A PSYCHOMETRIC ANALYSIS OF THE SURVEY WORK-HOME INTERACTION – NIJMEGEN (SWING) IN A NURSING ENVIRONMENT

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COMMENTS

The reader is reminded of the following:

- The references as well as the editorial style as prescribed by the *Publication Manual (5th edition)* of the American Psychological Association (APA) were followed in this dissertation. This practice is in line with the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom Campus) 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:

A psychometric analysis of the Survey Work-Home Interaction – Nijmegen (SWING) in a nursing environment.

Key terms:

Work-home interaction, Survey Work-Home Interaction-Nijmegen (SWING), reliability, construct validity, prevalence, nursing environment

Over the past few years, workers have been confronted with increasing pressures at work and at home. This is mainly the result of the growing number of dual-earner couples as well as changes and pressures in the nature of the workplace. Workers are challenged to manage multiple roles in both their work and home domains. Recently, a new measuring instrument was developed to measure work-home interaction, namely the Survey Work-Home Interaction – Nijmegen (SWING). This instrument measures both the direction of influence (work-to-home and home-to-work) and the quality of influence (negative vs. positive).

The objectives of this study were firstly to determine the construct validity and reliability of the Survey Work-Home Interaction – Nijmegen (SWING), and secondly to determine the prevalence of work-home interaction in various demographic groups in the nursing environment. A cross-sectional survey design was used. Random samples (N = 363) were taken from hospital nursing staff in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom and Pretoria. The SWING and a biographical questionnaire were administered. Structural equation modelling (SEM), Cronbach alpha coefficients, multivariate analysis of variance (MANOVA) and one-way analysis of variance (ANOVA) were used to reach the objectives.

SEM showed that a four-factor model, which measures negative work-home interference, positive work-home interference, negative home-work interference and positive home-work interference, fitted the data best. Cronbach alpha coefficients showed that all four factors were reliable. Regarding the prevalence of work-home interaction among different demographic groups, the results indicated that there were statistically significant differences

between demographic groups based on race, educational level, type of position, flexibility of arrangements at the workplace as well as between full-time and part-time work.

Recommendations for future research are made.

OPSOMMING

Titel:

'n Psigometriese analise van die *Survey Work-Home Interaction – Nijmegen (SWING)* in 'n verpleegomgewing.

Sleutelbegrippe:

Werk-huis-interaksie, *Survey Work-Home Interaction-Nijmegen (SWING)*, betroubaarheid, konstrukgeldigheid, voorkoms, verpleegomgewing

Gedurende die afgelope paar jaar is werkers met toenemende druk by die huis en by die werk gekonfronteer. Dit kan hoofsaaklik daaraan toegeskryf word dat daar deesdae al hoe meer egpare is waar die man en die vrou werk, en dat daar deurentyd veranderinge in die aard van die werksplek plaasvind. Werkers kom voor die uitdaging te staan om veelvuldige rolle in hulle werks- en huisdomeine te vervul. Onlangs is 'n nuwe meetinstrument, naamlik die *Survey Work-Home Interaction – Nijmegen (SWING)* ontwikkel om werk-huis-interaksie te meet. Hierdie meetinstrument meet die rigting van die invloed (werk-na-huis of huis-na-werk) asook die aard van die invloed (negatief teenoor positief).

Die doelwitte van hierdie studie was eerstens om die konstrukgeldigheid en betroubaarheid van die *Survey Work-Home Interaction – Nijmegen (SWING)* te meet en tweedens om die voorkoms van werk-huis-interaksie by verskillende demografiese groepe in die verpleegomgewing te bepaal. 'n Dwarssnee opname-ontwerp is gebruik. Ewekansige steekproewe ($N = 363$) is van verpleegpersoneel by hospitale in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom en Pretoria getrek. Die *SWING* en 'n biografiese vraelys is afgeneem. Strukturele vergelykingsmodellering, Cronbach alfakoëffisiënte, meervoudigerigtingvariansieanalise (*MANOVA*) en eenrigtingvariansieanalise (*ANOVA*) is gebruik om die doelwitte te bereik.

Strukturele vergelykingsmodellering het getoon dat 'n vierfaktormodel wat negatiewe werk-huis-interferensie, positiewe werk-huis-interferensie, negatiewe huis-werk-interferensie en positiewe huis-werk-interferensie meet, die mees geskikte vir die data was. Cronbach alfakoëffisiënte het getoon dat al vier faktore betroubaar was. Met betrekking tot die

voorkoms van werk-huis-interaksie by die verskillende demografiese groepe, het die resultate getoon dat daar statisties betekenisvolle verskille was tussen demografiese groepe wat gebaseer is op ras, opvoedkundige vlak, tipe pos, buigsaamheid by die werk om alternatiewe reëlings te tref asook tussen voltydse en deeltydse werk.

Aanbevelings vir toekomstige navorsing word aan die hand gedoen.

CHAPTER 1

INTRODUCTION

This mini-dissertation focuses on a psychometric analysis of the Survey Work-Home Interaction – Nijmegen (SWING), an instrument that measures work-home interaction, by using a sample of nurses in the Gauteng and North-West regions.

In this chapter the problem statement and the research objectives (including the general and specific objectives) are discussed. Following this, the research method is explained and an overview of the chapters is given.

1.1 PROBLEM STATEMENT

During the last couple of years, growing evidence has indicated that workers are facing growing pressures at work and at home. This is mainly due to the increasing number of dual-earner couples, as well as changes and pressures in the nature of the workplace. This trend has also affected the South African workforce, which now comprises more women and is more representative of all races, while the traditional South African household, where the man was the sole earner and the woman took care of the children, is being replaced by working couple families (Gerber, 2000; Schreuder & Theron, 2001). These demographic and structural changes in the workforce and family structure have not only affected work and family roles and their interrelation (Bond, Galinsky, & Swanberg, 1998; Ferber, O'Farrell, & Allen, 1991); it also had a significant impact on individual behaviour in an organisational setting, and ultimately on organisational functioning itself (Greenhaus, 1988; Parasuraman & Greenhaus, 1999). Furthermore, Barnett (1998) stressed the fact that work-home interaction is not only of paramount importance for the economic viability of organisations, but also for the welfare of families.

Awareness of the interaction between work and home and the effect it has on employees, families, organisations and the society has developed during the period of industrialisation (Westman & Piotrkowski, 1999). Socio-demographic changes led to the phenomenon that a large percentage of employed workers, and particularly employed parents, have serious

difficulty in combining obligations in the work domain and home domain (Geurts & Demerouti, 2003). In order to gain a better understanding of the interaction between work and home, these terms must be defined. Work can generally be defined as a set of tasks that an individual performs while occupying a position in an organisation (Geurts & Demerouti, 2003). Non-work (the home domain) on the other hand, is referred to as activities and responsibilities within the family domain, as well as activities and obligations beyond an individual's family situation (Geurts & Demerouti, 2003). It is evident from this that the work and home domains include different roles. Frone (2002) distinguished between work roles (e.g. employee, manager, union representative) and non-work (home) roles (family roles, religious roles, community roles, leisure roles). The expectation exists that imbalances between the different social roles may be an important stressor that can affect outcomes in the different domains, which could in turn affect the overall health and well-being of individuals exposed to the imbalance (Frone, 2002).

Work and family should not be seen as separate domains, but rather as highly interrelated. According to Greenhaus and Beutell (1985), work-home conflict is a form of interrole conflict in which the role pressures from the work and home domains are mutually incompatible in some respect, which implies that participation in the work role is made more difficult by virtue of participation in the home role. This definition is bidirectional, which implies that work can interfere with the home domain (work-to-home interference), but that home can also interfere with the work domain (home-to-work interference).

Although we have developed a better understanding of the work-home interface, research within this field is characterised by various limitations. First of all, most research refers to the spillover from work to home and ignores the fact that the home domain can also have an influence on the work domain. Secondly, an exclusive focus is being placed on *negative* work-home interaction with a rare reference to *positive* work-home interaction (Barnett, 1998; Carlson, Dacxmar, & Williams, 2000; Stephens & Sommer, 1996). The most dominant hypothesis here was the role strain hypothesis, postulating that the work and home domains are in conflict with each other (Geurts & Demerouti, 2003). However, researchers argued that employees may also benefit from combining work and home, which may have benefits that outweigh the costs (Bakker & Geurts, 2004; Marks & MacDermid, 1996). Finally, measuring instruments that measure both the direction (work-to-home and home-to-work) and the quality (negative or positive) of interaction between the two domains are largely absent.

To overcome these limitations, the SWING (Survey Work-home Interaction - Nijmegen) was developed by Wagena and Geurts (2000) and validated by Geurts et al. (in press) at the Radboud University in the Netherlands. This instrument was designed to extend and enhance existing knowledge on work-home interaction. The SWING gives a full theory-guided conceptualisation of the work-home interface and encompasses interaction between the work domain and the home domain as well as negative and positive interferences between these domains.

According to Geurts et al. (in press), four dimensions of work-home interaction are found, namely (1) *negative work-home interference (WHI)*, referring to a situation in which negative load reactions built up at work hamper functioning at home; (2) *negative home-work interference (HWI)*, referring to negative load reactions developed at home that impede functioning at work; (3) *positive WHI*, defined as positive load reactions built up at work that facilitate functioning at home; and (4) *positive HWI*, occurring when positive load reactions developed at home and facilitate functioning at work. These four dimensions of work-home interaction were captured by using 27 (including 13 self-developed) items. According to Geurts et al. (in press), confirmatory factor analysis strongly supported the proposed four-dimensional structure of the SWING across the various theoretically relevant subgroups (e.g. gender, parental status, full-time vs. part-time status), providing evidence regarding its robustness and generalisability. Other relationships with three categories of correlates, including job and home characteristics, and presumed outcomes (e.g. fatigue and organisational commitment), yielded evidence regarding the discriminant validity of the SWING and enhanced the understanding of how the various dimensions of the work-home interface relate to these correlates.

The Effort-Recovery model by Meijman and Mulder (1998) was used as theoretical grounds for the development of the SWING. This model postulates that effort expenditure (work) is associated with specific load reactions (physiological, behavioural, and subjective responses), which develop within the individual while confronted with these efforts. These load reactions can be reversible, which means that after a respite from work and the accompanying effort investments, psychobiological systems will restabilise to a baseline level and recovery will occur (Geurts et al., in press).

If there are not sufficient opportunities for recovery after being exposed to a high workload, the psychological systems are activated again before they had a chance to stabilise. This will mean that the person, still in a sub-optimal state, will have to make additional or compensatory effort (Bakker & Geurts, 2004). Continued exposure to workload and insufficient recovery may cause negative load effects to persist for a longer period of time and even become irreversible.

Geurts et al. (in press) revealed that recovery from activities in the home domain might be at risk in a similar way when (i) these activities require high-effort investments due to their 'high duty' character (e.g. household activities), (ii) the time available for low-effort activities (e.g. relaxing at home) and a good night's rest is insufficient, or (iii) individuals suffer from slow unwinding (negative load reactions associated with demanding home activities do not unload and may have an adverse impact on sleep quality). Eventually, insufficient recovery may cause accumulation of fatigue and affect health and well-being (Van der Hulst & Geurts, 2001). Thus, the quality and quantity of work-home interaction has a direct effect on a person's well-being as well as their families and productivity at work. The fundamental role of the recovery process clearly makes the E-R model a promising perspective for studying *negative* work-home interaction. However, the same perspective may also increase our understanding of *positive* work-home interaction, since effort expenditure may also be accompanied by positive load reactions. If one feels competent and fulfilled in one's work, these positive feelings could increase one's self-worth, and this may lead to positive reactions in the home sphere (and vice versa).

Although the SWING was validated and used in studies in Europe (Geurts et al., in press), only one study could be found that investigated the psychometric properties of the SWING in South Africa (Pieterse & Mostert, 2005). This study found that the SWING is a reliable and valid instrument for measuring work-home interaction in the earthmoving equipment industry in South Africa. The study also intended to determine the construct equivalence and bias of the SWING. The results obtained revealed that there was no evidence for either uniform or non-uniform bias. Furthermore, exploratory factor analysis with target rotations showed that the construct equivalence of the four scales was satisfactory after problematic items were removed. Although the findings of Pieterse and Mostert (2005) are encouraging, no information is available regarding the validity and reliability of the SWING in any other occupation, including the nursing environment.

Apart from investigating the above, it is also necessary to study the prevalence of work-home interaction among different demographic groups in the nursing profession. Empirical evidence on *gender* revealed almost constantly that there are hardly any differences between males and females in their experience of negative or positive interaction between work and family in both directions (Burke, 1988; Demerouti, Geurts, & Bakker, 2004; Eagle, Miles, & Icenogle, 1997; Frone, 2002; Kinnunen & Mauno, 1998; Kirchmeyer, 1992). However, Grzywacz and Marks (2000) did report that there might be a slightly larger spillover for women from work to home, and that males reported a higher level of negative WHI in studies by Geurts et al. (in press) and Pieterse and Mostert (2005).

With regard to the effect of *race*, Frone, Russell, and Cooper (1997) found no long-term relationship between race and conflict in both the home and work domains. It must be noted that the changes in the workforce in South Africa (now more representative of all races), might result in different indications on work-home interaction than studies in other parts of the world. However, the study by Pieterse and Mostert (2005) revealed no statistically significant differences with regard to race. According to research on *age*, Grzywacz and Marks (2000) found a less positive spillover from family to work in younger men than in older men, while younger women reported a more positive spillover from work to family than in older women. Kinnunen and Mauno (1998) as well as Frone et al. (1997) found no relationship between different age groups with any type of negative interaction between both domains.

When investigating the *household situation*, Grzywacz and Marks (2000) reported that being unmarried was associated with negative WHI. However, the impact of marital status on the work-home interface is not clearly investigated, because most studies include mostly married employees. Another important factor for the household situation is the amount of social support provided by the family. Social support was found to be directly and negatively linked to HWI (Frone, Russell, & Cooper, 1992). Studies on *parental status* revealed that the age of children as well as the number of children living at home has an influence on WHI in both directions (Grandey & Cropanzano, 1999; Higgens, Duxbury, & Lee, 1994; Kinnunen & Mauno, 1998). According to Higgens et al. (1994), men with children in high school experience slightly less WHI than men with younger children. Also, HWI were lower for women with high-school children, than for women with younger children (Higgens et al., 1994).

Frone et al. (1997) revealed that no significant relationships were found between *educational level* and work-home interference. The study by Pieterse and Mostert (2005) also didn't find any significant differences in terms of the participants' educational level in their study. When investigating research on *full-time workers vs. part-time workers*, studies revealed that full-time workers experience a slightly higher level of negative WHI than part-time workers (Geurts et al., in press). It may be that the flexibility associated with part-time work may reduce negative WHI (Barnett, 1998; Higgens et al., 1994; Kinnunen & Mauno, 1998). No statistically significant differences were found in the study by Pieterse and Mostert (2005).

It is evident from the above discussion that work-home interaction is an important topic of research among various occupational groups. Work-home interaction also plays a predominant role in the nursing environment, which is widely acknowledged to be a very stressful and demanding profession (Carson, Bartlett, & Croucher, 1991; Coffey & Coleman, 2001; Dolan, 1987; Fagin, Brown, Bartlett, Leary, & Carson, 1995; Moores & Grant, 1977; Snellgrove, 1998; Sullivan, 1993). A South African study revealed that burnout levels among nurses are very high, which indicates that the role of the nurse is inherently stressful (Levert, Lucas, & Ortlepp, 2000). Another concern for the South African nursing environment is the large number of nurses emigrating, which has a negative impact on the provision of health services throughout the country (Ehlers, Oosthuizen, Bezuidenhout, Monareng, & Jooste, 2003). With a staff shortage of 20 000 qualified members, nurses experience even higher stress levels because the workload increases, more patients have to be treated in the same period of time, and the turnover of patients is faster than in the past (Ehlers et al., 2003). Wallis and Prince (2003) revealed that women wish to tailor their working lives to suit the needs of their families. However, because of the factors inherent in the job as well as the nursing environment (working shifts, experience of emotional situations, having to deal with patients on a continuous basis, etc.), conflict between the work and the home domain may be a serious problem for nursing staff (Burke & Greenglass, 2001; Wallis & Prince, 2003). It therefore seems that studies regarding the work-home interface can assist nurses to balance their work and home demands.

Based on the problem statement, the following research questions arise:

- What does the literature reveal about work-home interaction and its measurement?
- What is the construct validity and reliability of the SWING in a sample of nurses?
- What is the prevalence of work-home interaction in a sample of nurses in various demographic groups?
- Which recommendations can be made for future research?

1.2 RESEARCH OBJECTIVES

The research objectives can be divided into a general objective and specific objectives.

1.2.1 General objectives

The general objective of this research was to determine the construct validity and reliability of the Survey Work-Home Interaction – Nijmegen (SWING) and to determine the prevalence of work-home interaction for various demographic groups in a sample of nurses.

1.2.2 Specific objectives

The specific objectives of this research were:

- To investigate work-home interaction and its measurement from the literature.
- To determine the construct validity and reliability of the SWING in a sample of nurses.
- To determine the prevalence of work-home interaction in a sample of nurses in various demographic groups.
- To make recommendations for future research.

1.3 RESEARCH METHOD

The research consisted of a literature review and an empirical study. The results obtained are presented in the form of a research article.

1.3.1 Research design

A cross-sectional survey design is used to achieve the research objectives. Cross-sectional designs are used to examine groups of subjects simultaneously in various stages of development, while the survey describes a technique of data collection in which questionnaires are used to gather data about an identified population (Burns & Grove, 1993).

1.3.2 Participants and procedure

Random samples (N = 363) are taken from hospital nursing staff in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom, and Pretoria.

Permission was obtained from the different hospitals and the first phase of the research commenced. The questionnaire was compiled and a letter requesting participation and stating the motivation of the research was included. This questionnaire was distributed among the selected nurses in the various hospitals. The participants were ensured of anonymity and confidentiality with which the information will be handled. The participants were given two to three weeks to complete the questionnaire. Thereafter the questionnaires were personally collected from the specific hospitals.

1.3.3 Measuring battery

The following questionnaires are utilised in the empirical study:

The *Survey Work-Home Interference – Nijmegen* (SWING) is used to measure work-home/home-work interference (Geurts et al., in press; Wagena & Geurts, 2000). The SWING is a 27-item work-home interference measure. It measures four types of work-home interference: (1) negative interference from "work" with "home" (negative WHI), referring to a negative impact of the work situation on one's functioning at home (e.g. "your work schedule makes it difficult to fulfil domestic obligations"); (2) negative interference from "home" with "work" (negative HWI), referring to a negative impact of the home situation on one's job performance (e.g. "you have difficulty concentrating on your work because you are preoccupied with domestic matters"); (3) positive interference from "work" with "home" (positive WHI), referring to a positive impact of the work situation on one's functioning at

home (e.g. "you come home cheerfully after a successful day at work, thereby positively affecting the atmosphere at home"); (4) positive interference from "home" with "work" (positive HWI), referring to a positive impact of the home situation on one's job performance (e.g. "you are able to have better interaction with your colleague/supervisor as a result of the environment at home"). All items are scored on a four-point frequency rating scale, ranging from "0" (never) to "3" (always). Pieterse and Mostert (2005) confirmed the four-factor structure of the SWING in a sample of workers employed in the earthmoving equipment industry in South Africa and obtained the following Cronbach alpha coefficients for the SWING: Negative WHI: 0,87; Negative HWI: 0,79; Positive WHI: 0,79; Positive HWI: 0,76.

A *Biographical Questionnaire* is also used to determine the biographical characteristics of the participants. Characteristics such as age, race, educational level, household situation (e.g. marital status and/or having children or not) , type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and, full time vs. part time work are measured by this questionnaire.

1.3.4 Statistical analysis

The statistical analysis is carried out with the help of the SPSS Program (SPSS Inc., 2003) and the Amos program (Arbuckle, 2003). Cronbach alpha coefficients are used to assess the reliability of the measuring instrument (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) are used to analyse the data.

Following the procedure of Geurts et al. (in press), the construct validity of the SWING (the proposed four-factor structure of WHI/HWI) is tested by comparing four models for the relationships among the 27 items. *Model 1* proposes that all 27 items load on the same underlying latent dimension, assuming that the items cannot be distinguished on the basis of direction or quality of influence. *Model 2* ('direction model') is a two-factor model, and distinguishes between items that refer to either influence from work or influence from home (irrespective of its quality). *Model 3* ('quality model') also distinguishes between two factors. The first factor includes all items referring to positive interaction and the second factor includes all items referring to negative interaction (irrespective of the originating domain). Finally, *Model 4* ('hypothesised model') represents the four-factor model and distinguishes

between the four expected dimensions: negative WHI, negative HWI, positive WHI, and positive HWI.

Structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1999) are used to test the construct validity of the SWING, using the maximum likelihood method. SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). The χ^2 and several other goodness-of-fit indices are used to summarise the degree of correspondence between the implied and observed covariance matrices. The following goodness-of-fit-indices are used as adjuncts to the χ^2 statistics: a) χ^2/df ratio; b) The Goodness-of-Fit Index (GFI); c) The Adjusted Goodness-of-Fit Index (AGFI); d) The Parsimony Goodness-of-Fit Index (PGFI); e) The Incremental Fit Index IFI; f) The Tucker-Lewis Index (TLI); g) The Comparative Fit Index (CFI); h) The Root Mean Square Error of Approximation (RMSEA).

Multivariate analysis of variance (MANOVA) is used to determine the significance of differences between the work-home interaction levels of different demographic groups. MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). In MANOVA a new dependent variable that maximises group differences is created from the set of dependent variables. Wilk's Lambda is used to test the likelihood of the data under the assumption of equal population mean vectors for all groups, against the likelihood under the assumption that the population mean vectors are identical to those of the sample mean vectors for the different groups. When an effect is significant in MANOVA, one-way analysis of variance (ANOVA) is used to discover which dependent variables had been affected. Because multiple ANOVAs are used, a Bonferroni type adjustment is made for inflated Type 1 error. The Games-Howell procedure is used to determine if there are statistically differences between the groups.

1.4 OVERVIEW OF CHAPTERS

In Chapter 2, the psychometric properties of the Survey Work-Home Interaction – Nijmegen (SWING) as well as the prevalence of work-home interaction in different demographic

groups are measured and discussed. This chapter also deals with the empirical study. Chapter 3 deals with the discussion, limitations, and recommendations of this study.

1.5 CHAPTER SUMMARY

This chapter provided a discussion of the problem statement and research objectives. Furthermore, the measuring instruments and research method were explained, followed by a brief overview of the chapters that follow.

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CHAPTER 2

RESEARCH ARTICLE

A PSYCHOMETRIC ANALYSIS OF THE SURVEY WORK-HOME INTERACTION – NIJMEGEN (SWING) IN A NURSING ENVIRONMENT

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ABSTRACT

The objectives of this study were to determine the construct validity and reliability of the Survey Work-Home Interaction – Nijmegen (SWING), and to determine the prevalence of work-home interaction in various demographic groups. A cross-sectional survey design was used. Random samples ($N = 363$) were taken of nurses working in hospitals in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom, and Pretoria. The SWING and a biographical questionnaire were administered. Structural equation modelling (SEM) showed that a four-factor model, which measures negative work-home interference, positive work-home interference, negative home-work interference and positive home-work interference, fitted the data best. Cronbach alpha coefficients showed that all four factors were reliable. Multivariate analysis of variance (MANOVA) and one-way analysis of variance (ANOVA) were used to determine differences between work-home interaction and various demographic characteristics. The results indicated that there were statistically significant differences between demographic groups based on race, educational level, type of position, flexibility of arrangements at the workplace as well as between full-time and part-time work.

OPSOMMING

Die doelwitte van hierdie studie was om die konstrukgeldigheid en betroubaarheid van die *Survey Work-Home Interaction – Nijmegen (SWING)* te meet, en om die voorkoms van werk-huis-interaksie by verskeie demografiese groepe te bepaal. 'n Dwarssnee opname-ontwerp is tydens die studie gebruik. Ewekansige steekproewe (*N*=363) is van verpleegsters in hospitale in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom en Pretoria getrek. Die *SWING* en 'n biografiese vraelys is afgeneem. Strukturele vergelykingmodellering het getoon dat 'n vierfaktormodel, wat negatiewe werk-huis-interferensie, positiewe werk-huis-interferensie, negatiewe huis-werk-interferensie en positiewe huis-werk-interferensie meet, die mees geskikte vir die data was. Cronbach alfakoëffisiënte het getoon dat al vier die faktore betroubaar was. Meervoudigerigtingvariansieanalise (*MANOVA*) en eenrigtingvariansieanalise (*ANOVA*) is gebruik om die verskille tussen werk-huis-interaksie en verskeie demografiese eienskappe te bepaal. Die resultate het getoon dat daar statisties betekenisvolle verskille was tussen demografiese groepe wat gebaseer is op ras, opvoedkundige vlak, tipe pos, buigsaamheid om alternatiewe reëlings by die werksplek te tref asook voltydse en deeltydse werk.

Managing the integration of work and family demands is a critical challenge facing most employees and also an issue of growing importance in the Occupational and Health Psychology field (Geurts & Demerouti, 2003). The increased attention that the work-home interface has received over the past few years, can largely be attributed to the increased participation of women in the labour force and the heightened role demands on men and women who are part of dual-earner families. Although engaging in both work and family roles can have positive effects for individuals (e.g. Geurts & Demerouti, 2003; Rothbard, 2001), the potential for conflict between these roles increases if workers are unable to balance the responsibilities associated with both roles (Frone, Russell, & Cooper, 1992a; Greenhaus & Beutell, 1985; Greenhaus & Powell, 2003; Netemeyer, Boles, & McMurrian, 1996). Harmonising paid work and family life is a pivotal issue confronting many industrialised nations, including South Africa. According to Gerber (2000), and Schreuder and Theron (2001), traditional South African households are being replaced by working couples and the workforce is representative of more women and employees of all races. These changes have a significant impact on individual behaviour and on the organisational functioning itself, and are of paramount importance for the economic viability of organisations, as well as for the welfare of families (Barnett, 1998; Bond, Galinsky, & Swanberg, 1998; Ferber, O'Ferrell, & Allen, 1991; Greenhaus, 1988; Parasuraman & Greenhaus, 1999).

Although it seems that it is important to study work-home interaction in various occupations, this aspect has not been explored in the nursing literature (Hall & Callery, 2003). Most researchers study healthy families (LaRossa & Reitzes, 1993) or focus on women's efforts to manage the dual-earner lifestyle (Bernal & Meleis, 1995; Douglas, Meleis, Eribes, & Kim, 1996; Hall, 1987; Meleis, Douglas, Eribes, Shih, & Messias, 1996; Walker & Best, 1991). However, a number of recent reports and research studies have identified an urgent need to improve the working conditions of nurses (Advisory Committee on Health Human Resources (ACHHR), 2002; Aiken et al., 2001; Baumann et al., 2001; Health Canada, 2001; Nursing Task Force, 1999; Page, 2003; Wunderlich, Sloan, & Davis, 1996). Many factors combine to create stressful working conditions for nurses that could interfere with their family life, including heavy workloads, long hours, low professional status, difficult relations in the workplace, difficulty in carrying out professional roles, and a variety of workplace hazards (Baumann et al., 2001). In South Africa, nurses are faced with additional stressors, including budget restraints, medical inflation, overcrowded hospitals, high patient loads and exposure

to HIV/AIDS infected patients (Hall, 2004). It therefore seems important to include nurses in work-home interaction research.

Despite the substantial increase in literature on work-home interaction, research within this field is characterised by various limitations. First of all, research focused almost exclusively on the negative impact of the interaction between the work and the home domains. Secondly, very few studies addressed the possibility that the home domain may also interfere with the work domain. A third limitation is that researchers did not base their hypotheses on strong theoretical frameworks. Finally, virtually all measuring instruments focused on work-home and home-work conflict and the negative interaction between these domains, disregarding the possibility that these domains may also affect each other in a positive way (Carlson, Dacxmar, & Williams, 2000; Kopelman, Greenhaus, & Connolly, 1983; Netemeyer et al., 1996; Stephens & Sommer, 1996). It was therefore evident that a measuring instrument was required to overcome these limitations.

One instrument that overcame the above-mentioned limitations is the Survey Work-Home Interaction – Nijmegen (SWING), developed by Wagena and Geurts (2000) and validated by Geurts et al. (in press) at the Radboud University in the Netherlands. This survey is theoretically based on the Effort-Recovery model (E-R) by Meijman and Mulder (1998) and designed to extend and enhance existing knowledge on work-home interaction. The SWING gives a full theory-guided conceptualisation of the work-home interface and encompasses interaction between both direction (interaction between the work domain and the home domain), and quality (negative and positive interferences between the work and home domains).

The SWING was validated extensively (Geurts et al., in press), and used in various studies in Europe (e.g. Bakker & Geurts, 2004; Demerouti, Geurts, & Kompier, 2004; Montgomery, Peeters, Schaufeli, & Den Ouden, 2003; Peeters, Montgomery, Bakker, & Schaufeli, 2005). However, only one study could be found that investigated the psychometric properties of the SWING in South Africa (Pieterse & Mostert, 2005). This study found the SWING to be a reliable, valid and equivalent instrument. Although the authors' findings are encouraging, it cannot be assumed that the same findings will also be applicable to other occupational groups, including the nursing occupation. It is therefore important and necessary to investigate the psychometric properties of the SWING in a sample of nurses, before it could

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be used to draw valid and reliable conclusions regarding the work-home interaction of nurses. Furthermore, in order for South African nursing organisations to identify possible risk groups that have problems to balance their work and home lives, it is important to investigate the prevalence of work-home interaction in different demographic groups.

In view of the above discussion, the objectives of this research were 1) to determine the construct validity and reliability of the SWING, and 2) to determine the prevalence of work-home interaction in various demographic groups.

Theoretical background of the work-home interface

Greenhaus and Beutell (1985) defined work-family conflict as a form of interrole conflict in which the role pressures from the work and home domains are mutually incompatible in some respect. In a similar vein, Geurts et al. (in press) based their definition on the Effort-Recovery model and 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)". Another aspect that should be considered when studying work-home interaction is the different social roles an individual has to perform. Frone (2002) distinguished between work roles (e.g. employee, manager, union representative) and non-work (home) roles (family roles, religious roles, community roles, leisure roles). The expectation exists that conflict between the different social roles is an important stressor that can influence outcomes in the different life domains (Frone, 2002).

A large percentage of employed workers, and particularly employed parents, have serious difficulty in combining obligations in the work domain and home domain (Geurts & Demerouti, 2003). According to Geurts and Demerouti (2003), the type of work-home conflict could be based on role characteristics that affect time involvement, strain or behaviour in one domain, but which are incompatible with fulfilling the role in the other domain (work vs. home). Three types of work-home conflicts can therefore be identified, namely (1) Time-based conflict (i.e. when work and home roles compete for time); (2) Strain-based conflict (i.e. when strain in the one role affects performance in another role), and (3) Behaviour-based conflict (i.e. when role behaviour in the one domain may be in conflict with expectations of behaviour in the other domain) (Greenhaus & Beutell, 1985).

According to Geurts and Demerouti (2003), various antecedents exist for work-home interaction, including personality characteristics, family characteristics, and job characteristics. Various studies on the role of personality showed that hardiness, positive affectivity, extraversion, and internal locus of control are associated with less conflict between the work and home domains (Bernas & Major, 2000; Frone, 2002; Grzywacz & Marks, 2000). On the other hand, neuroticism, negative affectivity, the type A personality and a tendency to avoid problems at work, lead to higher levels of conflict between the work and the home domains (Bernas & Major, 2000; Grandey & Cropanzano, 1999; Grzywacz & Marks, 2000). Family characteristics associated with work-home interaction include social support as well as aspects such as parental load and spouse disagreement (Parasuraman, Purohit, Godshalk, & Beutell, 1996). Demanding aspects of the family situation (parental load, family criticism and spouse disagreement) are also constantly related to the negative influence that the home domain can have on the work domain (Grzywacz & Marks, 2000).

Another major antecedent of work-home interaction is job characteristics, where demanding aspects of the job seem to be responsible for the conflict between the work and the home domains. Characteristics associated with negative work to home conflict include work overload, long working hours, work role conflict and work role ambiguity (Frone et al., 1992a; Frone, Yardley, & Markel, 1997b; Grandey & Cropanzano, 1999; Grzywacz & Marks, 2000). On the other hand, motivational characteristics such as higher levels of job control and social support at work seem to be related to lower levels of negative interaction between the work and home domains (Geurts & Demerouti, 2003; Grzywacz & Marks, 2000).

Possible consequences of work-home interaction include psychological, physical, attitudinal, behavioural and organisational outcomes that may have an effect on both the individual and the organisation. Psychological consequences refer particularly to work-related stress, burnout and a lack of engagement. Frone, Russell, and Cooper (1997) revealed elevated levels of depression and poor health, and Väänänen et al. (2004) reported an increase in the secretion of stress hormones when chronically exposed to overtime. Geurts, Rutte and Peeters (1999) observed physical consequences such as headache, backache, upset stomach, fatigue, dizziness, and pain in the chest. All these factors might lead to reported poor general health, which has been positively related to work-home conflict (Frone, 2002; Grandey & Cropanzano, 1999). In an investigation of attitudinal outcomes, Allen, Herst, Bruck, and

Sutten (2000) found that job satisfaction is associated with work-home interaction and is reported to have an influence on both the work environment and the home environment. Behavioural consequences are related to an increased consumption of stimulants such as coffee, cigarettes and alcohol (Burke, 1988; Frone et al., 1997a). Organisational consequences include the decrease in the effectiveness and efficiency of both employers and managers (Montgomery et al., 2003).

A frequently used model to investigate work-home interaction is the Effort-Recovery (E-R) model (Meijman & Mulder, 1998). The E-R model postulates that effort expenditure (e.g. task performance at work) is associated with specific load reactions that develop in the individual. These load reactions can include psychological, behavioural and subjective responses such as changes in hormone secretion, energy levels, and mood (Geurts et al., in press). Normally, these load reactions are reversible if recovery occurs after the effort was invested and sufficient time was available for the psychobiological systems to stabilise. According to Geurts et al. (in press), the same conditions apply to effort investments in the home domain. Load reactions associated with the household and childcare activities will return to their pre-demand level after a relief from these demands. This means that high demands from the one domain will not have adverse health consequences as long as sufficient recovery takes place during or after these periods. However, the willingness to put effort into the task is crucial for the positive mobilisation of effort. According the E-R model, work environments that offer enough resources (e.g. performance, feedback, autonomy and personal development), may foster the willingness to dedicate an individual's abilities to the task and yield positive outcomes. Therefore, under the above-mentioned conditions, energy might be produced rather than consumed and this lead to the fact that tasks will be completed more successfully (Bakker & Geurts, 2004). Bakker and Geurts (2004) noted that increased motivation and commitment may be the result of this positive mobilisation of energy.

The Survey Work-Home Interaction – Nijmegen (SWING)

The SWING was developed to extend and enhance existing knowledge on work-home interaction. According to Geurts et al. (in press), the objective of the SWING is to measure the differentiation between the *direction* of influence (i.e. influence from the work domain on the home domain and vice versa) and the *quality* of influence (i.e. negative vs. positive influence). This leads to the formulation of four types of work-home interaction, namely 1)

negative work-home interference (WHI) (when negative load reactions built up at work, hamper functioning at home); 2) positive WHI (when positive load reactions built up at work, facilitate functioning at home); 3) negative home-work interference (HWI) (when negative load reactions developed at home, impede functioning at work); and 4) positive HWI (when positive load reactions developed at home, facilitate functioning at work) (Geurts et al., in press).

The four types of work-home interaction were captured by a 27-item survey, including 13 self-developed items. The items were divided into a 4-response format questionnaire varying from 0 ("never") to 3 ("always"). To test the relationships among the 27 items, four models were compared (see Geurts et al., in press). A four-factor model, which distinguished between the four dimensions (negative WHI, negative HWI, positive WHI, and positive HWI), explained the associations among the items of the SWING significantly better than the other three competing models and accounted reasonably well for the data. Geurts et al. (in press) also found all the scales to be reliable (α of negative WHI = 0,84; α of positive WHI = 0,75; α of negative HWI = 0,75; α of positive HWI = 0,81).

When examining the prevalence of WHI/HWI, the mean scores and standard deviation for each scale were relatively low (considering its possible range of 0 to 3). The highest mean score ($M = 1,15$) was observed for positive HWI and the lowest mean score ($M = 0,46$) for negative HWI. This proposes that interference originates more often from work (negative WHI: $M = 0,86$), than from home (negative HWI: $M = 0,46$). The higher mean score on positive HWI ($M = 1,15$) compared to positive WHI ($M = 0,81$) indicated that positive influence more often originated from the home domain than from the work domain. In all samples, negative WHI was more prevalent than negative HWI, and positive HWI was more prevalent than positive WHI (Geurts et al., in press).

To determine whether the SWING can be used in the South African environment, its validity and reliability must be determined. Only one study could be found in South Africa which studied the psychometric properties of the SWING. This study was undertaken by Pieterse and Mostert (2005), who validated the SWING in the earthmoving industry and revealed that the SWING is a reliable and valid instrument for measuring work-home interaction of workers in the earthmoving industry. They applied exploratory factor analysis and found that the construct equivalence of the four scales was satisfactory, but that the formulation of some

items (Items 10, Item 14 and Item 23) may be the reason for some of the problems encountered.

It is evident that work-home interaction is an important topic of research among various occupational groups. Work-home interaction in the nursing environment also plays a predominant role, because nursing is widely acknowledged to be a very stressful and demanding profession (Carson, Bartlett, & Croucher, 1991; Coffey & Coleman, 2001; Dolan, 1987; Fagin, Brown, Bartlett, Leary, & Carson, 1995; Moores & Grant, 1977; Snellgrove, 1998; Sullivan, 1993). Specific problems can be identified in the nursing environment, including extremely high levels of burnout (Levert, Lucas, & Ortlepp, 2000), large numbers of nurses emigrating (Ehlers, Oosthuizen, Bezuidenhout, Monareng, & Jooste, 2003), and a growing shortage of nursing staff (Ehlers et al., 2003). Studies focusing on work-home interaction can therefore assist in the exploration of possible solutions to the problems experienced in the nursing environment. However, a sound psychometric instrument such as the SWING is required to measure work-home interaction of nurses in a reliable and valid way. It is therefore necessary to validate the SWING for the nursing environment.

The prevalence of work-home interaction

Apart from measuring the psychometric characteristics of the SWING, it is just as important to investigate the differences in the various demographic groups. The dimensions that were investigated in this study include age, race, educational level, household situation (e.g. marital status and/or whether or not there are any children), type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and full-time vs. part-time work.

Although *gender* was not included in this study (because women constitute the largest percentage of the nursing profession), other studies revealed almost constantly that there are hardly any differences between males and females in their experience of negative or positive interaction between work and home in both directions (Burke, 1988; Demerouti, Geurts, & Bakker, 2004; Eagle, Miles, & Icenogle, 1997; Frone, 2002; Kinnunen & Mauno, 1998; Kirchmeyer, 1992). However, Grzywacz and Marks (2000) did report that women might experience a slightly larger spillover from work to home. The results of Geurts et al. (in

press) and Pieterse and Mostert (2005) showed that males reported a higher level of negative WHI.

Regarding *age*, most studies found no relationship between the different age groups and negative interaction in the work and home domains (Frone et al., 1997a; Kinnunen & Mauno, 1998). However, Grzywacz and Marks (2000) found a less positive spillover from home to work in younger men than in older men. Younger women also reported a more positive spillover from work to home than older women did. Relatively few studies included differences with regard to *race*. Frone et al. (1997a) found no long-term relationship between race and conflict in either the home or work domain. The study by Pieterse and Mostert (2005) revealed no statistically significant differences with regard to race.

The impact of *marital status* (household situation) on the work-home interface has not been clearly investigated, because most studies include a large percentage of married employees. Grzywacz and Marks (2000) reported that being single was associated with negative WHI. An important factor to consider when differences in the household situation are investigated is the amount of social support provided by the family. Social support was found to be directly and negatively linked to HWI (Frone, Russell, & Cooper, 1992b). Studies on *parental status* revealed that the age of children as well as the number of children living at home has an influence on WHI in both directions (Grandey & Cropanzano, 1999; Higgens, Duxbury, & Lee, 1994; Kinnunen & Mauno, 1998). Higgens et al. (1994) showed that men with children in high school experience slightly less WHI than men with younger children. Also, HWI were lower for women with high-school children, than for women with younger children (Higgens et al., 1994).

Studies investigating differences based on *educational level* reported no significant differences between individuals with different levels of education (Frone et al., 1997a; Pieterse & Mostert, 2005). When investigating research on *full-time workers vs. part-time workers*, studies showed that full-time workers experience higher levels of negative WHI than part-time workers (Geurts et al., in press). A possible explanation for this could be that the flexibility associated with part-time work may reduce negative WHI (Barnett, 1998; Higgens et al., 1994; Kinnunen & Mauno, 1998). Pieterse and Mostert (2005) found no statistically significant differences between full-time workers and part-time workers.

Based on sound theory and empirical studies, hypotheses could be formulated regarding the construct validity and reliability of the SWING. Given the contrasting results with regard to the differences in demographic groups in their experience of work-home interaction, no hypotheses are however formulated regarding the prevalence of work-home interaction.

The following hypotheses are formulated:

H1: Work-home interaction can be characterised as a four-dimensional construct that distinguishes between the direction (work-to-home and home-to-work) and quality (negative and positive) of influence.

H2: All four scales of the SWING are reliable.

METHOD

Research design

A cross-sectional survey design was used to reach research objectives. Cross-sectional designs were used to examine groups of subjects simultaneously in various stages of development, while the survey describes a technique of data collection in which questionnaires were used to gather data about an identified population (Burns & Grove, 1993).

Participants and research procedure

Random samples (N = 363) were taken from hospital nursing staff in Johannesburg, Klerksdorp, Krugersdorp, Potchefstroom and Pretoria. Permission was obtained from the different hospitals and the first phase of the research commenced. The questionnaire was compiled and a letter requesting participation and stating the motivation of the research was included. This questionnaire was distributed among the selected nurses in the various hospitals and participants were ensured of the anonymity and confidentiality of all information gathered during the course of the study. The participants were given two to three weeks to complete the questionnaire, whereupon the questionnaires were personally collected from the specific hospitals. The characteristics of the participants are shown in Table 1.

Table 1

Characteristics of the Participants

Item	Category	Frequency	Percentage
Gender	Male	9	2,5
	Female	351	96,7
	Missing values	3	0,8
Race	White	285	78,5
	African	55	15,1
	Coloured	15	4,1
	Indian	1	0,3
	Other	2	0,6
	Missing values	5	1,4
Household situation	Single without children	44	12,1
	Single with children	46	12,7
	Married without children	59	16,2
	Married with children	179	49,3
	Living with parents	17	4,7
	Other	14	3,9
	Missing values	4	1,1
Educational level	Lower than grade 10	9	2,5
	Grade 10	35	9,6
	Grade 11	15	4,1
	Grade 12	89	24,5
	Technical College diploma	61	16,8
	Technikon diploma	18	5,0
	University degree	36	9,9
	Postgraduate degree	34	9,4
	Other	59	16,3
	Missing values	7	1,9
Job type	Permanent employment	319	87,9
	Part-time employment	17	4,7
	Missing values	27	7,4
Position	Enrolled auxiliary nurse	88	24,2
	Enrolled nurse	44	12,1
	Registered nurse	175	48,2
	Unit manager	23	6,3
	Process manager	3	0,8
	Nursing services specialist	6	1,7
	Other	21	5,9
	Missing values	3	0,8

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Table 1 showed that 87,9% of the participants were permanently employed, while 4,7% were employed on a part-time basis. The sample consisted of white (78,5%), African (15,1%), Coloured (4,1%) and Indian (0,3%) participants. Furthermore 72,4% were Afrikaans-speaking and 11,3% English-speaking. Other languages constituted a representation of 14,1%. The participants were also predominantly female (96,7%). Most of the participants (65,5%) were married and 62,0% of the population were parents.

Measuring battery

The following questionnaires were utilised in the empirical study:

The *Survey Work-Home Interference – Nijmegen* (SWING) was used to measure WHI and HWI (Geurts et al., in press; Wagena & Geurts, 2000). The SWING is a 27-item work-home interference measure. It measures four types of work-home interference: (1) negative interference from "work" with "home" (negative WHI), referring to a negative impact of the work situation on one's functioning at home (e.g. "your work schedule makes it difficult to fulfil domestic obligations"); (2) negative interference from "home" with "work" (negative HWI), referring to a negative impact of the home situation on one's job performance (e.g. "you have difficulty concentrating on your work because you are preoccupied with domestic matters"); (3) positive interference from "work" with "home" (positive WHI), referring to a positive influence of the work situation on one's functioning at home (e.g. "you come home cheerfully after a successful day at work, thereby positively affecting the atmosphere at home"); (4) positive interference from "home" with "work" (positive HWI), referring to a positive impact of the home situation on one's job performance (e.g. "you are able to have better interaction with your colleague/supervisor as a result of the environment at home"). All items are scored on a 4-point frequency rating scale, ranging from "0" (*never*) to "3" (*always*). Pieterse and Mostert (2005) confirmed the four-factor structure of the SWING in a sample of workers employed in the earthmoving equipment industry in South Africa and obtained the following Cronbach alpha coefficients for the SWING: Negative WHI: 0,87; Negative HWI: 0,79; Positive WHI: 0,79; Positive HWI: 0,76.

A *Biographical Questionnaire* was also used to determine the biographical characteristics of the participants working in the nursing industry. The dimensions investigated by this questionnaire include age, race, educational level, household situation (e.g. marital status

and/or whether or not there are any children), type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and, full-time vs. part-time work.

Statistical analysis

The statistical analysis was carried out with the help of the SPSS Program (SPSS Inc., 2003) and the Amos program (Arbuckle, 2003). Cronbach alpha coefficients were used to assess the reliability of the measuring instrument (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) were used to analyse the data.

Following the procedure of Geurts et al. (in press), the construct validity of the SWING (the proposed four-factor structure of work-home interaction) was tested by comparing four models for the relationships among the 27 items, using structural equation modelling (SEM) methods as implemented by AMOS (Arbuckle, 1999). SEM is a statistical methodology that takes a confirmatory (i.e. hypothesis-testing) approach to the analysis of a structural theory bearing on some phenomenon (Byrne, 2001). 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. The following goodness-of-fit-indices were used as adjuncts to the χ^2 statistics: a) χ^2/df ratio; b) The Goodness-of-Fit Index (GFI); c) The Adjusted Goodness-of-Fit Index (AGFI); d) The Parsimony Goodness-of-Fit Index (PGFI); e) The Incremental Fit Index IFI; f) The Tucker-Lewis Index (TLI); g) The Comparative Fit Index (CFI); h) The Root Mean Square Error of Approximation (RMSEA).

Multivariate analysis of variance (MANOVA) was used to determine the significance of differences between the work-home interaction levels of different demographic groups. MANOVA tests whether mean differences among groups on a combination of dependent variables are likely to have occurred by chance (Tabachnick & Fidell, 2001). In MANOVA a new dependent variable that maximises group differences is created from the set of dependent variables. Wilk's Lambda was used to test the likelihood of the data under the assumption of equal population mean vectors for all groups, against the likelihood under the assumption that the population mean vectors are identical to those of the sample mean vectors for the different groups. When an effect was significant in MANOVA, one-way analysis of variance

(ANOVA) was used to determine which dependent variables had been affected. Because multiple ANOVAs were used, a Bonferroni-type adjustment was made for inflated Type 1 error. The Games-Howell procedure was used to determine whether there were statistical differences between the groups.

RESULTS

Following Geurts et al. (in press), the construct validity of the SWING was tested with SEM, using the maximum likelihood method. Four competing factorial models were tested. *Model 1* ("one-factor model") proposes that all 27 items load on the same underlying latent dimension, assuming that the items cannot be distinguished on the basis of direction or quality of influence. *Model 2* ("direction model") is a two-factor model, and distinguishes between items that refer to either influence from work or influence from home (irrespective of its quality). *Model 3* ("quality model") also distinguishes between two factors. The first factor includes all items referring to positive interaction and the second factor includes all items referring to negative interaction (irrespective of the originating domain). Finally, *Model 4* ("hypothesised model") represents the four-factor model and distinguishes among the four expected dimensions: negative WHI, negative HWI, positive WHI, and positive HWI. Table 2 presents the fit indices for the four models that were compared.

Table 2

Goodness-of-fit Statistics for the Comparison of Models

	Model	χ^2	χ^2/df	GFI	AGFI	PGFI	IFI	TLI	CFI	RMSEA
M1	One-factor	2096,86	6,47	0,62	0,55	0,53	0,46	0,40	0,45	0,12
M2	Two-factor ("direction model")	1812,96	5,61	0,65	0,59	0,56	0,54	0,50	0,54	0,11
M3	Two-factor ("quality model")	1350,44	4,18	0,75	0,71	0,65	0,68	0,65	0,68	0,09
M4	Four-factor ("hypothesised model")	990,28	3,08	0,82	0,79	0,70	0,80	0,77	0,79	0,08
M5	Four-factor ("final model")	481,45	2,13	0,90	0,87	0,73	0,91	0,90	0,91	0,06

From Table 2 it is clear that Model 1 did not fit well to the data (χ^2 = 2096,86; GFI, AGFI, IFI, TLI and CFI < 0,90 and RMSEA > 0,80). Although Model 2 ("directional model") and Model 3 ("quality model") explained the associations among the items significantly better

than Model 1, (M2 vs. M1: $\Delta \chi^2 = 283,90$ $_{(N = 363)}$, $df = 1,00$, $p < 0,001$; M3 vs. M1: $\Delta \chi^2 = 746,42$ $_{(N = 363)}$, $df = 1,00$, $p < 0,001$), both models still fell short of what is acceptable. The four-factor hypothesised model, which distinguished between the four proposed dimensions of work-home interaction, explained the associations among the items significantly better than the other three competing models (M4 vs. M1: $\Delta \chi^2 = 1106,58$ $_{(N = 363)}$, $df = 2,00$, $p < 0,001$; M4 vs. M2: $\Delta \chi^2 = 822,68$ $_{(N = 363)}$, $df = 1,000$, $p < 0,001$; M4 vs. M3: $\Delta \chi^2 = 360,16$ $_{(N = 363)}$, $df = 1,00$, $p < 0,001$).

Inspection of the fit indices, factor loadings and modification indices suggested that Model 4 can be improved. Based on the standardised regression weights, modification indices and standardised residual covariances, problematic items seem to be Item 14, 16, 22 and 23. It was decided to omit these items. Furthermore, Item 2 and Item 3 as well as Item 6 and Item 7 showed high overlap, which imply highly correlated error terms. According to Byrne (2001), the errors of these two item pairs were allowed to correlate.

As can be seen in Table 2, Model 5 fitted the data significantly better than M4 (M5 vs. M4: $\Delta \chi^2 = 508,83$ $_{(N = 363)}$, $df = 9,6$, $p < 0,001$). Furthermore, the fit statistics of Model 5 indicate a good fit for the re-specified model (χ^2/df < 5,00; GFI, IFI, TLI and CFI > 0,90; RMSEA <0,08). Since this model fit was satisfactory and the results agreed with the theoretical assumptions underlying the structure of the SWING, no further modifications of the model were deemed necessary.

These results support Hypothesis 1, which postulates that work-home interaction can be characterised as a four-dimensional construct that distinguishes between the direction (work to home, and home to work) and quality (negative and positive) of influence.

In Table 3, the descriptive statistics and alpha coefficients of the four factors of the SWING are given.

Table 3

Descriptive Statistics and Alpha Coefficients of the SWING

Item	Mean	SD	Skewness	Kurtosis	α
Negative WHI	10,94	5,27	0,32	-0,38	0,86
Positive WHI	7,00	2,98	0,21	-0,09	0,67
Negative HWI	3,23	2,77	0,93	0,68	0,81
Positive HWI	7,02	3,17	-0,14	-0,79	0,78

From the results in Table 3, it can be seen that the scores of the SWING are normally distributed. Overall, the Cronbach alpha coefficients of the scales are acceptable (Kline, 1999; Nunnally & Bernstein, 1994). Therefore, these findings provide support for Hypothesis 2, which postulates that all four scales of the SWING are reliable.

Next, MANOVA (multivariate analysis of variance) was used to determine differences between demographic groups with regard to work-home interaction. Demographic groups included were age, race, educational level, household situation (e.g. marital status and/whether or not there are any children), type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and, full-time vs. part-time work. Results were first analysed for statistical significance using Wilk's Lambda statistics. ANOVA was used to determine specific differences whenever statistical differences were found. The results of the MANOVA analysis are given in Table 4.

Table 4

MANOVA – Differences in Work-Home Interaction Levels of Demographic Groups

Variable	Value	F	Df	p	Partial Eta Squared
Age	0,94	1,38	16	0,14	0,02
Race	0,93	3,15	8	0,00*	0,04
Educational level	0,86	1,48	36	0,04*	0,04
Household situation	0,92	1,10	28	0,34	0,02
Position	0,91	1,68	20	0,03*	0,02
Use of annual leave	0,98	0,87	8	0,55	0,01
Arrangements at work	0,89	2,59	16	0,00*	0,03
Partner's contribution to household income	0,93	1,33	12	0,20	0,02
Full-time or part-time employment	0,96	3,10	4	0,02*	0,04

*p <0,05 = significant effect

In an analysis of Wilk's Lambda values, no statistically significant differences ($p < 0,05$) regarding work-home interaction levels could be found between the age of individuals, household situation, use of annual leave or the contribution that the partner makes to the total percentage of the household income. However, statistically significant differences ($p < 0,05$) were found for race, educational level, type of position, arrangements at work and the type of employment (full-time or part-time). The relationship between work-home interaction and these demographic variable levels that showed a statistically significant difference was further analysed using ANOVA. Because sample sizes were different, the Games-Howell procedure was used to determine whether there were any statistical differences between the groups.

The results of the ANOVA based on race are given in Table 5.

Table 5

Differences in Work-Home Interaction Levels Based on Race

Item	White	African	Coloured	*p*	Partial Eta Squared
Negative WHI	11,21	9,51	10,70	0,09	0,02
Positive WHI	6,84	7,62	7,73	0,13	0,01
Negative HWI	3,50[a]	1,83[b]	2,87	0,00*	0,05
Positive HWI	6,76[a]	7,94[b]	7,97	0,02*	0,02

* Statistically significant difference: $p < 0,05$
[a] Group differs statistically significantly from type (in row) where [b] is indicated

Table 5 shows that there are statistically significant differences between levels of Negative HWI and Positive HWI based on race. It seems that White nurses experience statistically significantly higher levels of Negative HWI and statistically significantly lower levels of Positive HWI than African nurses.

The results of the ANOVA based on education are given in Table 6.

Table 6

Differences in Work-Home Interaction Levels Based on Education

Item	Lower than grade 10	Grade 10	Grade 11	Grade 12	Technical College diploma	Technikon diploma	University degree	Postgraduate degree	*p*	Partial Eta Squared
Negative WHI	10,56	8,76[b]	8,87[b]	10,25	11,61	14,00[a]	11,50	11,59	0,02*	0,06
Positive WHI	8,56	7,32	8,13	7,17	6,62	7,33	5,78	7,03	0,17	0,04
Negative HWI	2,89	2,43	2,67	3,05	3,67	4,61	3,72	2,85	0,11	0,04
Positive HWI	8,22	8,17	7,40	7,57	6,61	7,11	6,14	6,47	0,05	0,05

* Statistically significant difference: $p < 0,05$
[a] Group differs statistically significantly from type (in row) where [b] is indicated

According to Table 6, there are statistically significant differences between the levels of Negative WHI. Nurses with a Technikon diploma experience statistically significantly higher levels of Negative WHI than nurses with grade 10 or grade 11.

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The results of the ANOVA based on position are given in Table 7.

Table 7

Differences in Work-Home Interaction Levels Based on Position

Item	Enrolled auxiliary nurse	Staff nurse	Registered nurse	Unit manager	*p*	Partial Eta Squared
Negative WHI	10,20	10,24	11,42	12,43	0,08	0,03
Positive WHI	7,63	7,49	6,51	6,63	0,07	0,03
Negative HWI	3,11	2,75	3,48	3,48	0,25	0,02
Positive HWI	7,92[a]	7,25	6,62[b]	6,22	0,01[*]	0,04

* Statistically significant difference: *p* < 0,05
[a] Group differs statistically significantly from type (in row) where [b] is indicated

Table 7 shows statistically significant differences in Positive HWI based on position. It seems that enrolled auxiliary nurses experience statistically significantly higher levels of Positive HWI than registered nurses.

The results of the ANOVA based on arrangements at work are given in Table 8.

Table 8

Differences in Work-Home Interaction Levels Based on Arrangements at Work

Item	Very easy to arrange	Easy to arrange	Possible to arrange	May not be possible to arrange	Impossible to arrange	*p*	Partial Eta Squared
Negative WHI	9,35	8,90[a]	10,44[a]	12,57[b]	13,84[c]	0,00[*]	0,07
Positive WHI	8,41	7,84	7,18	6,21	6,93	0,02[*]	0,04
Negative HWI	3,24	3,48	2,99	3,55	4,18	0,19	0,02
Positive HWI	8,06	7,10	7,14	6,47	7,36	0,32	0,01

* Statistically significant difference: *p* < 0,05
[a] Group differs statistically significantly from type (in row) where [b] is indicated

Table 8 shows that there are differences between Negative WHI and Positive WHI based on the type of arrangements that can be made at work when unforeseen difficulties happen at home. Statistically significantly higher levels of Negative WHI are experienced by nurses for whom it is impossible to take a day off from work when something unforeseen happens at

home, as opposed to nurses for whom it is easy or possible to make arrangements. Among groups for whom it may not be possible to arrange something at work, higher levels of Negative WHI were experienced as opposed to groups for whom it was possible to arrange. Although it seems that differences exist regarding Positive WHI, none of these differences were statistically significant.

The results of the ANOVA based on full-time or part-time employment are given in Table 9.

Table 9

Differences in Work-Home Interaction Levels Based on Full-Time or Part-Time Employment

Item	Full-Time Employment	Part-Time Employment	p	Partial Eta Squared
Negative WHI	11,17	8,65	0,06	0,01
Positive WHI	7,01	5,00	0,01*	0,02
Negative HWI	3,30	2,82	0,50	0,00
Positive HWI	7,03	5,47	0,05	0,01

* Statistically significant difference: $p < 0,05$
ᵃ Group differs statistically significantly from type (in row) where ᵇ is indicated

Table 9 indicates that there were differences with regard to Positive WHI. It seems that nurses who are full-time employed experience higher levels of Positive WHI than nurses who are part-time employed.

DISCUSSION

The integration of work and family demands is a critical challenge facing most employees and is an issue of growing importance - not only for the organisation, but also for individuals and their families. The nursing environment is widely acknowledged to be a very stressful and demanding profession as levels of burnout are very high, the shortage of nursing staff is increasing and the workload of nurses has increased tremendously over the past few years. In studying work-home interaction, possible solutions might yield a renewed vision regarding work-home interaction. However, only a few instruments measure the four dimensions of the work-home interface. Also, very few studies were done on the prevalence of work-home interaction and this called for further investigation. The purpose of this study was therefore to

test the construct validity and reliability of the Survey Work-Home Interaction Nijmegen (SWING), and to determine the prevalence of work-home interaction in different demographic groups in the nursing environment.

The first objective was to determine the construct validity of the SWING (e.g. whether work-home interaction can be measured as a four-dimensional construct that distinguishes between the direction and quality of influence). It was hypothesised that a four-factor model (negative WHI, negative HWI, positive WHI, and positive HWI) will fit the sample data better than a one-factor or two-factor model. In order to reach this objective, four models were tested and compared. The first model was a one-factor model, proposing that all 27 items on the SWING load on the same underlying latent dimension. Therefore, it was assumed that the items cannot be distinguished on the basis of direction (work-to-home and home-to-work) or quality (negative vs. positive) of influence. Structural equation modelling showed that the one-factor model did not fit the data at all. The second model was labelled the "directional model" and assumed that all items measuring work-to-home interference (regardless of whether these were positive or negative items) would form one factor, and all items measuring home-to-work interference will form another factor. A poor overall fit was also found for this model. The third model (the so-called "quality model") assumed that all positive items will load on a factor and all negative items will load on the second factor. This model also fell short of an acceptable fit. The hypothesised model (Model 4) represented a four-factor model and distinguished between the four expected dimensions (negative WHI, negative HWI, positive WHI, and positive HWI). This model explained the associations among the items significantly better than the other three competing models. However, the fit indices indicated that the model could be improved.

Based on the standardised regression weights, modification indices and standardised residual covariances, problematic items seemed to be Item 14 ("you arrive late at work because of domestic obligations"), Item 16 ("you come home cheerfully after a successful day at work, thereby positively affecting the atmosphere at home"), Item 22 ("after spending time with your spouse/family/friends, you go to work in a good mood, thereby positively affecting the atmosphere at work") and Item 23 ("after spending a pleasant weekend with your spouse/family/friends, you have more fun in jour job"). It was decided to omit these problematic items. Furthermore, following Byrne (2001), the errors of two item pairs were allowed to correlate (Item 2 and Item 3 as well as Item 6 and Item 7). These items showed

high overlap, which imply highly correlated error terms. After these modifications were made to the hypothesised model, model fit was satisfactory and the results agreed with the theoretical assumptions underlying the structure of the SWING.

These results seem to support previous research by Geurts at al. (in press) and Pieterse and Mostert (2005). Geurts et al. (in press) indicated basically the same results in their study as the standardised regression weights, modification indices and standardised residual covariances revealed the same problematic items (Item 14, Item 16, and Item 22). Pieterse and Mostert (2005) found with an inspection of the factor loadings that three of the items (Item 10, Item 14, and Item 23) were problematic. According to Pieterse and Mostert (2005), the formulation of some items on the SWING may be the reason for the problems. The items may have contained words that were difficult to understand. Another reason may be that the participants were from diverse cultures and backgrounds, which could have affected the participants' perception of the meaning of these items.

It was also important to determine whether all four scales of the SWING were reliable. Inspection of the Cronbach alpha coefficients indicated that all the scales were reliable except Positive WHI, which has a coefficient of 0,67 (which was < 0,70). However, Kline (1999) notes that when dealing with psychological constructs, values below 0,70 can, realistically, be expected because of the diversity of the constructs being measured. Pieterse and Mostert (2005) also confirmed the four-factor structure of the SWING in a sample of workers employed in the earthmoving equipment industry in South Africa and found the scales to be reliable (Cronbach alpha coefficients for the SWING were: Negative WHI: 0,87; Negative HWI: 0,79; Positive WHI: 0,79; Positive HWI: 0,76). Based on these findings, it therefore seems that the SWING is a reliable instrument for measuring work-home interaction in the nursing environment.

The second objective was to determine the prevalence of work-home interaction in different demographic groups. MANOVA analysis was used to determine the significance of differences between the work-home interaction levels and the various demographic characteristics. The demographic variables included age, race, educational level, household situation (e.g. marital status and/whether or not there are any children), type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and, full-time

vs. part-time work. The results showed that statistically significant differences were found regarding work-home interaction based on race, educational level, type of position, arrangements at work and the type of employment (full-time or part-time).

With regard to race, it was found that White nurses experienced statistically significantly higher levels of negative HWI and statistically significantly lower levels of positive HWI than African nurses. This implies that the home situation of White nurses is less favourable than the home situation of African nurses. However, taking the assumptions of the E-R model into account, it could be that white nurses have fewer opportunities to recover at home.

Regarding differences based on educational level, nurses with a Technikon diploma experienced statistically higher levels of negative WHI than nurses with grade 10 or grade 11. It can be assumed that nurses with Technikon diplomas are under more pressure to perform well, due to a broader job description. On the other hand, nurses with grade 10 and grade 11 are under much less pressure, due to the fact that these nurses' job descriptions are relatively less challenging.

Another variable where differences were experienced was the position that an individual holds. The ANOVA results showed that enrolled auxiliary nurses experience significantly higher levels of positive HWI than registered nurses. A possible explanation for these findings might be that enrolled nurses are in most cases young, at the beginning of their career and are generally speaking more positive with regard to working. It might also be that enrolled nurses experience less pressure at home and work than registered nurses, who are in general older with a family to attend to.

Not surprisingly, there were differences regarding the possibility to take a day off from work or to work from home in the event of unforeseen circumstances at home. Nurses for whom such a possibility is impossible or difficult to arrange, experienced statistically significantly higher levels of negative WHI than nurses for whom it is easy or possible to make arrangements. It is therefore clear that the flexibility that an employee experiences at work with regard to making alternative arrangements in the event of unforeseen difficulties at home has an effect on the negative spillover from work to home. Especially nurses with young children or nurses, whose husbands are ill, experience the difficulty to arrange time off as very negative. It is highly frustrating not being able to attend to an ill family member and

participants experienced this limitation as a negative aspect in management's approach. On the other side, most nurses in this environment have husbands working far from home, which adds to frustration of not being able to go home in emergency situations, such as a problem with a household appliance of family illness.

Regarding full-time vs. part-time employment, the results indicated that nurses who are full-time employed experience statistically significantly higher levels of positive WHI than nurses who are part-time employed. In the environment where this research was conducted, work is scarce, especially for men. It can be assumed that stress levels might be higher for part-time employees, because of the uncertainty of full-time employment in the near future. Full-time nurses' schedules are planned in advance and their salaries are determined for at least a year in advance. Full-time employees can therefore easier plan in advance and give positive attention to their household and family.

In conclusion, the results obtained in this study revealed that the SWING is a reliable measuring instrument for measuring work-home interaction of workers in the nursing environment. It therefore seems that the SWING has paved the way for further research regarding work-home interaction in other occupations in South Africa.

With regard to the limitations of this study, the following can be outlined: Firstly, the results were obtained solely by self-report questionnaires. This may cause different kinds of problems, such as the participants not understanding the questions, or a phenomenon commonly referred to as "method-variance" or "nuisance". The size of the sample and the homogeneity of the sample are other limitations. Not only was the sample taken from nursing staff alone, but most of the respondents were White Afrikaans-speaking women. It is therefore difficult to generalise the results to other occupational groups. However, these results may enhance the previous study of Pieterse and Mostert (2005) because most of the respondents in their study were male.

RECOMMENDATIONS

With regard to the results obtained from this study, the SWING is recommended as a measuring instrument to measure work-home interaction in the South African nursing

environment. Although errors were encountered in some of the items, the four scales of the SWING can be successfully employed to measure work-home interaction.

With regard to the nursing environment, work-home interaction need to be studied as a matter of urgency. Evidence on the growing problems in this environment indicated that knowledge concerning this occupation is needed to aid the profession in the development of solutions, wellness programmes and the personal growth of individuals in this environment. An understanding of the different and specific influences found in the nursing environment can be best established by studying the processes of work-home interaction.

Future research, along with other measuring instruments, may enhance existing knowledge on the ever complex processes between the home and the work environment. As already noted by Pieterse and Mostert (2005), it is highly recommended that the SWING must be translated into other official languages of South Africa to prevent misunderstanding of items. On the other hand, further research must be conducted with regard to the problematic items encountered in this study and previous studies (Geurts et al., in press; Pieterse & Mostert, 2005). Since this study was conducted among a relatively homogenous group, other studies, comprising with a greater variety of demographic characteristics will enhance the reliability and usefulness of the SWING.

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CHAPTER 3

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter encompasses conclusions regarding the literature review and the empirical study according to the specific objectives. The limitations of the research are discussed, followed by recommendations to the organisation with regard to the specific research problem. Lastly, suggestions are made for further studies.

3.1 CONCLUSIONS

The first objective of this study was to investigate work-home interaction and its measurement according to the literature. Various changes have occurred in the workplace during the past few years. Some of the major changes can be linked to the increasing number of women and dual-earner couples that form part of the labour force. These tendencies do not only have a significant impact on individual behaviour in an organisational setting, but also on the individual's private life (Greenhaus, 1988; Parasuraman & Greenhaus, 1999). On an individual level, employees have difficulty in combining obligations in the work domain and the home domain (Geurts & Demerouti, 2003), and also experience difficulty to manage different roles, such as work roles (e.g. employee, manager, union representative) and non-work (home) roles (family roles, religious roles, community roles, leisure roles) (Frone, 2002). Whenever individuals experience difficulty to manage these roles, imbalances occur as a result and this has significant consequences for the individuals, their families as well as the organisation (see Geurts & Demerouti, 2003, for an overview). Therefore, it is most important to undertake research on the interaction between the work and the home domains.

Although valuable information is available, the work-home interaction research field is characterised by various limitations, which include (1) an almost exclusively view on the negative impact of the interaction between the work and the home domains; (2) the fact that very few studies addressed the possibility that the home domain may also interfere with the work domain; (3) studies are undertaken by researchers who do not base their hypotheses on sound theoretical frameworks; and (4) virtually all measuring instruments focus on work-home and home-work conflict and the negative interaction between these domains,

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disregarding the possibility that these domains may also have a positive effect on each other (Carlson, Dacxmar, & Williams, 2000; Kopelman, Greenhaus, & Connolly, 1983; Netemeyer, Boles, & McMurrian, 1996; Stephens & Sommer, 1996).

However, recent research led to the development of a work-home interaction measuring instrument that overcame the above-mentioned limitations. This instrument is called the Survey Work-Home Interaction – Nijmegen (SWING), developed by Wagena and Geurts (2000) and validated by Geurts et al. (in press). This survey is theoretically embedded in the Effort-Recovery (E-R) model (Meijman & Mulder, 1998) and designed to extend and enhance existing knowledge on work-home interaction. The 27-item survey captured the four basic dimensions of work-home interaction, namely (1) *negative work-home interference (WHI)* (referring to negative load reactions built up at work that hamper functioning at home); (2) *negative home-work interference (HWI)* (referring to negative load reactions developed at home that impede functioning at work); (3) *positive WHI* (defined as positive load reactions built up at work that facilitate functioning at home); and (4) *positive HWI* (occurring when positive load reactions developed at home facilitate functioning at work).

Geurts et al. (in press) used confirmatory factor analysis in their validation of the SWING, which strongly supported the proposed four-dimensional structure across various theoretically relevant subgroups (e.g. gender, parental status, full-time vs. part-time status). It also provides evidence regarding the robustness and generalisability of the SWING (Geurts et al., in press). Although the SWING is widely and successfully used in Europe (e.g. Bakker & Geurts, 2004; Demerouti, Geurts, & Kompier, 2004; Geurts et al., in press; Montgomery, Peeters, Schaufeli, & Den Ouden, 2003; Peeters, Montgomery, Bakker, & Schaufeli, 2005), studies regarding its validity and reliability in South Africa are lacking. Only one study undertaken by Pieterse and Mostert (2005) evaluated the psychometric properties of the SWING and yielded evidence that the SWING can be successfully applied in the South African earthmoving industry.

The second objective of this study was to determine the construct validity and reliability of the SWING in a sample of nurses. It was hypothesised that a four-factor model (negative WHI, negative HWI, positive WHI, and positive HWI) will fit the sample data better than a one-factor or two-factor model. Four models were tested and compared. The first model was a one-factor model, proposing that all 27 items on the SWING load on the same underlying

latent dimension. The second model was labelled the "directional model" and assumed that all items measuring work-to-home interference (regardless of whether these were positive or negative items) would form one factor, and all items measuring home-to-work interference will form another factor. The third model (the so-called "quality model") assumed that all positive items will load on a factor and all negative items will load on the second factor. The hypothesised model (Model 4) represented a four-factor model and distinguished between the four expected dimensions (negative WHI, negative HWI, positive WHI, and positive HWI). Structural equation modelling showed that the four-factor model explained the associations among the items significantly better than the other three competing models.

Although the four-factor model showed superior fit, the fit indices indicated that this model could be improved. Based on the standardised regression weights, modification indices and standardised residual covariances, problematic items were deleted, which included Item 14 ("you arrive late at work due to domestic obligations"), Item 16 ("you come home cheerfully after a successful day at work, thereby positively affecting the atmosphere at home"), Item 22 ("after spending time with your spouse/family/friends, you go to work in a good mood, thereby positively affecting the atmosphere at work") and Item 23 ("after spending a pleasant weekend with your spouse/family/friends, you have more fun in jour job"). Furthermore, the errors of two item pairs were allowed to correlate (Item 2 and Item 3 as well as Item 6 and Item 7). After these modifications were made to the hypothesised model, model fit was satisfactory and the results agreed with the theoretical assumptions underlying the structure of the SWING and thus supported previous research (e.g. Geurts et al., in press; Pieterse & Mostert, 2005).

Regarding the reliability of the SWING, inspection of the Cronbach alpha coefficients indicated that all the scales were reliable. The following Cronbach alpha coefficients were found for the four scales: Negative WHI: 0,86; Positive WHI: 0,67; Negative HWI: 0,81; Positive HWI: 0,78. Based on these findings, it therefore seems that the SWING is a reliable and valid instrument for measuring work-home interaction in the nursing environment.

The third objective of this study was to determine the prevalence of work-home interaction in a sample of nurses in various demographic groups. MANOVA analysis was used to determine the significance of differences between the work-home interaction levels and the various demographic characteristics. The demographic variables included age, race,

educational level, household situation (e.g. marital status and/or whether or not there are any children), type of position (e.g. auxiliary nurse, registered nurse), use of annual leave, flexibility of arrangements at work, the percentage contribution that the partner makes to the total household income and, full-time vs. part-time work. Whenever an effect was significant in MANOVA, one-way analysis of variance (ANOVA) was used to discover which dependent variables had been affected. The MANOVA results indicated that there were statistically significant differences between demographic groups based on race, educational level, type of position, flexibility of arrangements at the workplace as well as between full-time and part-time work.

With regard to race, it was found that White nurses experienced statistically significantly higher levels of negative HWI, and statistically significantly lower levels of positive HWI than African nurses. Regarding differences based on educational level, nurses with a Technikon diploma experienced statistically higher levels of negative WHI than nurses with grade 10 or grade 11. Differences were also experienced between enrolled auxiliary nurses and registered nurses; enrolled auxiliary nurses experience significantly higher levels of positive HWI than registered nurses. There were also differences regarding the possibility to take a day off from work in the event of unforeseen circumstances at home. Nurses for whom such a possibility was impossible or difficult to arrange, experienced statistically significantly higher levels of negative WHI than nurses for whom it was easy or possible to make arrangements. Finally, the results indicated that nurses who are full-time employed experience statistically significantly higher levels of positive WHI than nurses who are part-time employed.

3.2 LIMITATIONS

The various limitations of this study should be noted. Firstly, the results were obtained solely by self-report questionnaires. This may cause certain problems, such as the non-understanding of the questions and the problem referred to as "method-variance" or "nuisance". However, few alternative methodologies could be found or suggested to deal with the problem of self-report questionnaires. Research is therefore required to provide more objective forms of measurement to overcome this problem.

Secondly, the size of the sample is a further limitation, specifically with regard to the distribution of different races and language groups. This study did not consist of equal numbers of participants representing each language and race group. Future studies could benefit greatly by utilising a sample with proportionate inclusion of all the official language and race groups of South Africa.

A third limitation refers to the homogeneity of the group. The sample was taken from nursing staff and the majority of the respondents were White Afrikaans-speaking women. Therefore, one can not generalise the results to other occupational groups. The problem is that unique characteristics may be present within this occupational environment, which includes a specific organisational culture that could have affected the responses of the participants. It is important that the same study be conducted among other occupational groups.

Lastly, the language restraint of the questionnaires must be noted. The sample was mostly Afrikaans-speaking and only a few respondents have English as their home language. This implied that most of these respondents had to answer the questionnaire in their second or third language. The problem of misinterpretation of the questions might thus have occurred.

3.3 RECOMMENDATIONS

The following recommendations are made to the organisation as well as for future research.

3.3.1 Recommendations to the organisation

Striving for balance between work and home roles poses a great challenge to organisations. Research on work and home interaction revealed that work-life initiatives have a positive effect on the company as well as the welfare of individuals and their families (Barnett, 1998; Bond, Galinsky, & Swanberg, 1998; Ferber, O'Ferrell, & Allen, 1991; Greenhaus, 1988; Parasuraman & Greenhaus, 1999).

Various outcomes of work-home interaction are found, including personality characteristics, family characteristics, and job characteristics (Geurts & Demerouti, 2003). These outcomes can be highly interactive and may be harmful to both the organisation and the individuals and

their families. Consequences include psychological, physical, attitudinal, behavioural and organisational outcomes. Work-related stress, burnout and a lack of engagement (Frone, Russell, & Cooper, 1997; Väänänen et al., 2004) are a few of the most common consequences, which influence the individual and their families as well as the organisation. Physical consequences include headaches, backache, upset stomach, fatigue, dizziness, and pain in the chest (Geurts, Rutte, & Peeters, 1999). The consumption of stimulants, such as alcohol, cigarettes and coffee may also increase as a result (Burke, 1988; Frone et al., 1997). All of the above may lead to poor general health (Frone, 2002; Grandey & Cropanzano, 1999). On the other hand, there may also be positive consequences such as job satisfaction, which will have a positive influence on the work and home domains (Allen, Herst, Bruck, & Sutten, 2000).

The battle for balance will continue, and therefore it is imperative for organisations as well as individuals to understand work-home interaction and the consequences of an imbalance between the different roles in the work and home domains. This improved understanding and knowledge may help organisations and individuals in perceiving problematic areas and developing programmes aimed at general wellness. The SWING, though a relatively new measuring instrument, will contribute to the understanding of work-home interaction problem areas as well as in the development of wellness programs. If organisations have the ability to develop an awareness of these interactions, it can improve the day-to-day management of staff and prevent crisis management.

3.3.2 Recommendations for future research

Research in South Africa should focus on processes aimed at helping the individual to develop a balanced lifestyle and an awareness of unhealthy practices. Organisations can assist by investigating staff management practices and the culture of the work environment. By studying work-home interaction along with other measuring instruments, such as job demands, home demands, and coping strategies, it can contribute towards possible answers to the management of work-home interaction.

Due to the variety of languages spoken in South Africa, and the fact that English might not be the respondent's first language, it is recommended that the SWING be translated into the

other official languages. As sample size was a problem, it is recommended that studies with a greater variety of demographic characteristics and larger samples will enhance the reliability and usefulness of the SWING in other occupational groups in South Africa. In this way the generalisation of findings will be more effective. Regarding the problems encountered with certain items (Item 14, 16, 22, and 23) of the SWING, it is recommended that further research should examine the origin of the problem, or to exclude these items from the original questionnaire.

Finally, South Africa is a multicultural society and nurses come from diverse cultural backgrounds and language groups. Therefore, it is impossible that results obtained in one cultural or language group can be generalised to other groups. Future research should therefore test for equivalence and bias (Van de Vijver & Leung, 1997). Without a test of equivalence and bias it is impossible to know to what extent scores or constructs underlying an instrument can be compared across cultures.

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