HOME INTERACTION IN THE MINING
ENVIRONMENT**

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COMMENTS

The reader is reminded of the following:

- The editorial style as well as the references referred to in this mini-dissertation follows the format prescribed by the Publication Manual (5th edition) of the American Psychological Association (APA). This practice is in line with the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom) to use APA style in all scientific documents as from January 1999.
- The mini-dissertation is submitted in the form of a research article. The editorial style specified by the South African Journal of Industrial Psychology (which agrees largely with the APA style) is used, but the APA guidelines were followed in constructing tables.

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ABSTRACT

Title: Job and home characteristics associated with work-home interaction in the mining environment.

Key terms: Job characteristics, home characteristics, negative work-home interference, positive work-home interference, negative home-work interference, positive home-work interference, mining environment.

The mining environment forms the bedrock of the South African economy. It is an environment in which people's lives are put at risk due to the nature of the work. Employees in the mining industry work with dangerous materials and use heavy machinery and equipment that can have negative consequences. Mine workers also experience high job demands that require much effort, and yet also experience a lack of resources to fulfil job requirements. Positive aspects of this environment include diverse social support systems, health care, skills development programmes and information systems. Mine workers can therefore experience negative and positive behaviour towards work which can influence their behaviour at home, and vice versa. However, there seems to be a lack of research investigating specific job and home characteristics associated with work-home interaction in the mining environment.

The first objective of this study was to determine whether job and home characteristics play a role in negative or positive work-home interference (WHI) and in negative or positive home-work interference (HWI). The second objective was to determine the predictors of each domain. The last objective was to determine the variance of WHI and HWI explained by both job and home characteristics in the mining environment. A cross-sectional survey design was used. Random samples ($n = 320$) were taken from employees of different Patterson grade levels working in various gold, platinum and phosphate mining houses in Gauteng, the North-West and Limpopo provinces. A job characteristics questionnaire, home questionnaire and the '*Survey Work-Home Interaction – Nijmegen*' (SWING) were administered. The factor structures were tested with structural equation modelling. Cronbach alpha coefficients were used to determine the reliability of the measuring instruments. The relationship between

variables was determined with Pearson product-moment correlations and multiple regression analyses.

The results indicated that significant predictors of Negative WHI were Pressure, Poor Working Conditions and a Lack of Instrumental Support and explained 34% of the variance. Autonomy was found to be the only predictor of Positive WHI, explaining 10% of the variance. Significant predictors of Negative HWI were Home Pressure and a Lack of Home Autonomy, which explained 9% of the variance. Finally, it was found that only Home Pressure predicted Positive HWI, accounting for 3% of the variance.

Recommendations were made for the organisation and for future research.

OPSOMMING

Titel: Werks- en huiskenmerke geassosieer met werk-huisinteraksie in die mynomgewing.

Sleuteltermes: Werks- en huiskenmerke, negatiewe werk-huis-inmenging, positiewe werk-huis-inmenging, negatiewe huis-werk-inmenging, positiewe huis-werk-inmenging in 'n mynomgewing.

Die mynomgewing vorm die grondslag van Suid-Afrika se ekonomie. Dit is 'n omgewing waarin mense hul lewens in gevaar stel weens die aard van die werk. Werknemers in die mynbedryf werk met gevaarlike materiaal, gebruik swaar masjienerie en toerusting wat kan lei tot negatiewe gevolge. Mynwerkers ervaar ook 'n hoë werkslading wat energie verg en ervaar dikwels 'n gebrek aan ondersteuning om aan hulle werksvereistes te voldoen. Positiewe aspekte van die omgewing sluit in 'n diverse sosiale ondersteuningsstelsel, gesondheidsorg, vaardigheidsontwikkelingsprogramme en inligtingsstelsels. Daarom mag mynwerkers negatiewe en positiewe gedrag teenoor die werk openbaar wat hul gedrag by die huis kan beïnvloed, en andersom. Dit blyk egter dat daar onvoldoende navorsing gedoen is wat spesifieke werks- en huiskenmerke soos geassosieer met werk-huisinteraksie ondersoek in die mynomgewing.

Die eerste doelstelling van die studie was om te bepaal of werks- en huiskenmerke 'n rol speel in negatiewe of positiewe werk-huisinmenging (WHI) en negatiewe of positiewe huis-werkinmenging (HWI). Die tweede doelstelling was om die voorspellers van elke gebied te bepaal. Die laaste doelstelling was om die variansie van WHI en HWI te bepaal wat aan beide werks- en huiskenmerke in die mynomgewing toegeskryf kan word. 'n Dwarsdeursnee-opnameontwerp is gebruik. 'n Ewekansige steekproewe ($n = 320$) is geneem van vir verskillende Patterson-graad vlakwerknemers in diens van verskeie goud-, platinum- en fosfaatmyne in Gauteng-, die Noord-Wes- en die Limpopoprovinsies. 'n Werkskenmerkevraelys, 'n Huiskenmerkevraelys en die 'Survey Work-Home Interaction – Nijmegen' (SWING) is as meetinstrumente gebruik. Die faktorstrukture is getoets deur strukturelevergelykingsmodellering. Cronbach-alfakoëffisiënte is gebruik om die geldigheid te bepaal. Die verband tussen veranderlikes is bepaal deur die Pearson-produktmomentkorrelasies en meervoudige regressieanalise.

Die resultate het getoon dat Druk, Swak Werksomstandighede en 'n Gebrek aan Instrumentele Ondersteuning prominente voorspellers van Negatiewe WHI was, wat 34% van die variansie verklaar het. Outonomie was die enigste voorspeller van Positiewe WHI, wat 10% verklaar het. Prominente voorspellers van Negatiewe HWI was Druk by die Huis, wat 9% van die variansie verklaar het. Laastens is gevind dat net Druk by die Huis Positiewe HWI verduidelik, wat 3% van die variansie verklaar het.

Aanbevelings is gemaak vir die organisasie en vir verdere navorsing.

INTRODUCTION

This mini-dissertation focuses on job characteristics and home characteristics associated with negative and positive work-home interference and negative and positive home-work interference within the mining environment. This chapter presents the problem statement and a discussion of the research objectives, in which the general objectives and specific objectives are set out. The research method is explained and an overview of chapters is given.

1.1 PROBLEM STATEMENT

The mining industry forms the bedrock of the South African economy. Historically in South Africa, the concern for the health and safety of workers arose from the dangers inherent in mining. It is an environment in which people's lives are put at risk due to the nature of the work. Employees in the mining industry also work with dangerous materials and use heavy vehicles or machinery. Thus, the equipment and techniques used are varied and complex, with many areas requiring significant safety and skills training (Calitz, 2004). Furthermore, various working conditions (e.g. underground temperature, long working hours, unsafe working conditions, highly unionised environment and pressure to perform) can lead to negative consequences, including ill health, burnout, absenteeism, workplace injury, violence, drug and alcohol abuse and lower productivity (Sauter et al., 2003). Mine workers also experience high job demands that require a great deal of effort and, concomitantly, a lack of sufficient resources to fulfil job requirements (Calitz, 2004). On the other hand, some positive aspects of the mining environment are the diverse social support systems, health care and skills development programmes, as well as information systems. As a result, mine workers can also experience positive behaviour towards work, co-workers and supervisors and an increase of self-esteem, positive emotions about the future and better physical and psychological health (Greenhaus & Powell, 2006).

All these conditions related to the work environment of mine workers could influence their relationship between work and non-work. According to Geurts and Demerouti (2003), work refers to a set of prescribed tasks that an individual performs while occupying a position in an organisation, whereas non-work refers to activities and responsibilities within the family domain, as well as activities and obligations beyond one's own family situation.

Based on a definition by Geurts and Demerouti (2003), work-home interaction refers to the process of interaction between a person's work and non-work (home) situation. Thus, it refers to the process whereby one's functioning in one situation is influenced by demands from the other situation. This interaction can either be negative or positive. Geurts et al. (2005) identified four types of interaction, namely negative work-home interference (WHI), referring to a situation in which negative load effects built up at work hamper functioning at home; negative home-work interference (HWI), referring to negative load effects that have built up in the home situation and interfere with functioning at work; positive WHI, where positive load effects built up at work facilitates functioning at homes; and positive HWI, referring to positive load effects developed in the home domain that influence functioning at work.

The growing importance of the WHI and HWI is a consequence of various factors. According to Burke (2004), the dramatic increase in number of women in the workforce (including women and children) has contributed to interference between work and home. There is also some evidence that managerial and professional women and men are working harder and longer hours, especially in the industrial and development industries. Organisational downsizing and restructuring, the recent economic downturn followed by a jobless recovery, and increasing levels of international competition, have increased work demands for many individuals. Flexibilisation of work time schedules (e.g. 24-hours economy) also contributes to WHI, which is an appeal to employees' flexibility to work irregular hours and during 'unsocial' hours (i.e. evening work, night work, weekend work and working overtime) (Geurts, Rutte, & Peeters, 1999). The most evident factor involves the advances in technology, which make it possible to work twenty-four hours a day, seven days a week. These technology tools include e-mail, mobile phones and laptop computers. Other factors contributing to the strain between work and home include changes in family structures, dual-earner and single parent households, extended family as well as the blurring of gender roles and a shift in employee values. These factors have led to escalating demands on individuals' time and energy, which require greater mental and emotional efforts (rather than physical effort) (Montgomery, Panagopoulou, Peeters, & Schaufeli, 2005). Thus, an increasing number of people are confronted with high pressures in both their work and home life, and many of their daily hassles stem from job responsibilities that are incompatible with home or family responsibilities (Janssen, Peeters, De Jonge, Houkes, & Tummers, 2004). This can have serious consequences for the individual and the organisation.

According to Geurts and Demerouti (2003), the consequences of WHI transcend stress-related and organisational outcomes and also tend to spread to a great extent to one's private life. They have categorised the consequences of the work-non-work interface into five major categories, including psychological, physical, attitudinal, behavioural, and organisational consequences.

The first category comprises psychological consequences. This includes work-related stress, burnout and general psychological strain. These are generally related to negative WHI (Geurts et al., 2005). Related consequences of positive WHI include engagement, a positive attitude towards work, co-workers and supervisors, and improved self-esteem and self-concept. The physical category includes somatic and physical symptoms such as headaches, upset stomach, fatigue and sleep deprivation. Among attitudinal consequences, satisfaction has most frequently been documented in previous research. Satisfaction includes job, life and marital satisfaction. It has been found that satisfaction with work and family has an effect on an individual's happiness, life satisfaction and the perceived quality of life and also includes organisational commitment. Behavioural consequences received less attention. However, there are indications that negative influence from work is related to an increased consumption of stimulants such as coffee, cigarettes and alcohol (Burke, 2004). Organisational outcomes include increased turnover, absenteeism and decreased productivity (Geurts & Demerouti, 2003).

In spite of the importance of WHI/HWI and the research conducted on this phenomenon, there are still some limitations in the literature. These limitations can be classified into two main categories. Firstly, research often exclusively focuses on the interference from work to home and ignores the fact that the home domain could also influence the work domain. Secondly, researchers fail to research positive aspects of WHI. It is important to consider how work positively affects non-work and how non-work (e.g. family) can facilitate one's functioning at work. According to Geurts and Demerouti (2003), this can be seen as an expression of a more general trend towards positive psychology that focuses on human strengths and optimal functioning rather than on weaknesses and malfunctioning.

Eby, Casper, Lockwood, Bordeaux, and Brinly (2005) argue that research on the favourable effects of work on non-work (and non-work on work) is critical to understand the

complexities of WHI. Frone (2003) also makes a similar plea that work and family can positively influence one another through work-non-work facilitation. This is defined as the extent to which participation in one domain (work or family) is made easier by experience and skills development in the other domain. From this point of view, it is necessary for researchers to also focus on the spill-over from non-work to work. Organisational psychology research was criticised for not considering the totality of individuals' non-work lives and it seems that little progress has been made in this area. Demerouti, Geurts, and Kompier (2004) argue that employees may benefit from participating in multiple roles, and that these benefits may outweigh the difficulties (e.g. marital quality is a buffer for job-related stress, etc.). Furthermore, it is also likely to be associated with extra resources (e.g. social contact, etc.), skills and opportunities that might improve or facilitate functioning in both domains. Therefore, research should consider the antecedents of WHI, focussing specifically on job and home characteristics associated with negative and positive WHI/HWI. A finer grained analysis of the home and work situation may not only be instrumental to improve our understanding of how work and non-work affect each other, but also how the work-non-work interface might be influenced by specific work-family policies.

Many research studies classify job characteristics into two broad categories, namely job demands and job resources. Bakker and Geurts (2004) define job demands as those physical, psychological, or organisational aspects of the job that require sustained physical and/or mental effort and are, therefore, associated with certain physiological and/or psychological costs. Examples are a high work pressure (i.e. high work pace and tight deadlines), high physical or emotional demands, and role conflicts. Job resources are defined as the physical, psychological, or organisational aspects of the job that may be functional in meeting task requirements (i.e. job demands) and may thus reduce the associated physiological and/or psychological costs – and at the same time stimulate personal growth and development. Resources may be located in the task itself (e.g. performance feedback, skill variety or autonomy), as well as in the context of the task, for instance, organisational resources (e.g. career opportunities or job security) and social resources (e.g. supervisor and co-worker support).

Several empirical studies have confirmed the associations between these work characteristics and work-home interaction. Research by Demerouti, Geurts, and Kompier (2004) found that job demands were strongly related to negative influence from work (negative WHI), and job

control and particularly job support were associated with positive WHI. Thus, employees particularly experience interference between work and family life when they are exposed to a high workload and demanding interactions with clients. These job demands evoke feelings of exhaustion that spill over to the private domain. The end result is that employees worry about their work when at home and are unable to fulfil their domestic obligations (Bakker & Geurts, 2004). On the other hand, job resources such as opportunities for development, autonomy, and performance feedback evoke more positive experiences, where employees are happily engrossed in their work. This, according to Bakker and Geurts (2004), has a positive influence on private life, as employees come home cheerfully after a successful day at work.

Unfortunately, there is little evidence on the potential impact of home characteristics on WHI. Home characteristics involve the situation at home, which include tasks required to maintain a household and childcare responsibilities. Home characteristics can be divided into home demands, household tasks, home control and home support. Home control and support are usually related to positive influence in the work domain, thus facilitating functioning in the work domain. Some studies have taken into account the bidirectional nature of WHI, suggesting that home characteristics are more likely to foster HWI, rather than HWI (see Frone, 2003 for an overview). Research by Demerouti et al. (2004) found that higher home demands were associated with a higher level of negative HWI. The research also found that home control and home support were not related to either positive or negative HWI. It seems as if only work characteristics tend to explain some variance in negative and positive HWI. Past research has found that work characteristics (work demands, work-role conflict, work-role ambiguity and job distress/dissatisfaction) are positively related to reports of work-family conflict and that home characteristics (family demands, family-role conflict, family-role ambiguity and family distress/dissatisfaction) are positively related to family-work conflict. Frone (2003) and other researchers (Bellavia & Frone, 2005; Geurts et al., 2001; Greenhaus & Powell, 2006; Peeters et al., 2005;) support these findings by stating that work characteristics generally influence work-family spill-over and that family characteristics generally cause family-work spill-over.

The following research questions emerge from the problem statement:

- What is the relationship between job characteristics and negative and positive WHI according to the literature?
- What is the relationship between home characteristics and negative and positive HWI according to the literature?
- What are the main job characteristics in the mining environment that are associated with negative and positive WHI?
- What are the main home characteristics of employees working in the mining environment that are associated with negative and positive HWI?
- What recommendations can be made regarding the relationship between job characteristics, coping and work-home interaction?

1.2 RESEARCH OBJECTIVES

1.2.1 General objectives

The general objective of this research is to investigate the job and home characteristics that are associated with work-home interaction.

1.2.2 Specific objectives

The specific objectives in this research are the following:

- To investigate the relationship between job characteristics and negative and positive WHI according to the literature
- To investigate the relationship between home characteristics and negative and positive HWI according to the literature
- To identifying the main job characteristics in the mining environment that are associated with negative and positive WHI
- To identifying the main home characteristics of employees working in the mining environment that are associated with negative and positive HWI.
- To make recommendations regarding the relationship between job characteristics, home characteristics and work-home interaction.

1.3 RESEARCH METHOD

The research method consists of a literature review and an empirical study. The results obtained from the research are presented in an article format. Because separate chapters are not targeted for literature reviews, this section focuses on aspects relevant to the empirical study that is conducted. The reader should note that a brief literature review is compiled for the purpose of the article.

1.3.1 Research design

A cross-sectional survey design with a survey as the data collection technique was used to achieve the research objectives. Cross-sectional designs are used to examine groups of subjects in various stages of development simultaneously, while a survey is a data-collection technique in which questionnaires are used to gather data about an identified population. Information collected is used to describe the population at that time. This design will also be used to assess interrelationships among variables within a population. According to Shaughnessy and Zechmeister (1997), this design is best suited to address the descriptive and predictive functions associated with the correlational design, whereby relationships between variables are examined.

1.3.2 Participants and procedure

A cross-sectional survey will be conducted among employees from various gold, platinum and phosphate mining houses in Gauteng, the North-West and Limpopo provinces. The sample will consist of employees of different Patterson grade levels (B2-E2), ranging from employees working underground to managers. Arrangement for scheduled visits and focus group sessions will be made for the purpose of gathering information on employees' work environment and factors that might help or hinder them in doing their jobs. The measuring battery will be compiled and the questionnaires will be distributed after establishing the recurring topics and main concerns of the employees. Participants will be assured of the anonymity and confidentiality with which the information would be treated, by including a letter stating the goal, importance and contact list of the study. The questionnaires will be personally collected or sent to the university by the HR consultant after three weeks.

1.3.3 Measuring battery

The following measuring instruments will be used in the empirical study:

Job characteristics. To determine the specific job demands and recourses that employees experience in their work, focus group discussions will be held in several mining houses. Employees will have to identify possible characteristics in their jobs and work environment that help or hinder them in doing their jobs. Their responses will be used to develop items for the questionnaire. All items will be rated on a four-point scale ranging from 1 (*never*) to 4 (*always*).

Home characteristics. Three home characteristics will be measured, including Pressure (eight items, e.g. “Do you have to work very fast when you have to complete tasks at home?”), Autonomy (six items, e.g. “Do you have influence in the planning of your home activities?”), and Home Support (e.g. “If necessary, can you ask people in your private life (e.g. spouse, children, friends) for help with work at home?”). All items are scaled on a four-point scale, ranging from 1 (*never*) to 4 (*always*), with higher scores indicating higher levels on that particular dimension.

Work-home interaction. The Survey Work-Home Interference Nijmegen (SWING) will be used to measure work-home interaction. The SWING is a 22-item work-home interference measure developed by researchers in the Netherlands (Geurts et al., 2005). It measures four types of work-home interaction, namely (1) Negative WHI (eight items, e.g. “How often does it happen that you do not have the energy to engage in leisure activities with your spouse/family/friends because of your job?”); (2) Positive WHI (five items, e.g. “How often does it happen that you fulfil your domestic obligations better because of the things you have learned on your job?”); (3) Negative HWI (four items, e.g. “How often does it happen that you have difficulty concentrating on your work because you are preoccupied with domestic matters?”); and (4) Positive HWI (five items, e.g. “How often does it happen that you take your responsibilities at work more seriously because you are required to do the same at home?”). All items are scored on a four-point frequency rating scale, ranging from “0” (*never*) to “3”

(*always*). The SWING has been found to be valid, equivalent and reliable by various researchers (Pieterse & Mostert, 2005).

1.3.4 Statistical analysis

The statistical analysis will be conducted with the SPSS programme (SPSS Inc., 2006) and the Amos programme (Arbuckle, 2003). The factor structures will be tested with structural equation modelling (SEM). Maximum likelihood estimation will be used with the covariance matrix of the scales as input for the analysis. The goodness-of-fit of the models will be evaluated using absolute and relative indices. The χ^2 and several other goodness-of-fit indices will be used to summarise the degree of correspondence between the implied and observed covariance matrices, including the χ^2/df ratio, the Goodness-of-Fit Index (GFI), the Incremental Fit Index (IFI), the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). Acceptable fit of the model is indicated by non-significant χ^2 values, values smaller than or equal to 0,90 for GFI, IFI and CFI and RMSEA values smaller than or equal to 0,08 (Browne & Cudeck, 1993).

Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) will be used to analyse the data. Pearson product-moment correlation coefficients will be used to specify the relationship between the variables. In terms of statistical significance, it has been decided to set the value at a 95% confidence interval level ($p \leq 0,05$). Effect sizes (Steyn, 1999) will be used to establish the practical significance of the findings. A cut-off point of 0,30 (medium effect) (Cohen, 1988) will be set for the practical significance of correlation coefficients. Multiple regression analyses will be carried out to determine the percentage variance in the dependent variable (e.g. negative and positive WHI and negative and positive HWD) that will be predicted by the independent variables (e.g. job and home characteristics).

1.4 OVERVIEW OF CHAPTERS

In Chapter 2, the relationship between job and home characteristics and work-home interference is discussed. The chapter also presents the empirical study. Chapter 3 provides the discussion, limitations, and recommendations of this study.

1.5 CHAPTER SUMMARY

This chapter discussed the problem statement and research objectives. The measuring instruments and research method used in this research were explained, followed by a brief overview of the chapters that follow.

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JOB AND HOME CHARACTERISTICS ASSOCIATED WITH WORK-HOME INTERACTION IN THE MINING ENVIRONMENT

ABSTRACT

The general objective of this study was to investigate the job- and home characteristics associated with work-home interaction in a mining environment. A random sample of 320 employees was taken from mining houses in the Gauteng-, North West- and Limpopoprovinsie, including gold, platinum and phosphate mines. A job characteristics questionnaire, a home characteristics questionnaire and the 'Survey Work-Home Interaction – Nijmegen' (SWING) were used as measuring instruments. The results indicated that significant predictors of Negative WHI were Pressure, Poor Working Conditions and a Lack of Instrumental Support which together explained 34% of the variance. Autonomy was found to be the only predictor of Positive WHI, explaining 10% of the variance. Significant predictors of Negative HWI were Home Pressure and a Lack of Home Autonomy, which explained 9% of the variance. Finally, it was found that only Home Pressure predicted Positive HWI, accounting for 3% of the variance.

OPSOMMING

Die algemene doelstelling van hierdie studie was om ondersoek in te stel na werks- en huiskenmerke wat geassosieer word met werk-huisinteraksie in die mynomgewing. 'n Ewekansige steekproef van 320 werknemers is geneem van myne in Gauteng-, die Noord-Wes- en Limpopoprovinsie, vanuit goud-, platinum- en fosfaatmyne. 'n Werkseienskappevraelys, 'n Huiskenmerkevraelys en die 'Survey Work-Home Interaction – Nijmegen' (SWING) is as meetinstrumente gebruik. Die resultate het getoon dat prominente voorspellers van Negatiewe WHI Druk, Swak Werksomstandighede en 'n Gebrek aan Instrumentele Ondersteuning was, wat 34% van die variansie verduidelik het. Outonomie was die enigste voorspeller van Positiewe WHI, wat 10% verklaar het. 'n Prominente voorspeller van Negatiewe HWI was Druk by die Huis, wat 9% van die variansie verklaar het. Laastens is gevind dat net Druk by die huis Positiewe HWI verduidelik, wat 3% van die variansie verklaar het.

Work and family constitute the dominant life roles for most employed adults in society. Numerous changes have recently blurred the boundaries between job and home life and this has created the potential for interference or conflict to occur between work and non-work. The growing importance of this issue is due to various reasons. Along with an increasing number of women entering the workforce, there are also changes in family structures, including dual-earner and single parent households, extended families (e.g. mother, father, children, children's children, etc.) and the blurring of gender roles (Geurts, Rutte, & Peeters, 1999). The nature of work has changed, demanding more mental and emotional effort from employees. There is also some evidence that managerial and professional women and men are working harder and longer hours, especially in the industrial and development industries (Grzywacz & Marks, 2000). Organisational downsizing and restructuring, the recent economic downturn followed by a jobless recovery, and rising levels of international competition, have increased work demands for many individuals (Geurts et al., 1999). Flexibilisation of work time schedules (e.g. 24-hours economy) also contributes to the current state of affairs, which is an appeal to employees' flexibility to work irregular hours and during 'unsocial' hours (i.e. evening work, night work, weekend work and working overtime) (Geurts et al., 1999). As a result, an increasing number of people are confronted with high pressures in both their work and home lives, and many of their daily hassles stem from job responsibilities that are incompatible with home or family responsibilities (Jansen, Peeters, De Jonge, Houkes, & Tummers, 2004).

Researchers have pointed out that there is a bidirectional dimension to work-family conflict (Frone, 2003). Thus, work can interfere with family (work-family conflict) and family can interfere with work (family-work conflict). Part of the family role involves spending recreational time with other family members and attempting to fit this in around work seems to add to the stress of trying to balance work and family life (Bellavia & Frone, 2005). Research has found that when effort expenditure in the home domain becomes excessive and recovery is quantitatively and/or qualitatively insufficient, negative load reactions will spill over to and hamper functioning at work (Geurts et al., 2005; Peeters, Montgomery, Bakker, & Schaufeli, 2005). For example, a parent might experience family-to-work conflict when it is necessary to take time off from work to stay home with a sick child (Bellavia & Frone, 2005). Also, when the effort invested remains acceptable because home demands and work strategies can be adjusted to one's need for recovery, positive load reactions will spill over to

facilitate functioning at work. Home characteristics were found to be the main antecedents of HWI (Geurts et al., 1999; Greenhaus & Beutell, 1985; Peeters et al., 2005) and include family demands, family-role conflict, family-role ambiguity, and family distress or dissatisfaction, which were found to be positively related to reports of family-to-work conflict (Frone, 2003).

Interference between work and home can have serious consequences for the individual and the organisation. Frone (2003) has found that negative WHI may have detrimental effects on health and well-being, since it increases psychosomatic symptoms and physical health complaints. The consequences of negative WHI transcend stress-related and organisational outcomes and also spread to a great extent to one's private life (Geurts et al., 2005; Geurts & Demerouti, 2003). According to Geurts et al. (2005), the results of negative interaction between work and private life can have several negative consequences, including psychological consequences (e.g. work-related stress, burnout, and general psychological strain), physical consequences (e.g. somatic and physical symptoms such as headaches, upset stomach, fatigue and sleep deprivation), attitudinal consequences (e.g. job, life and marital satisfaction and organisational commitment), behavioural consequences (e.g. increased consumption of stimulants like coffee, cigarettes and alcohol) and organisational consequences (e.g. organisational turnover, absenteeism and decreased productivity).

Recently, researchers have criticised the almost exclusive focus on negative interaction between work and home, and reason that the two domains can also influence each other in a positive way. Researchers have indeed found that employees may benefit from participating in multiple roles, and that these benefits may outweigh the difficulties (Frone, 2003; Geurts & Demerouti, 2003; Grzywacz & Marks, 2000). This positive interaction is likely to be associated with extra resources, skills and opportunities that might improve or facilitate functioning in each domain (Frone, 2003; Geurts & Demerouti, 2003; Geurts et al., 1999). Related consequences of positive interaction between work and home include higher work engagement; a positive attitude towards work, co-workers and supervisors; and improved self-esteem and self-concept. Positive spill-overs are also related to assisting employees with coping with demanding aspects of their work and stimulating them to learn from, and grow in their job. This may lead to motivation, feelings of accomplishment and organisational commitment (Montgomery, Panagopoulou, Schaufeli, & Ouden, 2001). Grzywacz and Marks (2000) explored the relationship of both types of positive work-family spill-over to employee

health outcomes, but failed to find evidence that either type of positive work-family spill-over was related to physical health. They also found both types of positive work-family spill-overs to be negatively related to poor mental health.

Work-home interaction is, furthermore, an important construct to consider in the mining environment – an environment in which people’s lives are at risk due to the nature of the work. Employees in the mining industry work with dangerous materials and use heavy vehicles or machinery. Thus, the equipment and techniques used are varied and complex, with many areas requiring significant safety and skills training (Calitz, 2004). Furthermore, various working conditions (e.g. underground temperature, long working hours, unsafe working conditions, highly unionised environment and pressure to perform) can lead to negative consequences, including ill health, burnout, absenteeism, workplace injury, violence, drug and alcohol abuse and lower productivity (Sauter et al., 2003). Mine workers also experience high job demands that require a great deal of effort and a lack of sufficient resources to fulfil job requirements (Calitz, 2004). On the other hand, some positive aspects of the mining environment are the diverse social support systems, health care and skills development programmes, as well as information systems. As a result, mine workers can also experience positive behaviour towards work, co-workers and supervisors and an increase in self-esteem, positive emotions about the future and better physical and psychological health (Greenhaus & Powell, 2006).

From the discussion above, it is clear that there is a definite interaction between the work and home domains. However, one of the limitations in the literature is the lack of knowledge about the specific variance that influences this interaction between the domains. Several empirical studies support the assumptions that job characteristics are directly associated with work-home interference, and that home characteristics are associated with home-work characteristics. The objectives of this study are 1) to determine whether work and home characteristics play a role in negative or positive WHI/HWI; 2) to determine significant predictors of each domain; and 3) to determine the variance explained in WHI/HWI by job and home characteristics.

Work-Home and Home-Work Interaction

Geurts et al. (2005, p. 322) define work-home interaction as, “an interactive process in which a worker’s functioning in one domain (e.g. home) is influenced by (negative or positive) load reactions that have built up in the other domain (e.g. work)”. Geurts et al. (2005) developed the Survey Work-Home Interaction – Nijmegen (SWING), which differentiates between the direction of influence (i.e. influence from work on private life, and vice versa) and the quality of influence (i.e. negative vs. positive influence). Therefore, four dimensions could be distinguished, namely negative Work-Home Interference (WHI), referring to a situation in which negative load effects built up at work hamper functioning at home; negative Home-Work Interference (HWI), referring to negative load effects that have built up in the home situation and interfere with functioning at work; positive WHI, where positive load effects build up at work that facilitate functioning at homes; and positive HWI, referring to positive load effects developed in the home domain that facilitate functioning at work. The Effort-Recovery model (E-R) (Meijman & Mulder, 1998) provided the theoretical background to illustrate the interaction between the two domains.

The central idea of the E-R model is that meeting work/home demands that require effort produces two kinds of outcomes, namely the product itself (i.e. the tangible result of work/home activities) and the short-term physiological and psychological reactions (the costs and benefits to the individual). These load reaction are normally reversible: after the work demands are removed, psychological systems re-stabilise to a baseline level after recovery occurs. If opportunities for recovery are insufficient, the psychological systems are activated again before they have had a chance to stabilise. If insufficient recovery time is experienced, the psychobiological systems are activated again, resulting in a higher intensity of negative load reactions and higher demands on the recovery process. Thus, when negative effects build up in an unfavourable work situation (characterised by high job demand, little job control and little job support) these will spill over to the home situation (Demerouti et al., 2004). A similar process can be expected in a home situation characterised by high home demands and little control and support. Negative spill-over has detrimental health effects when opportunities between successive exposure periods are insufficient. Under unchanged conditions, these symptoms may develop into health problems (Geurts et al., 1999).

The same principles are also true for *positive* work-home interaction, since effort expenditure may also be accompanied by positive load reactions. Positive interaction between work and home represents the extent to which participation at work (or home) is made easier by virtue of the experiences, skills, and opportunities gained or developed at home (or work) (Frone, 2003). If one feels competent and satisfied in one's work, these positive feelings could translate to the home sphere (and vice versa). Positive spill-over challenges the assumptions that people possess fixed amounts of energy and that fulfilling multiple roles is associated with energy depletion and strain (Geurts et al., 2005; Montgomery et al., 2003).

Grzywacz and Marks (2000) also support the body of research acknowledging the existence of positive spill-over, by basing their study on the assumption that the predictors of work-family conflict and positive work-family spill-over are similar. Furthermore, their study suggests that the process underlying work-family conflict may not be generalised to positive work-family spill-over. Rather, new models need to be developed to elucidate the causal antecedents of positive work-family spill-over. However, Grzywacz and Marks's (2000) findings showed that positive family-work spill-over was reported to occur more frequently than positive work-family spill-over. Thus, it appears that family has a more beneficial impact on work life than work life has on family. These researchers also found that behavioural involvement at work, work demands, family demands, and family conflict were unrelated to both positive work-family and family-work spill-over. Although work-related social support and decision latitude were positively related to both types of positive spill-over, family-related social support was positively related to only positive family-work spill-over. Thus, fulfilling multiple roles produces resources that facilitate functioning in both life-spheres.

Job and Home Characteristics

The Job Demands-Resources (JD-R) model (Bakker, Demerouti, De Boer, & Schaufeli, 2003; Demerouti, Taris, & Bakker, 2007) categorise job characteristics into two broad categories, namely job demands and job resources. Job demands are those physical, psychological, or organisational aspects of the job that require sustained physical and/or mental effort, and are therefore associated with certain physiological and/or psychological costs. Examples include high work pressure (i.e. high work pace and tight deadlines), high

physical or emotional demands, and role conflict. Job resources are defined as the physical, psychological, or organisational aspects of the job that may be functional in meeting task requirements (i.e. job demands) and may thus reduce the associated physiological and/or psychological costs – and at the same time stimulate personal growth and development. Resources may be located in the task itself (e.g. performance feedback, skill variety, autonomy), as well as in the context of the task, for instance, organisational resources (e.g. career opportunities, job security) and social resources (e.g. supervisor and co-worker support).

The JD-R model proposes that employee well-being is a result of two relatively independent processes (Bakker et al., 2003). The first process proposes that demanding aspects of work lead to constant overtaxing and eventually to health problems, including physical and psychological problems. According to the second process, availability of job resources may help employees to cope with the demanding aspects of their work. This may stimulate them to learn from and grow in their job, leading to motivation, feelings of accomplishment and organisational commitment. The proposed mechanism operates similarly for home demands and home resources.

Several empirical studies support the assumption that job characteristics are associated with negative WHI. Regarding job demands, it has consistently been found that work overload (Frone, Russell, & Cooper, 1997; Geurts et al., 1999; Wallace, 1997), pressure at work (Frone et al., 1997; Grzywacz & Marks, 2000; Mostert & Oosthuizen, 2006), role conflict and role ambiguity (Carlson & Perrewe, 1999; Grandey & Cropanzano, 1999; Mostert & Oosthuizen, 2006) and job insecurity (Kinnunen & Mauno, 1998) have the most robust relationship with negative WHI. Higher levels of job control and job support have also been associated with less conflict between both domains. The latter relationship has been put into perspective by Grzywacz and Marks (2000) by showing that job control is more strongly related to positive than to negative spill-over between work and family. Several job resources have been found to have a negative relationship with negative WHI, including autonomy and social support (Frone et al., 1997; Grzywacz & Marks, 2000; Kinnunen & Mauno, 1998; Parasuraman, Purohit, Godshalk, & Beutell, 1996). Demerouti, Geurts and Kompier (2004) found that job control, especially job support, was associated with positive work-home interference. This implies that employees who have control over their work and receive

support from their colleagues and supervisors experience more positive and less negative spill-over effects from their work to their home.

Frone (2003) states that each of these dimensions (i.e. work-to-family spill-over and family-to-work spill-over) has a unique relation to domain-specific antecedents and outcomes. For example, it is hypothesised that the domain-specific antecedents of work-home conflict reside in the work domain and its domain-specific outcome resides in the family domain. Various researchers have verified this by stating that work characteristics are related to WHI, and that home characteristics are related to HWI (Frone et al., 1997; Grzywacz & Marks, 2000; Kinnunen & Mauno, 1998). Home control and support are usually related to positive influence in the work domain, thus facilitating functioning in the work domain. A study by Montgomery et al. (2003) showed that home demands (quantitative, emotional and mental demands) were significantly related to HWI. Similarly, family demands, family-role conflict, family-role ambiguity, and family distress or dissatisfaction are positively related to reports of HWI (e.g. Carlson & Kacmar, 2000). Demerouti et al. (2004) found that home control and home support were not related to positive or negative HWI. Furthermore, Grzywacz and Marks (2000) found that involvement at work, work demands, family demands, and family conflict were unrelated to both positive WHI and HWI. However, it seems that only family-related social support was positively related to positive HWI. Also, high levels of extraversion were associated with high levels of both positive WHI and HWI. From the above, it seems that home demands, family-role conflict, family-role ambiguity, family support and family distress/dissatisfaction are related to HWI.

Based on these findings, it is hypothesised that job demands and job resources are significant predictors of negative WHI (*Hypothesis 1*) and positive WHI (*Hypothesis 2*) and that home demands and home resources are significant predictors of negative HWI (*Hypothesis 3*) and positive HWI (*Hypothesis 4*).

METHOD

Participants and procedure

A cross-sectional survey was conducted among employees from various gold, platinum and phosphate mining houses in Gauteng, the North-West and Limpopo provinces. A total of 800 questionnaires were distributed, of which 320 usable questionnaires were returned ($N = 320$, response rate = 35%). The sample consisted of employees of different Patterson grade levels (B2-E2), ranging from employees working underground to managers. Arrangements for scheduled visits and focus group sessions were made for the purpose of gathering information on employees' work environment and factors that might help or hinder them in doing their job. The measuring battery was compiled and the questionnaires were distributed after obtaining the recurring topics and main concerns of the employees. Participants were assured of the anonymity and confidentiality with which the information would be handled, by the inclusion of a letter stating the goal, importance and contact list of the study. The questionnaires were personally collected or sent to the university by the HR consultant after three weeks. Table 1 shows the characteristics of the participants.

Table 1

Characteristics of Participants (N = 320)

Item	Category	Frequency	Percentage
Gender	Male	254	79,4
	Female	64	20,0
Age	22 -29	42	13,1
	30 -39	126	39,4
	40 -49	104	32,5
	50 – 59	43	13,4
	60 - 69	1	0,3
Ethnicity	White	182	56,9
	African	129	40,3
	Coloured	3	0,9
	Indian	1	0,3
	Other	2	0,6
Language	Afrikaans	148	46,3
	English	41	12,8
	African Languages	128	40,0
Relationship status	Single	35	10,9
	Engaged/in a relationship	18	5,6
	Married	239	74,7
	Divorced	17	5,3
	Separated	3	0,9
	Remarried	5	1,6
Qualifications	Less than grade 10 (Std 8)	26	8,1
	Grade 10 (Std 8)	27	8,4
	Grade 12 (Std 10)	139	43,4
	M+3 (e.g. Matric + Diploma)	57	17,8
	M+4 (e.g. Matric + Higher Diploma or degree – BA., B. Com, B.Sc)	41	12,8
	M+5 (e.g. Matric + Honours in BA, B.Com, B.Sc)	17	5,3
	M+6 (e.g. Matric + Masters Degree – M.A, M.Com, M.Sc)	7	2,2
Mining Industry	Gold	245	76,6
	Copper	5	1,6
	Phosphate	66	20,6

According to Table 1, the majority of the participants (79,40%) were male, of which 56,90% were Caucasian and 40,30% African. In total, 148 (46,30%) of the participants were Afrikaans-speaking, with African languages constituting 128 (40,00%) of the sample. In

terms of educational distribution, 192 (59,90%) of the participants possessed a secondary educational qualification (grade 12 or lower), while 122 (38,10%) possessed a tertiary education qualification. With regard to marital status, 74,70% of the participants were married and 10,9% were single.

Measuring instruments

The following measuring instruments were used in the empirical study:

Job characteristics. To determine the specific job demands and recourses that employees experience in their work, focus groups were held in several mining houses. Employees had to identify possible characteristics in their job and work environment that help or hinder them in doing their jobs. Their responses were used to develop items for the questionnaire. All items were rated on a four-point scale ranging from 1 (*never*) to 4 (*always*). Three major job demands were identified, namely Pressure (10 items, e.g. “Do you have too much work to do?”), Poor Working Conditions (11 items, e.g. “Are you exposed to health risks in your work environment (i.e. HIV/Aids, tuberculosis, gasses, etc.)?”) and Job Insecurity (three items, e.g. “Do you need to be more secure that you will be working in one year’s time?”). Major job resources included Autonomy (seven items, e.g. “Do you have freedom in carrying out your work activities?”), Task Characteristics (six items, e.g. “Do you have enough variety in your work?”), Social Support (nine items, e.g. “Can you count on your supervisor when you come across difficulties in your work?”), Instrumental Support (six items, e.g. “Do you receive sufficient technical support to complete your tasks?”) and Pay and Benefits (five items, e.g. “Does your job offer you the possibility to progress financially?”).

Home characteristics. Three home characteristics were measured, including Pressure (eight items, e.g. “Do you have to work very fast when you have to complete tasks at home?”), Autonomy (six items, e.g. “Do you have influence in the planning of your home activities?”), and Home Support (e.g. “If necessary, can you ask people in your private life (e.g. spouse, children, friends) for help with work at home?”). All items were scaled on a four-point scale, ranging from 1 (*never*) to 4 (*always*), with higher scores indicating higher levels on that particular dimension.

Negative Work-Home Interaction. The Survey Work-Home Interference Nijmegen (SWING) was used to measure work-home interaction. The SWING is a 22-item work-home interference measure developed by researchers in the Netherlands (Geurts et al., 2005). It measures four types of work-home interaction, namely (1) Negative WHI (eight items, e.g. “How often does it happen that you do not have the energy to engage in leisure activities with your spouse/family/friends because of your job?”); (2) Positive WHI (five items, e.g. “How often does it happen that you fulfil your domestic obligations better because of the things you have learned on your job?”); (3) Negative HWI (four items, e.g. “How often does it happen that you have difficulty concentrating on your work because you are preoccupied with domestic matters?”); and (4) Positive HWI (five items, e.g. “How often does it happen that you take your responsibilities at work more seriously because you are required to do the same at home?”). All items are scored on a four-point frequency rating scale, ranging from “0” (*never*) to “3” (*always*). The SWING has been found to be valid, equivalent and reliable by various researchers (Pieterse & Mostert, 2005).

Statistical analysis

The statistical analysis was conducted with the SPSS programme (SPSS Inc., 2006) and the Amos programme (Arbuckle, 2003). The factor structures were tested with structural equation modelling (SEM). Maximum likelihood estimation was used with the covariance matrix of the scales as input for the analysis. The goodness-of-fit of the models was evaluated using absolute and relative indices. The χ^2 and several other goodness-of-fit indices were used to summarise the degree of correspondence between the implied and observed covariance matrices, including the χ^2/df ratio, the Goodness-of-Fit Index (GFI), the Incremental Fit Index (IFI), the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA). Acceptable fit of the model is indicated by non-significant χ^2 values, values smaller than or equal to 0,90 for GFI, IFI and CFI and RMSEA values smaller than or equal to 0,08 (Browne & Cudeck, 1993).

Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) were used to analyse the data. Pearson product-moment correlation coefficients were used to specify the relationship between the variables. In terms of statistical significance, it was decided to set the value at a 95% confidence interval level ($p \leq 0,05$). Effect sizes (Steyn, 1999) were used

to decide on the practical significance of the findings. A cut-off point of 0,30 (medium effect) (Cohen, 1988) was set for the practical significance of correlation coefficients. Multiple regression analyses were carried out to determine the percentage variance in the dependent variable (e.g. negative and positive WHI and negative and positive HWI) that will be predicted by the independent variables (e.g. job and home characteristics).

RESULTS

Construct validity of the measuring instruments

Before analysing the data, the construct validity of the measuring instruments was determined using confirmatory factor analysis. A two-factor model was tested for job characteristics, consisting of 1) Job Demands, including Pressure, Poor Working Conditions and Job Insecurity and 2) Job Resources, including Autonomy, Task Characteristics, Social Support, Instrumental Support and Pay and Benefits ($\chi^2 = 46,40$; $\chi^2/df = 2,58$; GFI = 0,97; IFI = 0,92; CFI = 0,92; RMSEA = 0,07). A two-factor model was also tested for home characteristics, consisting of 1) Home Demands, including home pressure and 2) Home Resources, including home autonomy and home support ($\chi^2 = 106,12$; $\chi^2/df = 4,25$; GFI = 0,93; IFI = 0,92; CFI = 0,92; RMSEA = 0,10). A four-factor was tested for work-home interaction, including negative WHI, positive WHI, negative HWI and positive HWI ($\chi^2 = 276,05$; $\chi^2/df = 1,49$; GFI = 0,93; IFI = 0,96; CFI = 0,96; RMSEA = 0,04).

Descriptive statistics

The descriptive statistics and Cronbach alpha coefficients of the measuring instruments are shown in Table 2.

Table 2

Descriptive Statistics and Cronbach Alpha Coefficients of the Measuring Instruments (N = 320)

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	α
Pressure	25,16	5,11	0,21	-0,28	0,80
Poor Working Conditions	24,86	6,77	0,32	-0,60	0,84
Job Insecurity	8,03	3,00	-0,19	-1,14*	0,89
Autonomy	20,57	4,24	-0,10	-0,72	0,82
Task Characteristics	15,50	3,93	0,06	-0,60	0,77
Social Support	26,02	6,32	-0,32	-0,71	0,89
Instrumental Support	17,31	3,62	-0,14	-0,52	0,78
Pay and Benefits	10,83	4,06	0,47	-0,64	0,87
Home Pressure	14,83	4,68	0,74	0,43	0,88
Home Autonomy	20,47	3,65	-1,14*	1,21*	0,86
Home Support	14,50	3,51	-0,25	-0,53	0,77
Negative WHI	9,09	5,35	0,56	0,10	0,90
Positive WHI	7,30	3,16	0,08	-0,15	0,74
Negative HWI	2,69	2,43	0,99	0,86	0,78
Positive HWI	6,65	3,08	-0,09	-0,62	0,77

* High skewness and kurtosis

From the results in Table 2, it can be seen that all the scores of the measuring instruments were relatively normally distributed. The Cronbach alpha coefficients of all the measuring instruments were considered acceptable compared to the guideline of $\alpha > 0,70$ (Nunnally & Bernstein, 1994).

Product-moment correlations

The results of the product-moment correlation coefficients between the constructs are reported in Table 3.

Table 3

Correlation Coefficients between Job Characteristics, Home Characteristics and Work-Home Interaction (N = 320)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Pressure	1,00														
2 Poor Working Conditions	0,42 ⁺ *	1,00													
3 Job Insecurity	0,02	0,22 ⁺	1,00												
4 Autonomy	-0,04	-0,06	-0,04	1,00											
5 Task Characteristics	0,03	0,11 ⁺	-0,03	0,41 ⁺ *	1,00										
6 Social Support	-0,25 ⁺	-0,06	-0,03	0,32 ⁺ *	0,41 ⁺ *	1,00									
7 Instrumental Support	-0,11 ⁺	-0,01	0,05	0,21 ⁺	0,35 ⁺ *	0,35 ⁺ *	1,00								
8 Pay and Benefits	-0,12 ⁺	-0,06	-0,13 ⁺	0,23 ⁺	0,35 ⁺ *	0,35 ⁺ *	0,22 ⁺	1,00							
9 Home Pressure	0,35 ⁺ *	0,28 ⁺	0,22 ⁺	-0,07	0,02 ⁺	-0,12 ⁺	-0,06	-0,11 ⁺	1,00						
10 Home Autonomy	-0,02	-0,08	-0,12 ⁺	0,27 ⁺	0,05	0,13 ⁺	0,11	0,07	-0,09	1,00					
11 Home Support	0,01	0,06	-0,18 ⁺	0,13 ⁺	0,13 ⁺	0,14 ⁺	0,17 ⁺	0,20 ⁺	-0,12 ⁺	0,26 ⁺	1,00				
12 Negative WHI	0,47 ⁺ *	0,46 ⁺ *	0,15 ⁺	-0,13 ⁺	-0,07	-0,14 ⁺	-0,17 ⁺	-0,15 ⁺	0,35 ⁺ *	-0,11 ⁺	-0,06	1,00			
13 Positive WHI	-0,07	-0,06	0,08	0,26 ⁺	0,16 ⁺	0,19 ⁺	0,12 ⁺	0,02	0,02	0,00	0,05	0,06	1,00		
14 Negative HWI	0,14 ⁺	0,23 ⁺	0,14 ⁺	-0,04	0,01	0,06	0,05	-0,11	0,23 ⁺	-0,20 ⁺	-0,10	0,35 ⁺ *	0,08	1,00	
15 Positive HWI	-0,02	0,04	0,26 ⁺	0,08	0,01	0,03 ⁺	0,15 ⁺	-0,11 ⁺	0,15 ⁺	0,02	-0,03	0,14 ⁺	0,34 ⁺ *	0,17 ⁺	1,00

⁺ Statistically significant ($p \leq 0,05$)

* Correlation is practically significant $r \geq 0,30$ (medium effect)

Table 3 provides the correlation coefficient of the study variables. As indicated, Negative WHI is practically significantly related to Job Pressure and Poor Working Conditions, and statistically significantly related to Job Security, Autonomy, Task Characteristics, Social Support, Instrumental Support and Pay and Benefits. Positive WHI is statistically significantly related to Autonomy, Task Characteristics, Social Support and Instrumental Support. Negative HWI is statistically significantly related to Home Pressure and Home Autonomy. Lastly, Positive HWI is statistically significantly related to Home Pressure.

Multiple regression analysis

Standard multiple regression analyses, using the enter method, were performed. The first two regressions assessed the contribution that job characteristics had upon negative and positive WHI, while the last two regressions assessed the contribution that home characteristics had upon negative and positive HWI. The results are reported in Tables 4, 5, 6 and 7.

Table 4

Multiple Regression Analysis with Negative WHI as Dependent Variable

Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	-0,88	0,18		-4,91	0,00	48,35	0,56	0,32	0,32
	Pressure	0,05	0,01	0,35	6,74	0,00*				
	Poor Working Conditions	0,03	0,01	0,30	5,67	0,00*				
	Job Insecurity	0,02	0,01	0,08	1,66	0,10				
2	(Constant)	-0,25	0,29		-0,86	0,39	20,30	0,59	0,34	0,03
	Pressure	0,05	0,01	0,34	6,45	0,00*				
	Poor Working Conditions	0,03	0,01	0,30	5,75	0,00*				
	Job Insecurity	0,02	0,01	0,08	1,59	0,11				
	Autonomy	-0,01	0,01	-0,06	-1,18	0,24				
	Task Characteristics	-0,01	0,01	-0,05	-0,88	0,38				
	Social Support	0,01	0,01	-0,06	1,08	0,29				
	Instrumental Support	-0,02	0,01	-0,11	-2,24	0,03*				
Pay and Benefits	-0,01	0,01	-0,05	-0,97	0,33					

*Statistically significant $p \leq 0,05$

Table 4 summarises the regression analyses with job demands and job resources as predictors of Negative WHI. Entry of job demands at the first step of the regression analysis produced a statistical model ($F_{(3,316)} = 48,35; p \leq 0,05$), accounting for approximately 32% of the variance in Negative WHI. More specifically, it seems that Pressure ($\beta = 0,35; t = 6,74; p \leq 0,05$) and Poor Working Conditions ($\beta = 0,30; t = 5,67; p \leq 0,05$) predict Negative WHI. When job demands and job resources were entered in the second step of the regression analysis, a statistically significant model was produced ($F_{(8,311)} = 20,30; p \leq 0,05$), accounting for approximately 34% of the variance in Negative WHI. In this model, it seems that significant predictors of Negative WHI are Pressure ($\beta = 0,34; t = 6,45; p \leq 0,05$), Poor Working Conditions ($\beta = 0,30; t = 5,75; p \leq 0,05$) and a Lack of Instrumental Support ($\beta = -0,11; t = -2,24 \leq 0,05$).

Next, Positive WHI was regressed upon the job demands and job resources. The results are reported in Table 5.

Table 5

Multiple Regression Analysis with Positive WHI as Dependent Variable

Model		Unstandardised Coefficients		Standardised Coefficients	t	p	F	R	R ²	Δ R ²
		B	SE	BETA						
1	(Constant)	0,41	0,22		1,84	0,07	6,16	0,30	0,09	0,09
	Autonomy	0,03	0,01	0,21	3,51	0,00*				
	Task Characteristics	0,01	0,01	0,05	0,72	0,47				
	Social Support	0,01	0,01	0,13	1,99	0,05*				
	Instrumental Support	0,01	0,01	0,04	0,67	0,50				
	Pay and Benefits	-0,02	0,01	-0,10	-1,64	0,10				
	2	(Constant)	0,46	0,32		1,44				
Autonomy	0,03	0,01	0,21	3,41	0,00*					
Task Characteristics	0,01	0,01	0,07	0,98	0,33					
Social Support	0,01	0,01	0,12	1,79	0,08					
Instrumental Support	0,01	0,01	0,03	0,49	0,62					
Pay and Benefits	-0,01	0,01	0,10	-1,51	0,13					
Pressure	-0,00	0,01	-0,01	-0,21	0,83					
Poor Working Conditions	-0,01	0,01	-0,07	-1,13	0,26					
Job Insecurity	0,02	0,01	0,10	1,77	0,08					

*Statistically significant $p \leq 0,05$

As can be seen in Table 5, the entry of job resources at the first step of the regression analysis produced a statistically significant model ($F_{(5,314)} = 6,16; p \leq 0,05$), accounting for approximately 9% of the variance in Positive WHI. It seems that Autonomy ($\beta = 0,21; t = 3,51; p \leq 0,05$) and Social Support ($\beta = 0,13; t = 1,99; p \leq 0,05$) predict Positive WHI. When job resources along with job demands were entered at the second step of the regression analysis, it produced a statistically significant model ($F_{(8,311)} = 4,38; p \leq 0,05$) accounting for

approximately 10% of the variance in Positive WHI. In this model, it seems as if only Autonomy ($\beta = 0,21$; $t = 3,41$; $p \leq 0,05$) predicts Positive WHI.

Next, Negative HWI was regressed upon the home characteristics. The results are reported in Table 6.

Table 6

Multiple Regression Analysis with Negative HWI as Dependent Variable

Model		Unstandardised Coefficients		Standardised Coefficients	t	p	F	R	R ²	ΔR^2
		B	SE	BETA						
1	(Constant)	0,22	0,11		2,03	0,04	18,40	0,23	0,06	0,06
	Home Pressure	0,03	0,01	0,23	4,29	0,00*				
2	(Constant)	0,93	0,24		3,81	0,00	10,18	0,30	0,09	0,03
	Home Pressure	0,03	0,01	0,22	3,97	0,00*				
	Home Autonomy	-0,03	0,01	-0,17	-3,10	0,00*				
	Home Support	-0,01	0,01	-0,03	-0,58	0,57				

*Statistically significant $p \leq 0,05$

Table 6 summarises the regression analysis with home characteristics as predictors of Negative HWI. Entry of home pressure at the first step of the regression analysis produced a statistically significant model ($F_{(1,318)} = 18,40$; $p \leq 0,05$), accounting for approximately 6% of the variance in Negative HWI. More specifically, it seems that Home Pressure ($\beta = 0,23$; $t = 4,29$; $p \leq 0,05$) predicts Negative HWI. Entry of home resources in the second step of the regression analysis produced a statistically significant model ($F_{(3,316)} = 10,18$; $p \leq 0,05$), accounting for approximately 9% of the variance in Negative HWI. It seems that Home Pressure ($\beta = 0,22$; $t = 3,97$; $p \leq 0,05$) and a lack of Home Autonomy ($\beta = -0,17$; $t = -3,10$; $p \leq 0,05$) predict Negative HWI.

Next, Positive HWI was regressed upon the home characteristics. The results are reported in Table 7.

Table 7

Multiple Regression Analysis with Positive HWI as Dependent Variable

Model		Unstandardised Coefficients		Standardised Coefficients	<i>t</i>	<i>p</i>	<i>F</i>	<i>R</i>	<i>R</i> ²	ΔR^2
		B	SE	BETA						
1	(Constant)	1,64	0,27		6,01	0,00	0,25	0,04	0,00	0,00
	Home Autonomy	0,01	0,01	0,03	0,52	0,60				
	Home Support	-0,01	0,01	-0,04	-0,60	0,55				
2	(Constant)	1,17	0,32		3,68	0,00	2,72	0,16	0,03	0,02
	Home Autonomy	0,01	0,01	0,04	0,68	0,50				
	Home Support	-0,00	0,01	-0,02	-0,31	0,76				
	Home Pressure	0,03	0,01	0,16	2,77	0,01*				

*Statistically significant $p \leq 0,05$

As can be seen in Table 7, the entry of home resources at the first step of the regression analysis produced a statistically significant model ($F_{(2,317)} = 0,25$; $p \leq 0,05$), accounting for none of the variance in Positive HWI. In the second step of the regression analysis, home pressure was added along with home resources. It produced a statistically significant model ($F_{(3,316)} = 2,72$; $p \leq 0,05$), accounting for approximately 3% of the variance in Positive HWI. It seems that Home Pressure ($\beta = 0,16$; $t = 2,77$; $p \leq 0,05$) predicts Positive HWI.

DISCUSSION

The general objective of this study was to investigate job and home characteristics that are associated with negative/positive work-home and home-work interaction in the mining environment. To attain the general objective, more specific objectives were developed, namely 1) to determine if job and home characteristics play a role in negative or positive WHI/HWI; 2) to determine the predictors of each domain; and 3) to determine the percentage variance explained in WHI/HWI by job and home characteristics respectively.

According to the Job Demands-Resources (JR-D) model (Bakker et al., 2003; Demerouti et al., 2007), job characteristics can be characterised into two broad categories, namely job demands and job resources. Job demands include high job pressure, high physical or

emotional demands, and role conflict. Job resources may be located in the task itself, in the context of the task and in social resources. The results indicated that both job demands and job resources were significant predictors of negative WHI and these explained 34% of the variance. More specifically, pressure, poor working conditions and a lack of instrumental support predict negative WHI. These results were expected and it explained a significant percentage of the variance. The findings are also consistent with results from previous research, where especially pressure at work was found to predict negative WHI (Carlson & Perrewe, 1999; Frone et al., 1997; Geurts et al., 1999; Wallace, 1997; Grzywacz & Marks, 2000; Grandey & Cropanzano, 1999; Mostert & Oosthuizen, 2006). Job resources that have been found to have a negative relationship with WHI in previous research include autonomy and social support (Frone et al., 1997; Grzywacz & Marks, 2000; Kinnunen & Mauno, 1998; Parasuraman et al., 1996). Interestingly, the only resource which was found to predict negative WHI in this study was a lack of instrumental support. The lack of other resources can be due to the specific resources available in the mining environment. These can be seen as mine-specific resources (e.g. materials available, access to resources, and enough staff to do the work).

These results suggest that high job demands, specifically high pressure (e.g. working very fast, working very hard, intense concentration for long periods of time, the amount of work exceeding the capacity of employees) and poor working conditions (e.g. uncontrollable events in work environment, exposure to health risks, security risks, dealing with crisis situations, dangerous and unsafe conditions, and a stressful working environment) contribute to higher levels of negative WHI in the mining environment. In terms of the E-R model, the practical implications of these findings are that employees who work under poor working conditions, who are experiencing high job pressure and have little or no instrument support experience more negative and less positive spill-over effects from their work to their home. If this persists, the situation reduces the opportunity to recover at home and the employees have to make compensatory efforts. Furthermore, this can lead to frustration and feelings of powerlessness, which could spill over to the home domain, creating tension at home and preventing efficient recovery. When sufficient recovery does not take place, it is difficult for load reactions that develop at work to be reversed and to stabilise at normal baseline level.

With regard to positive WHI, only job resources were found to predict positive WHI, which explained only 10% of variance in positive WHI. More specifically, autonomy (e.g. freedom

in carrying out your own work activities, deciding for oneself how to carry out one's work, having influence over decisions about when a piece of work must be completed, deciding for oneself how much time one would like to spend on a certain task) and social support (e.g. relying on co-workers to help finish the job, giving technical support) were found to predict positive WHI. This suggests that the more autonomy and social support the worker experience, the more positive feelings are experienced, which spill over to the home domain. Thus, this positive interaction is likely to be associated with extra resources, skills and opportunities that might improve functioning at home (Frone, 2003; Geurts & Demerouti, 2003; Geurts et al., 2005). Researchers have found that positive spill-over is related to assisting employees with coping with demanding aspects of their work and stimulating them to learn from and grow in their job. This, in turn, can lead to motivation, feelings of accomplishments and organisational commitment (Montgomery et al., 2001).

The practical implication of these findings is that employees who experience autonomy and who receive support from their colleagues and supervisors experience more positive spill-over effects from their work to their home. This may cause them to feel more relaxed at home and to have the opportunity to recover sufficiently from a day at work. According to the E-R model, it is possible that positive load reactions can develop as a function of job resources. Therefore, in a job that is characterised by high job demands, the availability of job resources can help employees to align their behaviour at work with their need for recovery. As a result, effort expenditure remains within acceptable limits and this could lead to positive reactions such as skills acquisition, motivation for learning and positive affects. Furthermore, recovery can take place, implying that the exposure to built-up load reactions developed at work can cease and that the respective psychological systems can stabilise at the specific baseline level. Fatigue and other effects of stressful situations at work are reduced, leaving the person revitalised, ready and motivated for the next day. The small percentage explained for positive WHI can be due to the specific environment. This study did not include some psychological involvement (degree to which individuals identify with a social role and see it as important to their self-concept), personality variables (e.g. mastery, hardiness, positive affectivity, extraversion) and demographic characteristics that were found to have an impact on positive WHI. It is advisable that future research should include such variables.

The significant predictors of negative HWI were found to be home pressure (e.g. having a lot of work at home, working very hard to get things done at home, and having enough time to

complete work at home) and a lack of home autonomy (deciding for oneself how to carry out one's tasks at home, having influence over decisions about when a certain task at home has to be completed, determining which tasks at home one could complete oneself, having freedom in carrying out one's activities at home and having influence in planning home activities). Thus, the higher home pressure and the lower autonomy are experienced at home, the more negative load effect will be experienced and negative feelings will spill over to the work domain. Ultimately, when people feel that they did not recover sufficiently, they will lack the energy to participate in family life because of depleted individual resources. Montgomery et al. (2003) confirmed that home demands (quantitative, emotional and mental demands) were significantly related to both negative and positive HWI. Bellavia and Frone (2005) also found that having younger children in the household is related to negative HWI. It must be noted that home characteristics explained only 6% of the variance in negative HWI. This can be due to the measures used, which only included autonomy, home support and home pressure. Future research should include additional aspects of home characteristics.

With regards to positive HWI, only home pressure was found to predict positive WHI. This implies that the less home pressure one experiences at home, the more positive feelings and attitudes will be experienced, which will carry this positive feeling over to the work domain. Contrary to this result, Frone (2003) found that only family-related social support was positively related to positive HWI. This can be due to the different home situations that different families experience. Furthermore, home characteristics explained only 3% of the variance in positive HWI. This small percentage can be due to the fact that only home pressure, home autonomy and home support were included in this study. It will be wise to include other home aspects (whether one can influence the type of responsibilities one has to fulfil, whether additional instrumental and physical support is available, having extensive care-giving tasks, etc.) in future research.

LIMITATIONS AND RECOMMENDATIONS

Although this research provided some valuable findings, it is also necessary to note the limitations of the current study. The main limitation is that the design of the study is cross-sectional. No concrete decisions can be made regarding the cause-and-effect relationship amongst the variables. The second limitation of this study is the use of self-report questionnaires. However, several authors have argued that this is not a major threat if

interaction is found. Furthermore, few alternative methodologies are suggested to deal with the use of self-report measures. The third limitation is that the study only included a few job demands and resources. The JD-R model is capable of integrating several demands and resources, and therefore, it would be interesting to replicate the current findings in future studies using a broader range of working conditions. The same is true with home characteristics. It will improve our understanding when more job and home characteristics are included to broaden the influence on the work-home interaction nexus. It is also important to recognise that specific demands and resources might differ across organisations. This implies that interventions aimed at improving the working environment will be most successful if they are tailored to the most important job characteristics. Such interventions might lead to the reduction of negative WHI and the improvement of positive WHI. Lastly, this study suggests the necessity to consider reciprocal relationships between positive and negative aspects of both work and home in order to achieve a better understanding of work-home interaction.

Some recommendations that arise from this study include that the mining industry should focus on providing support in terms of available resources and effectively managed job demands that are conducive to helping employees align their work and home domain. The focus should not only be on formal policies, but must also include the informal work environment. Thus, an environment should be created where employees feel at ease to utilise such policies without feeling that they are branded. Some form of stress management can also be offered, because training people to use the most effective ways of coping with stress may reduce their work-family conflicts.

One aspect that needs more attention is the unit of analysis. Frone (2003) suggests that one should consider the family as the unit of analysis, instead of focussing on the individual alone. The reason for this is that one employee may affect not only his/her own performance but the performance of co-workers and the work group as well. A number of studies have found that the number of weekly hours devoted to family activities and chores is positively related to levels of HWI (Frone, 2003; Grzywacz & Marks, 2000). Consistently, a number of other studies have found that psychological family involvement is positively related to HWI (e.g. Carlson, Kacmar & Williams, 2000; Frone, 2003). Other variables that should be considered in the study of work-home interaction are personality variables (such as mastery, hardiness, positive affectivity and extraversion). Several studies have found that high levels

of hardiness, extraversion and self-esteem were associated with lower levels of both WHI and HWI (e.g. Grandey & Cropanzano, 1999; Grzywacz & Marks, 2000). This reinforces the suggestion that other variables that can have an influence of WHI/HWI should be included in future studies.

Finally, it is recommended that longitudinal research designs are used in work-home interaction research, because levels of work-family conflict undoubtedly fluctuate over time for many people. It will also be useful to collect data from multiple sources. The work-home interaction issue involves two domains that generally include collectives of people. This will give researchers the opportunity to test for moderators of work-family conflict that have their sources outside of the target respondents.

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CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter, conclusions are presented regarding the specific objectives of this study. The limitations of the research are discussed, followed by recommendations for the organisation and future research.

3.1 CONCLUSIONS

The first objective of this study was to investigate the relationship between job characteristics and negative and positive WHI according to the literature. According to the Job Demands-Resources (JR-D) model (Bakker, Demerouti, De Boer & Schaufeli, 2003; Demerouti, Taris & Bakker, 2007), job characteristics can be characterised into two broad categories, namely job demands and job resources. Job demands include high job pressure, high physical or emotional demands, and role conflict. Job resources may be located in the task itself, in the context of the task and in social resources. Previous research findings showed that especially pressure at work predict negative WHI (Carlson & Perrewe, 1999; Frone, Russel & Cooper, 1997; Geurts, Rutte & Peeters, 1999; Wallace, 1997; Grzywacz & Marks, 2000; Grandey & Cropanzano, 1999; Mostert & Oosthuizen, 2006). Job resources that have been found to have a negative relationship with WHI in previous research include autonomy and social support (Frone et al., 1997; Grzywacz & Marks, 2000; Kinnunen & Mauno, 1998; Parasuraman, Purohit, Godshalk & Beutell, 1996).

Positive interaction is likely to be associated with extra resources, skills and opportunities that might improve functioning at home (Frone, 2003; Geurts & Demerouti, 2003; Geurts et al., 2005). Researchers have found that positive spill-over is related to assisting employees with coping with demanding aspects of their work and stimulating them to learn from and grow in their job. This, in turn, can lead to motivation, feelings of accomplishments and organisational commitment (Montgomery, Panagopoulou, Peeters & Schaufeli, 2005).

The second objective of this study was to investigate the relationship between home characteristics and negative and positive HWI according to the literature. Montgomery, Peeters, Schaufeli & Den Ouden (2003) confirmed that home demands (quantitative, emotional and mental demands) were significantly related to both negative and positive HWI.

Bellavia and Frone (2005) also found that having younger children in the household is related to negative HWI. Frone (2003) found that only family-related social support was positively related to positive HWI. This can be due to the different home situations that different families experience.

The third objective of this study was to identify the main job characteristics in the mining environment that are associated with negative and positive WHI. The results indicated that both job demands and job resources were significant predictors of negative WHI and these explained 34% of the variance. More specifically, pressure, poor working conditions and a lack of instrumental support predict negative WHI. These results were expected and it explained a significant percentage of the variance. These results also suggest that high job demands, specifically high pressure (e.g. working very fast, working very hard, intense concentration for long periods of time, the amount of work exceeding the capacity of employees) and poor working conditions (e.g. uncontrollable events in work environment, exposure to health risks, security risks, dealing with crisis situations, dangerous and unsafe conditions, and a stressful working environment) contribute to higher levels of negative WHI in the mining environment. In terms of the E-R model, the practical implications of these findings are that employees who work under poor working conditions, who are experiencing high job pressure and have little or no instrument support experience more negative and less positive spill-over effects from their work to their home. If this persists, the situation reduces the opportunity to recover at home and the employees have to make compensatory efforts. Furthermore, this can lead to frustration and feelings of powerlessness, which could spill over to the home domain, creating tension at home and preventing efficient recovery. When sufficient recovery does not take place, it is difficult for load reactions that develop at work to be reversed and to stabilise at normal baseline level.

With regard to positive WHI, only job resources were found to predict positive WHI, which explained only 10% of variance in positive WHI. More specifically, autonomy (e.g. freedom in carrying out your own work activities, deciding for oneself how to carry out one's work, having influence over decisions about when a piece of work must be completed, deciding for oneself how much time one would like to spend on a certain task) and social support (e.g. relying on co-workers to help finish the job, giving technical support) were found to predict positive WHI. This suggests that the more autonomy and social support the worker experience, the more positive feelings are experienced, which spill over to the home domain.

The practical implication of these findings is that employees who experience autonomy and who receive support from their colleagues and supervisors experience more positive spill-over effects from their work to their home. This may cause them to feel more relaxed at home and to have the opportunity to recover sufficiently from a day at work. According to the E-R model, it is possible that positive load reactions can develop as a function of job resources. Therefore, in a job that is characterised by high job demands, the availability of job resources can help employees to align their behaviour at work with their need for recovery. As a result, effort expenditure remains within acceptable limits and this could lead to positive reactions such as skills acquisition, motivation for learning and positive affects. Furthermore, recovery can take place, implying that the exposure to built-up load reactions developed at work can cease and that the respective psychological systems can stabilise at the specific baseline level. Fatigue and other effects of stressful situations at work are reduced, leaving the person revitalised, ready and motivated for the next day.

The fourth objective was to identify the main home characteristics of employees working in the mining environment that are associated with negative and positive HWI. The significant predictors of negative HWI were found to be home pressure (e.g. having a lot of work at home, working very hard to get things done at home, and having enough time to complete work at home) and a lack of home autonomy (deciding for oneself how to carry out one's tasks at home, having influence over decisions about when a certain task at home has to be completed, determining which tasks at home one could complete oneself, having freedom in carrying out one's activities at home and having influence in planning home activities). Thus, the higher home pressure and the lower autonomy are experienced at home, the more negative load effect will be experienced and negative feelings will spill over to the work domain. Ultimately, when people feel that they did not recover sufficiently, they will lack the energy to participate in family life because of depleted individual resources.

With regards to positive HWI, only home pressure was found to predict positive HWI. This implies that the less home pressure one experiences at home, the more positive feelings and attitudes will be experienced, which will carry this positive feeling over to the work domain. Furthermore, home characteristics explained only 3% of the variance in positive HWI. This small percentage can be due to the fact that only home pressure, home autonomy and home support were included in this study.

3.2 LIMITATIONS OF THIS RESEARCH

The first limitation of this research is the fact that a cross-sectional research design was used. Despite the fact that the results provided direction and footing for future research within the mining environment, some limitations were discernable. No concrete deductions could be made regarding the cause-and-effect relationships amongst the variables. Therefore, it is not possible to verify causal assumptions about predictors of work-home interaction. Future studies will benefit by the use of longitudinal research designs, because then the hypothesised causalities of the relationships can be further validated. This will also indicate whether the relationship holds true over time.

Another limitation was the use of 'self-report questionnaires'. This may lead to a problem referred to as "method-variance" or "nuisance". However, several authors have argued that this phenomenon is not a major threat if interaction is found (Dollard & Winefield, 1998; Wall, Jackson, Mullarkey, & Parker, 1996). Furthermore, few alternative methodologies are suggested to deal with the use of self-report measures. Nonetheless, further research, including more objective measures of job and home characteristics, is still needed. The nature of the mining industry and its diversity present a disadvantage in terms of how many participants truly understood the contents of the questionnaire due to language barriers and educational issues.

The third limitation is that this study included only a few job demands and resources. The JD-R model is capable of integrating several demands and resources, and therefore, it would be interesting to replicate the current findings in future studies using a broader range of working conditions (e.g. mental and physical demands, skill variety and the like). The same is true of home characteristics. It will improve our understanding when more job and home characteristics are included to broaden the influence on the work-home interaction nexus. It is also important to recognise that specific demands and resources might differ across organisations. This implies that interventions aimed at improving the working environment will be most successful if they are tailored to the most important job characteristics. Such interventions might lead to the reduction of negative WHI and an improvement of positive WHI.

Lastly, this study suggests, along with previous research, the necessity to consider reciprocal relationships between positive and negative aspects of both work and home in order to achieve a better understanding of the work-home interaction. Researchers should move beyond work-family balance to explore the balance between work and other non work/life roles. However, it is important to assess the characteristics of each role separately. It will be useful for future research to look separately at the various family roles (spouse, parent, offspring) and the various non-work roles (family, student, leisure) because work-home interaction of one employee may not only affect his/her own performance, but also the performance of co-workers and work groups. Conflict between work and each of the other non-work roles can have serious consequences, though potentially different from one another (Frone, 2003). For example, if work interferes with the school role, an individual may experience lower academic achievement that may, in turn, hinder career advancement or performing the neighbour role (for example, shovelling the driveway of the elderly person next door may cause one to be late for work). Thus, it is important to study each combination of work and non work roles to obtain a more complete picture of the consequences of interrole conflict.

3.3 RECOMMENDATIONS

Next, recommendations for the organisation as well as for future research are made.

3.3.1 Recommendations for the organisation

Mining is an industry driven by performance, and consequently presents increased job demands and a lack of available resources, which have adverse implications for the health and well-being of individuals and organisations. It is recommended that the mining industry should focus on providing support in terms of available resources and effectively managed job demands that are conducive to helping employees align their work and home domains. According to Geurts and Demerouti (2003), the focus should not only be on formal policies (e.g. by offering flexible working hours, compressed work schedules, child care facilities, and parental leave), but also on the informal work environment. Although such policies exist, an environment needs to be created where employees feel at ease to make use of such policies without feeling that they are branded or discriminated against.

In addition, employers may wish to offer their employees some form of stress management training. People who use avoidant or resigned coping styles have been shown to experience higher levels of both work-family and family-work conflict, but those who use help-seeking or direct-action coping styles have reported lower levels of family-work conflict (Bellavia & Frone, 2005). Thus, training people to use the most effective ways of coping with stress may reduce their work-family conflict.

Another aspect that the organisation should look at is providing more control and support to the employee. It can also be mentioned that when employees have more control over their work and they receive support from their colleagues and supervisors, they experience more positive spill-over effects from their work to their home. Thus, the availability of job resources (e.g. job control and support) may facilitate recovery at work and reduce the need for recovery at home. This will influence the atmosphere at home in a positive way and leave room for interaction with family members. As a result, fatigue and other effects of stressful situations at work are reduced, leaving the person revitalised, ready and motivated for the next day at work. The organisation must also keep in mind that positive feelings experienced at home can influence the employee positively at work. When the employee experiences support and autonomy at home, he or she will be more recovered and will have more energy to participate in the work domain. Lastly, the organisation should create a culture in which employees who experience work-family conflict will feel entitled to use the facilities that are available. Supervisor's attitude towards the use of such arrangements should therefore be 'family-friendly'.

3.3.2 Recommendations for future research

The first recommendation is the use of longitudinal data, because levels of work-family conflict undoubtedly fluctuate over time for many people. Research that obtains measurements from the same respondents at different time points would likely add to our knowledge of the circumstances that are associated with work-home interaction, and will also provide insight into personal characteristics that might interact with circumstances to increase or inhibit the interaction between work and home.

The next recommendation will be to collect reports from multiple sources. The issue of work-home interaction involves two domains that generally include collectives of people – not just the target respondent. It would therefore be informative to obtain supplementary measurements from those people. This will provide researchers with the opportunity to test for moderators of work-family conflict that have their sources outside of the target respondent. It will also give a better sense of the experience and outcomes of work-family conflict for the target respondent and for the other people in the work and family systems.

Lastly, it will be advantageous if more attention is given through research to the positive aspects of both work and home domains. It will better our understanding if attention is paid to the antecedents and consequences of positive spill-over. The individual and the organisation can benefit from this, as information will be available that one can use to enhance the positive aspects of positive WHI/HWI and reduce the negative aspects of negative WHI/HWI. This will also indicate a strong focus on positive psychology for future research.

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