

**A PSYCHOMETRIC ANALYSIS OF THE SURVEY WORK-  
HOME INTERACTION – NIJMEGEN (SWING) IN THE SOUTH  
AFRICAN EARTHMOVING EQUIPMENT INDUSTRY**

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## COMMENTS

The reader should keep the following in mind:

- The editorial style as well as the references referred to in this mini-dissertation follow the format prescribed by the Publication Manual (4<sup>th</sup> edition) of the American Psychological Association (APA). This practice is in line with the policy of the Programme in Industrial Psychology of the North-West University (Potchefstroom) to use APA style in all scientific documents as from January 1999.
- The mini-dissertation is submitted in the form of a research article. The editorial style specified by the South African Journal of Industrial Psychology (which agrees largely with the APA style) is used, but the APA guidelines were followed in constructing tables.

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## ABSTRACT

**Title:** A psychometric analysis of the Survey Work-Home Interaction – Nijmegen (SWING) in the South African earthmoving equipment industry.

**Key terms:** Work-home interaction, work-life balance, well-being, effort-recovery model, earthmoving equipment industry, validity, reliability, construct equivalence, item bias.

In an ever-changing world, people are constantly faced with the challenge of simultaneously managing multiple roles in their work as well as their home-sphere. It therefore becomes increasingly important to maintain a balance in these two life spheres. Unfortunately, a gap exists between the positive and negative side of work-home balance as most research focuses on the negative side. Recently, a much needed instrument was developed in the Netherlands, namely the Survey Work-Home Interaction – Nijmegen (SWING), which measures both the direction of influence (work→home and vice versa) and the quality of influence (negative vs. positive).

The objectives of this study were to validate the Survey Work-Home Interaction – Nijmegen (SWING) for workers of the earthmoving equipment industry in a South African context, to determine its construct equivalence and bias for different language groups, and to determine differences regarding work-home interaction between different demographic groups. A cross-sectional survey design was used. Random samples ( $n = 330$ ) were taken of workers in the earthmoving equipment industry across South Africa. The SWING and a biographical questionnaire were administered. Item bias analyses, exploratory factor analysis, Cronbach alpha coefficients, MANOVAs, ANOVAs and T-tests were used to analyse the data.

Exploratory factor analysis showed that the SWING consists of four factors, namely Negative Work-Home Interference, Negative Home-Work Interference, Positive Work-Home Interference and Positive Home-Work Interference. All four factors showed acceptable internal consistencies. No evidence was found for uniform or nonuniform bias of the items of the SWING for different language groups. Exploratory factor analysis with target rotations

confirmed the construct equivalence of the work-home interface construct. There were also no differences regarding work-home interaction between different demographic groups, except for a practically significant difference (medium effect) between males and females with respect to negative Work-Home Interaction levels.

Recommendations were made for further research.

## OPSOMMING

**Titel:** 'n Psigometriese analise van die Survey Work-Home Interaction – NijmegenGen (SWING) in die grondverskuiwingstoerustingindustrie

**Sleutelterme:** Werk-huis-interaksie, werk-lewe-balans, welstand, poging-herstelmodel, grondverskuiwingstoerustingindustrie, geldigheid, betroubaarheid, konstruktiewalensie, itemsydigheid.

In 'n dinamiese, veranderende wêreld word mense daagliks blootgestel aan verskeie rolle in hul werk- en familiesfeer, asook met die suksesvolle bestuur van hierdie rolle. Daarom word dit toenemend van belang dat mense weet hoe om 'n balans tussen die twee sferes te handhaaf. Ongelukkig fokus huidige navorsing meerendeels op die negatiewe aspekte van werk-huis-balans. Onlangs is 'n instrument in Nederland ontwikkel, naamlik die Survey Work-Home Interaction – Nijmegen (SWING) wat sowel die rigting (werk→huis en vice versa) as die kwaliteit van die invloed (positief vs. negatief) meet.

Die doelwitte van die studie was om die SWING te valideer vir werknemers in die grondverskuiwingstoerustingindustrie van Suid-Afrika, om die konstruktiewalensie en sydigheid vir verskeie taalgroepe te verkry asook om die verhouding tussen werk-huis-balans en verskillende demografiese groepe te bepaal. 'n Dwarsdeursnee-navorsingsontwerp is gebruik en 'n ewekansige steekproef ( $n = 330$ ) is geneem onder werkers in die grondverskuiwingstoerustingindustrie regoor Suid-Afrika. Die SWING en 'n biografiese vraelys is afgeneem. Itemsydighedsanalises, eksploratiewe faktoranalises, Cronbach alfakoëffisiente, MANOVAs, ANOVAs and T-toetse is gebruik om die data te analiseer.

Eksploratiewe faktoranalise het getoon dat die SWING uit vier faktore bestaan, naamlik Negatiewe Werk-Huis-Interaksie, Negatiewe Huis-Werk-Interaksie, Positiewe Werk-Huis-Interaksie en Positiewe Huis-Werk-Interaksie. Al vier faktore het aanvaarbare interne konsekwentheid getoon. Geen bewyse is gevind vir uniforme of nie-uniforme sydigheid van die

items van die SWING vir verskillende taalgroepe nie. Eksploratiewe faktoranalise met teikenrotasies het die konstrukekwivalensie van die vier faktore vir verskillende taalgroepe bevestig. Daar was geen verskille tussen demografiese groepe nie, maar wel tekens van praktiese betekenisvolle verskille van medium effek tussen mans en vrouens ten opsigte van negatiewe Werk-Huis-interaksievlakke.

Aanbevelings vir toekomstige navorsing is aan die hand gedoen.

# **CHAPTER 1**

## **INTRODUCTION**

This mini-dissertation focuses on a psychometric analysis of the Survey Work-Home Interaction – Nijmegen (SWING), which measures work-home interaction by using a representative sample of employees working in the earthmoving equipment industry of South Africa.

This chapter contains the problem statement and a discussion of the research objectives, in which the general objective and specific objectives are set out. The research method is explained and the division of chapters given.

### **1.1 PROBLEM STATEMENT**

In the global economy in which we live, the question is often asked how people manage the conflicting demands from work and family life – and the consequences of these conflicts. This is important, especially since our roles have changed considerably since the first democratic elections in 1994, as evidently seen in the more representative workforce of South Africa. Nowadays it is generally agreed that a good work/non-work balance is of growing importance for the economic viability of organisations and for the welfare of employees and families (Barnett, 1998).

The importance of work-home interference is also seen in organisations such as the earthmoving equipment industry. On a daily basis, an industry such as this is concerned with the management of economic risks as well as political and social change, all of which creates both uncertainty and stress. Earthmoving includes four processes, namely excavating, hauling, spreading and compacting (Peurifoy & Ledbetter, 1985). According to Shi and Abourizk (1998), earthmoving is a common construction operation typical to building foundation work, dam construction, airport construction, road construction, strip-mining and other work. Demands in the earthmoving industry have developed from the middle nineteenth century, and have increased

dramatically since then. Greater quantities of earth and rock needed to be moved at a lower cost to accommodate these demands, thus earthmover's mechanisms have become more efficient and progressively larger (Haycraft, 2000). In a modern and safety-conscious society, there is constant pressure to improve the effectiveness, productivity and safety in the industry (Singh, 1997). The challenge to the individual is to adjust and accommodate to work (Quick, Nelson & Quick, 2001) and to maintain a full, balanced life.

In order for employees to maintain a balanced life, the challenge does not only encompass work and family adjustments, but also the management of multiple roles (e.g. that of parent, spouse and employee). The management of these roles may become problematic, especially if the fulfilling of these roles draw on the same scarce resources. Sometimes the demands of one role make it difficult to comply with the demands of the other. The result is that individuals may experience some form of conflict between the roles that they assume they must fulfil and the roles that they are expected to fulfil. This, in turn, may cause individuals to experience conflict between their family and work lives (Schreuder & Theron, 2001). If this is the case, it may lead to work-family conflict. Greenhaus and Beutell (1985) define *work-family conflict* as a form of inter-role conflict in which role pressures from the work and family domains are mutually incompatible in some respect, thus creating role strain. On the other hand, *work-family balance* can be seen as the lack of conflict or interference between work and family roles in both directions (Frone, 2003).

Extensive research has explored the potential negative outcomes related to an imbalance in the individual's life. These include aspects such as stress and burnout (Geurts, Taris, Kompier, Dijkers, Van Hooff and Kinnunen, in press), lack of engagement (Geurts et al., in press) and poor general health (Frone, 2003; Grandey & Cropanzano, 1999). Burke (1988) also reported a positive relationship between work-family conflict and negative affective states, including depression, the impulse and overt to aggression, anger, irritation and insomnia.

Work-home interference (WHI) or home-work interference (HWI) is an interactive process in which a worker's functioning in one domain (work or home) is influenced by positive or negative load reactions that have built up in the other domain (Geurts et al., in press). Although

the definition states that work-home interference is a much broader concept that also includes a positive side, very few studies have addressed the occurrence, frequency and correlation of positive interaction between work and private life (Frone, 2003; Geurts & Demerouti, 2003) and virtually all measures that focus on work-home interference measure work-family and family-work conflict and the negative spillover effect of one domain to the other (Carlson, Dacmar & Williams, 2000; Kopelman, Greenhaus & Connolly, 1983; Netemeyer, Boles & McMurrin, 1996; Stephens & Sommer, 1996). In light of this research, it can be said that, despite a growing multidisciplinary literature, the work-family interface is not well understood. The lack of an overarching and integrating theoretical framework and an almost exclusive focus on work-family conflict can be seen as one of the greatest barriers facing work-family research (Barnett, 1996).

However, recent research has shown that even though the role strain hypothesis (which states that work and non-work are two domains which are perceptually in conflict with each other) is still quite dominant in work/non-work research (e.g. Kinnunen & Mauno, 1998, Stephens, Franks & Atziena, 1997), these two domains might also be in harmony. This is a more positive view of how work and non-work might relate. Marks (1977) presented an approach stating that the fulfilment of multiple roles is not necessarily difficult and associated with the spending or depletion of energy resources and the development of role strain. Furthermore, Grzywacz and Marks (2000) stated that the process of consumption of human energy was inseparably related to the process of production of human energy, in other words, managing multiple roles may also create energy and this can be referred to as *positive spillover or role enhancement*. However, the gap in research on this matter is reflected in the lack of measuring instruments, which measures both the positive and negative side of work-home interference as well as the direction of this interference (e.g. home to work and work to home). Therefore, the undeniable need for an instrument that measures both dimensions of the work-home interface (e.g. quality and direction) is quite apparent.

However, in 2000 an instrument called the Survey Work-Home Interaction – Nijmegen (SWING) was developed by Wagena and Geurts at the Radboud University in Nijmegen. This instrument measures the work-home interface by using 27 items, of which 13 were self-developed (Geurts et al., in press). Furthermore, the SWING is also unique because it is the first

instrument that differentiates between the quality and direction of the work-home interface. Through this differentiation, four types of the work-home interface are captured. **Negative WHI** occurs when negative load reactions build up at work and hamper functioning at home. **Positive WHI** means that positive load reactions build up at work and facilitate functioning at home. **Negative HWI** occurs when negative load reactions developed at home that impedes functioning at work, while **Positive HWI** occurs when positive load reactions developed at home, facilitate functioning at work.

Although theory should form a fundamental part of the research discipline, the lack of theoretically based instruments is rather apparent and quite appalling. However, the development of the SWING is based on a sound theoretical model, called the Effort-Recovery (E-R) model (Meijman & Mulder, 1998). The E-R model is a work psychological model that is rooted in exercise physiology, particularly in its application to the study of workload in relation to a person's capacity. The E-R model also sheds light on *how* work and private life may interact and by which mechanisms well-being may be affected (Geurts et al., 2003). According to this model, effort expenditure is associated with specific load reactions (namely physiological, behavioural and subjective responses) that develop within the individual. In practice, the short-term reactions include all the responses at a physiological, behavioural and subjective level that can be related to the load process. These reactions are in principle reversible. Recovery takes place when the exposure to load ceases and the respective psychological systems will stabilise again at a specific baseline level within a certain period of time (Drenth, Thierry & de Wolff, 1998). As a result of the recovery process, fatigue and other effects of stressful situations are reduced, but when demands do not cease but are continuously put on the individual, no recovery occurs.

It is also necessary to take certain factors into consideration if the recovery process is to be successful. Recovery from high job demands might be jeopardised when (i) demands unremittingly require effort investment without the possibility to recuperate (e.g. by switching to low-effort routine tasks or by taking an occasional break), (ii) the time available for recuperation after work is too short because demands do not cease but continue to exist (e.g. household or

child care tasks), and (iii) individuals are slowly unwinding, negative load reactions built up at work and do not unfold immediately after a short respite from work (Sonnetag, 2001).

According to Geurts et al. (in press), recovery from activities in the home setting 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, or job-related tasks), (ii) the time available for low-effort activities (e.g. watching TV, relaxing on the sofa) 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 reduce soon and may have an adverse impact on sleep quality). The outcome of this accumulation of load reactions may be the occurrence of impaired well-being and health problems (Sonnetag, 2001). To illustrate this, the following example is used: When a person complains of a back injury due to heavy physical work, this may render him or her unsuitable for work on a forklift truck – because of mechanic vibrations affecting the back. For recovery to occur, it is necessary that the demands that were previously made on the individual's psychobiological systems be removed and that the individual engage in a below-baseline activity (Craig & Cooper, 1992). Thus, high demands in either the job or the home setting will not have adverse health consequences as long as *sufficient* recovery during and after working time is warranted.

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 satisfied 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).

It is important to use a reliable and valid instrument to measure work-family balance. However, since this is the first time that the SWING is used in South Africa, it has not yet been validated and little information is available on its internal consistency and construct validity. However, research done by Geurts et al. (in press) indicates that the psychometric properties of the SWING are promising. The SWING was found to be reliable and confirmatory factor analyses strongly

supported the proposed four-dimensional structure across various theoretically relevant subgroups, providing evidence for its robustness and generalisability. The SWING was also validated internally and externally by using data from five samples (gender, parental status – parents vs. non-parents – and part-time vs. full-time status; total  $N = 2\,472$ ) (Geurts et al., in press). Three categories of correlates were used to examine the yielding of the discriminant validity of the SWING as well as to see how the various dimensions of the work-home interface relate to these correlates. Relationships with three categories of correlates (i.e. job characteristics, home characteristics, and presumed outcomes) yielded evidence regarding the discriminant validity of the SWING.

When comparing scores in terms of a specific construct across multicultural settings, equivalence and bias must also be tested (Van de Vijver & Leung, 1997). This is particularly relevant where no norms exist for the different cultural groups – which is often the case in cross-cultural research (Storm & Rothmann, 2003). Furthermore, when cultural influences are not accounted for, invalid conclusions regarding the constructs under study could be made, with serious implications for culturally diverse settings such as South Africa. In light of the fact that membership of different language and cultural groupings can influence the manner in which we perceive the world around us, it is advised to account for these differences by computing equivalence and bias of measuring instruments in multicultural research settings (Van de Vijver & Leung, 1997), as in a South African context. Therefore, construct equivalence and item bias of the SWING will also have to be computed.

*Construct equivalence* indicates the extent to which the same construct is measured across the cultural groups under study, in other words, the comparison of cultural groups because their scores are related to the same construct. On the other hand, in the case of construct inequivalence, obtained scores are not related to the same construct and no comparison can be made.

*Item bias*, the second important computation in cross-cultural settings, concerns aspects of measurement validity in intercultural group comparisons (Van de Vijver & Leung, 1997). An unbiased item would provide the same average score on an item for two individuals from

different cultural groups that could be regarded as similar in terms of a specific construct measured by an item. The danger associated with bias is that it would lower the equivalence of the measuring instrument. Two types of bias can be distinguished, namely uniform and nonuniform bias (Van de Vijver & Leung, 1997). *Uniform* bias refers to the main effects of cultural differences, in other words the influence of bias on an item is consistent for all the score levels of that particular item. *Nonuniform* bias refers to the interaction effects of cultural differences and score level, indicating that across all score levels of an item, significantly larger differences in terms of a particular item exist in one group when compared to the other group across the different score levels for the specific item (Mellenbergh, 1982). Various contributory causes exist for bias. It can be caused by incidental differences in appropriateness of item content, inadequate item formulation and translation response characteristics of the sample, and also by administration effects.

Apart from measuring the psychometric qualities of the SWING, it is also necessary to investigate differences between different demographic groups. Regarding the difference between genders, Geurts et al. (in press) found that males reported a more negative WHI than females, and females experienced a more positive HWI than males. This may suggest that women may perceive their non-work activities as more rewarding than males. Full-timers also showed a relatively higher level of negative WHI than part-timers. More negative interaction between both domains was associated with a higher level of fatigue, thus, interference from both domains impedes recovery and this yields negative load reactions.

Furthermore, it was found that working parents reported relatively high levels of positive HWI. This raises the question about the nature of non-work activities that they are engaged in, for these activities may be experienced as replenishing and rewarding. In other words, positive experiences at home may outweigh negative experiences in that domain (Geurts et al., in press). Little is known about the influence of race on the work-family interface (Barnett, 1996). However, it was found that there is no long-term relationship between race and conflict in both domains (Frone, Russell & Cooper, 1997). Burke and Greenglass (1999) found that age is positively related to family-work conflict. This is in contrast with Kinnunen and Mauno (1998)

and Frone et al. (1997), who found no relationship with any type of negative interaction between both domains.

In view of the fact that the SWING is a relatively new measuring instrument, the need to explore the psychometric characteristics of this instrument is apparent, especially if we would like to understand work-life balance and the improvement of employee wellness in a South African context. By using the SWING to measure work-home interaction, organisations can use the obtained results as guidelines to fill gaps in recently employed wellness programmes and in the development of new programmes that may benefit individuals in their work and home environment.

In light of the above discussion, the following research questions emerge:

- What are the reliability and validity of the SWING for employees in the earthmoving equipment industry in South Africa?
- What are the construct equivalence and item bias of the SWING?
- What is the relationship between work-home interaction and various demographic characteristics?
- Which recommendations could be made for future research?

## **1.2 RESEARCH OBJECTIVE**

The research objectives consist of a general objective and specific objectives.

### **1.2.1 General objectives**

The general objective of this research is to validate the Survey Work-Home Interaction – Nijmegen (SWING) and to determine the construct equivalence and item bias for employees working in the earthmoving equipment industry in South Africa.

### **1.2.2 Specific objectives**

The specific objectives of this research are the following:

- To determine the reliability and validity of the SWING for employees in the earthmoving equipment industry in South Africa.
- To determine the construct equivalence and item bias of the SWING.
- To investigate the relationship between work-home interaction and the various demographic characteristics.
- To make recommendations for future research.

## **1.3 RESEARCH METHOD**

The research consists 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 reach the objectives of this research. Cross-sectional designs are used to examine groups of subjects in various stages of development simultaneously, while the survey describes a technique of data collection in which questionnaires are used to gather data about an identified population (Burns & Grove, 1993). This design is well suited to the descriptive and predictive functions associated with correctional research, whereby relationships between variables are examined (Shaughnessy & Zechmeister, 1997).

### **1.3.2 Study population**

Random samples ( $n = 330$ ) are taken from earthmoving companies in Limpopo, Gauteng, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and North West.

The following formula proposed by Kerlinger and Lee (2000) is used to determine the sample

size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where  $n'$  = estimated sample size;  $n$  = the estimated sample size using the formula;  $N$  = the size of the population;  $z$  = standard score corresponding to the specified probability of risk;  $SD$  = the standard deviation of the population, and  $d$  = the specified deviation.

The values for  $z$ ,  $SD$  and  $d$  have been determined based on previous studies of burnout in South Africa (Storm & Rothmann, 2003).

### 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 (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 cheerfully home after a successful day at work, 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 better able to interact with your colleague/supervisor as a result of the environment at home"). All items are scored on a 5-point frequency rating scale, ranging from "1" (never) to "5" (always).

A *Biographical Questionnaire* is also used to determine the biographical characteristics of the participants working in the earth moving equipment industry. Characteristics such as gender, age, race, language, household situation, parental status, educational level as well as the participant's working contract are measured with this questionnaire.

#### **1.3.4 Statistical Analysis**

The statistical analysis is carried out with the help of the SPSS Program (SPSS Inc., 2003) as well as the SAS Program (SAS Institute, 2000). Cronbach alpha coefficients and exploratory factor analyses are used to assess the reliability and validity of the measuring instruments (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) are used to analyse the data.

*Item-level analysis (item bias analysis)* is performed by using analysis of variance (ANOVA) for the SWING (yielding interval-level scores). According to Van de Vijver and Leung (1997), it can be assumed that an item is unbiased if persons from different language groups, with an equal standing on the theoretical construct underlying the instrument, would have the same expected score on the item. Although several statistical techniques are available for analysing item bias, analysis of variance has the advantage of computational simplicity, robustness and the possibility to study both uniform and nonuniform bias (Mellenbergh, 1982). For this reason the analysis of variance is used in this study. The dependent variable is taken as the item score and the independent variables are language and score levels. A significant main effect of language groups is taken to point to uniform bias, whereas a significant interaction of score level and language groups point to nonuniform bias.

Construct equivalence of the SWING is also performed. Construct equivalence can be investigated with several techniques such as factor analysis, cluster analysis, and

multidimensional scaling or other dimensionality-reducing techniques (Van de Vijver & Leung, 1997). The basic idea behind the application of these techniques is to obtain a structure in each culture, which can then be compared across all cultures involved. Construct equivalence is mostly studied by using the factor analysis technique. A principal components analysis is conducted to determine the number of factors of the SWING in the total sample. A direct oblimin rotation is used to determine the solution for each language group. Factors obtained in each group are compared (after target rotation). The agreement is evaluated by a factor congruence coefficient, Tucker's phi (Van de Vijver & Leung, 1997). Values above 0,90 are taken to point to essential agreement between cultural groups, while values above 0,95 point to very good agreement. A high agreement implies that the factor loadings of the lower and higher level are equal up to a multiplying constant. The latter is needed to accommodate possible differences in eigenvalues of factors for the different language groups.

Multivariate analysis of variance (MANOVA) is used to determine the significance of differences between the burnout of 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. One-way analysis is then performed on the newly created dependent variable. 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 I error. Tukey tests are done to indicate which group differed significantly when ANOVAs are done.

T-tests are used to determine differences between the groups in the sample. Effect size (Cohen, 1998; Steyn, 1999) is used in addition to statistical significance to determine the significance of relationships. Effect sizes indicate whether obtained results are practically significant. A cut-off

point of 0,50 (medium effect) (Cohen, 1998) is set for the practical significance of differences between means.

## **1.4 OVERVIEW OF CHAPTERS**

In Chapter 2, the psychometric and theoretic qualities of the Survey Work-Home Interaction – Nijmegen (SWING) are discussed. The 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 discussed the problem statement and research objectives. The measuring instruments and research method used in this research were explained, followed by a brief overview of the chapters that follow.

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## **CHAPTER 2**

### **RESEARCH ARTICLE**

# A PSYCHOMETRIC ANALYSIS OF THE SURVEY WORK-HOME INTERACTION – NIJMEGEN (SWING) IN THE EARTHMOVING INDUSTRY\*

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## ABSTRACT

The objectives of this study were to validate the Survey Work-Home Interaction – Nijmegen (SWING), to determine its construct equivalence and item bias for different language groups of workers in the earthmoving equipment industry in South Africa, and to determine the differences in work-home interaction of demographic groups in the study. A cross-sectional survey design was used. Random samples ( $n = 330$ ) were taken of workers in eight provinces in South Africa. The SWING and a biographical questionnaire were administered. Exploratory factor analysis showed that the SWING consists of four factors, namely Negative Work-Home Interference, Negative Home-Work Interference, Positive Work-Home Interference, and Positive Home-Work Interference. All four factors showed acceptable internal consistencies. No evidence was found for uniform or nonuniform bias of the items of the SWING for different language groups. Exploratory factor analysis with target rotations confirmed the construct equivalence of the work-home interface construct. The results also indicated that there were only practically significant differences in work-home interaction levels, based on gender.

## OPSOMMING

Die doelwitte van die studie was om die “Survey Work-Home Interaction – Nijmegen” (SWING) te valideer en die konstrukekwivalensie en sydigheid daarvan vir verskillende taalgroepe te bepaal vir werknemers in die grondverskuiwingstoerustingindustrie in Suid Afrika. ’n Dwarsdeursnee-opname is gebruik. Ewekansige steekproewe ( $n = 330$ ) is geneem van werkers in agt provinsies in Suid-Afrika. Die SWING en ’n biografiese vraelys is afgeneem. Eksploratiewe faktoranalise het getoon dat die SWING uit vier faktore bestaan, naamlik Negatiewe Werk-Huis-Interaksie, Negatiewe Huis-Werk-Interaksie, Positiewe Werk-Huis-Interaksie en Positiewe Huis-Werk-Interaksie. Al vier faktore het aanvaarbare interne konsekwenheid getoon. Eksploratiewe faktoranalise met teikenrotasies het die konstrukekwivalensie van die vier faktore vir verskillende taalgroepe bevestig. Geen bewyse is gevind vir uniforme of nie-uniforme sydigheid van die items van die SWING vir verskillende taalgroepe nie. Die bevindings dui wel daarop dat daar ’n praktiese beduidende verskil tussen geslagte is.

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In an ever-changing world, people will always be subjected to change. One of the most significant changes that South Africans have been subjected to was the first democratic election in 1994. It can be argued that the most prominent place in which this change can be seen is in the workforce of South Africa itself. The previously disadvantaged now play an increasingly large role in the composition of today's workforce. Furthermore, working-couple families replaced the traditional South African household where it was expected of the man to generate an income while the woman had to see after household tasks. A working couple consists of two people in an ongoing committed relationship, where both parties work, where there may or may not be children, and where decisions about family and work are influenced by the working situation of each partner (Gutterman, 1991).

A serious concern for working couples is the number of roles they have to manage – that of parent, wife or husband, careerist, self and friend. Sometimes the demands of the one role make it difficult to comply with the demands of the other. The end result is that individuals may experience some form of conflict between the roles they assume they must fulfil and the roles they are expected to fulfil. This, in turn, may cause individuals to experience conflict between their family and working lives (Schreuder & Theron, 2001). If this is the case, it could lead to work-family interference.

Work-home interference is a broad concept that encompasses a negative as well as and a positive side. However, virtually all measures that focuses on this subject measure work-family and family-work conflict and the negative spillover effect of one domain on the other (Carlson, Dacmar & Williams, 2000; Kopelman, Greenhaus & Connolly, 1983; Netemeyer, Boles & McMurrian, 1996; Stephens & Sommer, 1996). Work-family research is restricted by an almost exclusive focus on work-family conflict and the lack of an overarching and integrating theoretical framework imposes a great challenge on this matter for future researchers (Barnett, 1996). The gap in research on this matter is also reflected in the lack of measuring instruments, which measures the positive (and negative) side of work-home interference as well as the direction of this interference (e.g. positive vs. negative). In other words, *positive work-home interference* (when positive load reactions build up at work that facilitate functioning at home), *negative work-home interference* (when negative load reactions build up at work and hamper

functioning at home), *positive home-work interference* (when positive load reactions, developed at home, facilitate functioning at work) and *negative home-work interference* (when negative load reactions, developed at home, impede functioning at work) are dimensions that should be measured in the work-home interface.

In recent research an instrument called the Survey Work-Home Interaction-Nijmegen (SWING) was developed by Wagena and Geurts (2000) at the Radboud University in Nijmegen (the Netherlands). The effort-recovery theory was used as basis in developing the SWING. This instrument is unique because it captures the negative as well as the positive dimensions of the work-home interface. It also differentiates between the directions (the influence of work on home, or Work-Home Interference (WHI), as well as the influence of home on work, or Home-Work Interference (HWI)).

Striving for balance between work and family roles poses a challenge for organisations such as the earthmoving industry. Work-family issues are viewed as affecting company competitiveness and are therefore not only a problem for employees, but also for organisations, and are becoming increasingly important (Hall & Mirvis, 1995). To help individuals as well as organisations, a work-life balance instrument such as the SWING may be used in future research to measure the quality and direction of work-home interference and to serve as guideline for the development of wellness programmes.

In light of the above discussion, the objectives of this research were to determine the validity and reliability of the SWING; 2) to determine the item bias and construct equivalence of the SWING; 3) to examine the differences in work-home interaction levels of various demographic groups.

### **The Work-Home Interface**

These days more value is placed on a balanced lifestyle, and success is increasingly defined in terms of not only one's contributions to work, but also in terms of one's contributions to family, community and self (Schein, 1993). Employees strive towards attaining a balance between work and leisure – and more flexibility on where, when and how they work (Cascio, 2001). Research

in South Africa has also indicated a strong association with lifestyle as a career anchor (Ellison & Schreuder, 2000; Koortzen, 1995).

Work-family balance represents the vague notion that work and family life are somehow integrated or harmonious. More precisely, work-family balance can be seen as the lack of conflict or interference between work and family roles in both directions (Frone, 2003). Greenhaus and Beutell (1985) define work-family conflict as a form of inter-role conflict in which role pressures from the work and family domains are mutually incompatible in some respect.

A growing body of research has explored the potential consequences related to the dimensions of the work-family interface, and more in particular of work-family conflict. A person may be subjected to *stress* when conflicts from work and home become insurmountable. *Burnout* is another possible consequence. Burned-out workers show a lack of commitment and are less capable of providing adequate services, especially in terms of decision-making. Geurts, Taris, Kompier, Dikkers, Van Hooff and Kinnunen (in press) found that work pressure, WHI and exhaustion predict one another over time so that none of these constructs can be considered only a cause or only a consequence. *Lack of engagement* could also occur in response to job-related stressors, where the imbalance between job demands and the available job resources leads to an emotional response characterised by anxiety, tension, fatigue and strain (exhaustion). Self-reported *bad general health* has been positively related to work-family conflict (Frone, 2003; Grandey & Cropanzano, 1999). Several physical consequences have also been observed, namely headache, backache, upset stomach, fatigue, dizziness and pain in chest or heart area (Geurts, Rutte & Peeters, 1999). Furthermore, positive relationships between work-family conflict and negative affective states, including depression, the impulse and overt to aggression, anger, irritation and insomnia has been reported by Burke (1988).

As mentioned previously, Greenhaus and Beutell (1985) were of the first to define work/non-work conflict. According to Geurts and Demerouti (2003), the type of work-family conflict could be based on role characteristics that effect time involvement, strain or behaviour in one domain that are incompatible with fulfilling the role in the other domain (work vs. family). Three

types of work-family conflicts can therefore be identified namely (1) *Time-based conflict* (e.g. when work and family roles compete for time, time that is devoted to one role cannot be devoted to the other); (2) *Strain-based conflict* (e.g. when strain in one role affects performance in another role) and (3) *Behaviour-based conflict* (e.g. when certain patterns of role behaviour may well be in conflict with the expectations of behaviour in other roles). Psychologists often interpreted the work/non-work role conflict as a form of negative spillover of strain built up at work into one's family life (Lambert, 1990). Research further suggests that positive work-family spillover may be a second component of work-family balance (Grzywacz & Marks, 2000; Kirchmeyer, 1992). As opposed to the strain hypothesis and negative spillover, there is a process often referred to as *positive spillover or role enhancement* (Grzywacz & Marks, 2000). This theory suggests that energy or skills mobilised or developed in the work domain might also improve one's functioning in the non-work domain.

As work-home balance has become increasingly important, the need for an instrument based on sound theory had become even more so. This, in turn contributed to the SWING's uniqueness, because this instrument is based on a relevant theoretical perspective, called the Effort-Recovery (E-R) model (Meijman & Mulder, 1998). The E-R model describes how work and private life may interact and which mechanisms may affect well-being during this process (Geurts, Kompier, Roxburgh & Houtman, 2003). The E-R model also sheds light on *how* work and private life may interact and by which mechanisms well-being may be affected (Geurts et al., 2003). According to this model, effort expenditure is associated with specific load reactions (namely physiological, behavioural and subjective responses) that develop within the individual. In practice, the short-term reactions include all the responses at a physiological, behavioural and subjective level that can be related to the load process. These reactions are in principle reversible. Recovery takes place when the exposure to load ceases and the respective psychological systems will stabilise again at a specific baseline level within a certain period of time (Drenth, Thierry & de Wolff, 1998). As a result of the recovery process, fatigue and other effects of stressful situations are reduced, but when demands do not cease, no recovery occurs.

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 satisfied 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).

### **The Survey Work-Home Interaction – Nijmegen (SWING)**

As previously mentioned, there is a certain gap in research regarding the positive side of the work-home balance. This one-sidedness is mirrored in instruments used to measure work-family balance. Recently, a new instrument, called the SWING (the Survey Work-Home Interaction – Nijmegen), was developed in the Netherlands by Wagena and Geurts (2000). The SWING is a theory-based instrument that measures work-home interference, differentiating between the *direction* of influence (work→home influence vs. home→work influence) and the *quality* of influence (negative vs. positive influence). By differentiating between the direction as well as the quality of influence, four types of work-home interaction were captured, namely negative WHI, negative HWI, positive WHI and positive HWI. These four dimensions are measured by using 27 items, of which 13 were self-developed (Geurts et al., in press).

According to Geurts et al. (in press), the psychometric properties of the SWING seem to be promising. The SWING offers a 4-response format varying from “never” (0) to “always” (3). Furthermore, the 4-response variation format found at the low end of the SWING is meaningful, considering the associations with relevant correlates. The SWING was also found to be reliable when alpha scores (NHWI = 0,72; NWHI = 0,85; PWHI = 0,72; and PHWI = 0,78) were compared to the guideline of 0,70 suggested by Nunnally & Bernstein (1994). Confirmatory factor analyses strongly supported the proposed four-dimensional structure of the SWING across various theoretically relevant subgroups, providing evidence regarding its robustness and generalisability. The SWING was validated internally and externally (Geurts et al., in press), by using data from five samples (gender, parental status – parents vs. non-parents – and part-time vs. full-time status; total  $N = 2\ 472$ ). Three categories of correlates were used to examine the yielding of the discriminant validity of the instrument as well as to see how the various dimensions of the work-home interface relate to these correlates. Further, relationships with

three categories of correlates (i.e. job characteristics, home characteristics, and presumed outcomes) yielded evidence regarding the discriminant validity of the SWING.

In light of the fact that membership of different language and cultural groupings can influence the manner in which we perceive the world around us, it is advised to account for these differences by computing *equivalence and bias* of measuring instruments in multicultural research settings (Van de Vijver & Leung, 1997), as used in this study. *Construct equivalence* indicates the extent to which the same construct is measured across the cultural groups under study. *Item bias*, the second important computation in cross-cultural settings, concerns aspects of measurement validity in intercultural group comparisons (Van de Vijver & Leung, 1997). An unbiased item would provide the same average score on an item for two individuals from different cultural groups that could be regarded as similar in terms of a specific construct measured by an item. The danger associated with bias is that it would lower the equivalence of the measuring instrument. According to Van de Vijver and Leung (1997), two types of bias can be distinguished, namely uniform (the main effects of cultural differences) and nonuniform bias (interaction effects of cultural differences and score level). Bias can be caused by incidental differences in appropriateness of item content, inadequate item formulation and translation response characteristics of the sample, and also by administration effects.

It is important to measure the psychometric qualities of the SWING; however, it is also essential to measure the prevalence of the four scales of the SWING (when compared to each other). Geurts et al. (in press) also found that *males* reported more negative work-home interference than females, and *females* experienced more positive home-work interference than males. This may suggest that women may perceive their non-work activities as more rewarding than men.

Little is known about the influence of *race* on the work-family interface (Barnett, 1996). As mentioned before, following the 1994 democratic election major changes occurred in South Africa's workforce – which became a diverse representation of the different cultures found in South Africa. According to Grzywacz and Marks (2000), black women reported less negative spillover from family to work than other women did. It was also found that there is no long-term relationship between race and conflict in both domains (Frone, Russell & Cooper, 1997).

Burke and Greenglass (1999) found *age* to be positively related to family-work conflict. This is in contrast with Kinnunen and Mauno (1998) and Frone et al. (1997), who found no relationship with any type of negative interaction between both domains. Furthermore, it was found that after controlling work and family characteristics, younger men reported higher negative spillover between work and home (as well as between home and work) and less positive spillover from family to work than older men (Grzywacz & Marks, 2000). They also found that younger woman reported more positive spillover from work to family and more negative spillover from family to work than older women did.

*Working parents* reported relatively high levels of positive HWI, which raises the question about the nature of non-work activities that they are engaged in, for these activities may be experienced as replenishing and rewarding. In other words, positive experiences at home may outweigh negative experiences in that domain (Geurts et al., in press). *Full-timers* also showed a relatively higher level of negative work-home interference than *part-timers*. More negative interaction between both domains was associated with a higher level of fatigue, thus, interference from both domains impedes recovery and this yields negative load reactions. They also state that work-home interface is a multidimensional phenomenon, including negative (originating mostly from work) as well as positive (originating mostly from home) influence originating from each sphere of life. Furthermore, it was found that a job situation that is characterised by high job demands and insufficient regulation possibilities for workers to align their work tasks with their current need for recovery, shows a negative load reaction, which spills over to the home domain and which may cause fatigue. In other words, jobs with high demands should be aligned so that efficient opportunity for recovery is warranted (Geurts et al., in press).

It is clear that the SWING has contributed greatly to the literature in a number of ways. It is a much-needed measuring instrument for work-family balance with multidimensionality and it also contributed to theory enhancement (in light of the fact that the instrument is based on the E-R model).

South Africa is a multicultural society and, for the purpose of this research, it was essential to use a representative sample for the validation of the SWING. The earthmoving profession accommodates individuals of diverse cultural backgrounds and was thus an outstanding demonstration of this diversity. According to Shi and Abourizk (1998), earthmoving is a common construction operation typical to building foundation work, dam construction, airport construction, road construction, strip-mining and other work. In a modern and safety-conscious society, there is constant pressure to improve the effectiveness, productivity and safety in the industry (Singh, 1997).

Because the SWING is a new survey, and as this is the first research of this sort on the SWING, no information is available on the psychometrical soundness of this instrument in a South African context, which makes it difficult to evaluate research results regarding work-home interaction levels. Bearing this in mind, the need to do a psychometric analysis of the SWING became evident, which was thus the intention of this research.

The above discussion leads to the following hypotheses:

- H1: The work-home interaction is characterised as a four-dimensional construct that distinguishes between the direction and the quality of influence. Therefore, four factors will underlie the SWING (negative WHI, negative HWI, positive WHI, and positive HWI). All four scales will be reliable.
- H2: The SWING is an unbiased and equivalent measuring instrument that can be used in a multicultural context in the earthmoving equipment industry.
- H3: There are different work-home interaction levels for different demographic groups.

## **METHOD**

### **Research design**

A cross-sectional survey design was used to reach the objectives of this research. Cross-sectional designs are used to examine groups of subjects in various stages of development

simultaneously, while the survey describes a technique of data collection in which questionnaires are used to gather data about an identified population (Burns & Grove, 1993). This design is well suited to the descriptive and predictive functions associated with correlational research, whereby relationships between variables are examined (Shaughnessy & Zechmeister, 1997).

### **Sample**

Random samples ( $n = 330$ ) were taken from earthmoving companies in Limpopo, Gauteng, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and North West.

The following formula proposed by Kerlinger and Lee (2000) was used to determine the sample size for this study:

$$n' = \frac{n}{1 + \frac{n}{N}}$$

and

$$n = z^2 \times \frac{SD^2}{d^2}$$

where  $n'$  = estimated sample size;  $n$  = the estimated sample size using the formula;  $N$  = the size of the population;  $z$  = standard score corresponding to the specified probability of risk;  $SD$  = the standard deviation of the population, and  $d$  = the specified deviation. The values for  $z$ ,  $SD$  and  $d$  have been determined based on previous studies of burnout in South Africa (Storm & Rothmann, 2003). Table 1 gives an indication of the characteristics of the participants in the study.

Table 1

*Characteristics of the participants*

<b>Item</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Gender	Male	247	74,8
	Female	76	23,5
Race	White	203	61,5
	African	72	21,8
	Coloured	38	11,5
	Indian	6	1,8
	Other	2	0,6
	Language	Afrikaans	135
	English	127	38,5
	Sepedi	23	7,0
	Sesotho	7	2,1
	Setswana	6	1,8
	Tshivenda	3	0,9
	Ndebele	4	1,2
	isiXhosa	7	2,1
	isiZulu	13	3,9
	Other	1	0,3
Household situation	Single without children	44	13,3
	Single with children	32	9,7
	Married without children	52	15,8
	Married with children	173	52,4
	Living with parents	14	4,2
	Other	11	3,3
Parental status	Parents	197	59,7
	Non-Parents	133	40,3
Education level	Grade 10	54	16,4
	Grade 11	12	3,6
	Grade 12	126	38,2
	Technical College Diploma	78	23,6
	Technikon Diploma	31	9,4
	University Degree	14	4,2
	Postgraduate Degree	8	2,4

The study population consisted of 89,7% participants that were permanently employed, while 7% were employed on contract basis. Furthermore, the sample consisted of White (61,5%), African (21,8%), Coloured (11,5%) and Indian (1,8%) participants of which 40,9% were Afrikaans and 38,5% English speaking. The languages Sepedi, Sesotho, Setswana, Tshivenda, isiNdebele, isiXhosa and isiZulu made up a representation of 19%. The participants were also predominantly male (74,8%). The majority (68,2%) were married and 59,7% 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 (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 cheerfully home after a successful day at work, 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 better able to interact with your colleague/supervisor as a result of the environment at home”). All items are scored on a 5-point frequency rating scale, ranging from “1” (never) to “5” (always).

A *Biographical Questionnaire* was also used to determine the biographical characteristics of the participants working in the earthmoving equipment industry. Characteristics such as gender,

race, age, language, household situation, parental status, educational level as well as the participant's working contract were measured with this questionnaire.

### **Statistical analysis**

The statistical analysis was carried out with the help of the SPSS Program (SPSS Inc., 2003) as well as the SAS Program (SAS Institute, 2000). Cronbach alpha coefficients and exploratory factor analyses were used to assess the reliability and validity of the measuring instruments (Clark & Watson, 1995). Descriptive statistics (e.g. means, standard deviations, skewness and kurtosis) were used to analyse the data.

Item-level analysis (item bias analysis) was performed by using analysis of variance (ANOVA) for the SWING (yielding interval-level scores). According to Van de Vijver and Leung (1997), it can be assumed that an item is unbiased if persons from different language groups, with an equal standing on the theoretical construct underlying the instrument, would have the same expected score on the item. Although several statistical techniques are available for analysing item bias, analysis of variance has the advantage of computational simplicity, robustness and the possibility to study both uniform and nonuniform bias (Mellenbergh, 1982). For this reason, the analysis of variance was used in this study. The dependent variable was taken as the item score and the independent variables were language and score levels. A significant main effect of language groups was taken to point to uniform bias, whereas a significant interaction of score level and language groups point to nonuniform bias.

Construct equivalence of the SWING was also performed. Construct equivalence can be investigated with several techniques such as factor analysis, cluster analysis, and multidimensional scaling or other dimensionality-reducing techniques (Van de Vijver & Leung, 1997). The basic idea behind the application of these techniques is to obtain a structure in each culture, which can then be compared across all cultures involved. Construct equivalence is mostly studied by using the factor analysis technique. A principal components analysis was conducted to determine the number of factors of the SWING in the total sample. A direct oblimin rotation was used to determine the solution for each language group. Factors obtained in

each group were compared (after target rotation). The agreement was evaluated by a factor congruence coefficient, Tucker's phi (Van de Vijver & Leung, 1997). Values above 0,90 were taken to point to essential agreement between cultural groups, while values above 0,95 point to very good agreement. A high agreement implies that the factor loadings of the lower and higher level are equal up to a multiplying constant. The latter is needed to accommodate possible differences in eigenvalues of factors for the different language groups.

Multivariate analysis of variance (MANOVA) was used to determine the significance of differences between the work-home interface of 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 was created from the set of dependent variables. One-way analysis was then performed on the newly created dependent variable. 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 were 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 discover which dependent variables had been affected. Because multiple ANOVAs were used, a Bonferroni-type adjustment was made for inflated Type I error. Tukey tests were done to indicate which group differed significantly when ANOVAs were done.

T-tests were used to determine differences between the groups in the sample. Effect size (Cohen, 1998; Steyn, 1999) was used in addition to statistical significance to determine the practical significance of relationships. A cut-off point of 0,50 (medium effect) (Cohen, 1998) was set for the practical significance of differences between means.

## **RESULTS**

Because of the composition of the sample, it was decided to conduct the analyses in this study on language groups. The two groups were the African group (consisting of Afrikaans-, Sepedi-,

Sesotho-, Setswana-, Tshivenda-, isiNdebele-, isiXhosa- and isiZulu-speaking employees) and the English group.

Firstly, bias analysis was conducted to identify items that show uniform or nonuniform bias for the two language groups. Score groups were compiled, based on the total score on the SWING. A total of five score levels were obtained by using percentiles, making it possible to assign at least 50 respondents to each score group. Two effects were tested for significance in the subsequent variance analysis, namely the main effects of culture (uniform bias) and interaction effects of culture and score level (nonuniform bias). If both the main effect of culture and the interaction of culture and score level are found to be non-significant, the item is taken to be unbiased.

Table 2 shows the results obtained of the analysis of variance for each individual item of the 27-item SWING.

Table 2

*Item-bias analyses of the SWING*

Item	Uniform Bias	Nonuniform Bias
	<i>p</i>	<i>p</i>
NWHI1	0,36	0,08
NWHI2	0,79	0,07
NWHI3	0,89	0,86
NWHI4	0,08	0,90
NWHI5	0,25	0,51
NWHI6	0,23	0,83
NWHI7	0,38	0,77
NWHI8	0,39	0,10
NWHI9	0,27	0,82
NHWI10	0,16	0,33
NHWI11	0,64	0,39
NHWI12	0,20	0,53
NHWI13	0,38	0,36
NHWI14	0,30	0,33
NHWI15	0,32	0,26
PWHI16	0,40	0,20
PWHI17	0,45	0,15
PWHI18	0,35	0,81
PWHI19	0,57	0,28
PWHI20	0,28	0,69
PWHI21	0,64	0,82
PHWI22	0,95	0,18
PHWI23	0,93	0,58
PHWI24	0,90	0,03
PHWI25	0,63	0,03
PHWI26	0,93	0,63
PHWI27	0,41	0,92

\*  $\eta^2 > 0,06$  – Practically significant (medium effect)

According to Table 2, no significant eta square ( $\eta^2$ ) value was obtained for any item of the SWING, indicating that none of the items showed uniform or nonuniform bias.

Next, a simple principle components analysis was conducted on the 27 items of the SWING. By analysing the eigenvalues (larger than 1) as well as the scree plot, there was an indication that four factors could be extracted. The next step was to use principle component analysis with a direct oblimin rotation to carry out factor analysis on the African group and the English group. The pattern matrices for these two groups are reported in Table 3.

Table 3

*Pattern matrix of the 27-item SWING for the African and English Groups*

AFRICAN GROUP					ENGLISH GROUP				
Item	Factor 1	Factor 2	Factor 3	Factor 4	Item	Factor 1	Factor 2	Factor 3	Factor 4
NWHI1	0,40	-0,22	0,27	-0,02	NWHI1	0,60	-0,23	0,00	-0,01
NWHI2	0,60	-0,10	0,13	-0,02	NWHI2	0,62	-0,24	0,15	-0,08
NWHI3	0,74	-0,05	0,03	-0,05	NWHI3	0,67	-0,17	0,12	-0,12
PWHI16	-0,07	0,33	0,02	0,36	PWHI16	-0,32	0,33	-0,02	-0,15
PWHI20	-0,16	0,06	-0,01	0,67	PWHI20	-0,22	0,37	0,05	-0,40
NWHI4	0,58	0,18	0,04	0,04	NWHI4	0,56	0,01	0,07	0,01
PWHI21	0,04	0,08	-0,02	0,74	PWHI21	-0,11	0,05	0,13	-0,82
PWHI19	-0,03	0,04	-0,01	0,76	PWHI19	-0,03	-0,09	-0,01	-0,76
NWHI5	0,75	0,23	0,01	-0,10	NWHI5	0,87	0,11	0,01	0,18
NWHI6	0,70	0,11	0,08	-0,13	NWHI6	0,74	0,54	0,11	0,03
NWHI7	0,73	-0,01	-0,19	-0,01	NWHI7	0,75	0,14	0,02	0,10
PWHI18	0,10	0,06	-0,01	0,78	PWHI18	0,07	0,11	0,02	-0,81
NWHI8	0,65	-0,22	0,07	0,13	NWHI8	0,72	-0,19	-0,04	-0,15
NWHI9	0,74	-0,05	0,01	0,07	NWHI9	0,79	0,23	0,07	0,12
PWHI17	-0,03	0,37	-0,08	0,31	PWHI17	-0,18	0,41	0,05	-0,13
PHWI22	-0,07	0,48	-0,08	0,04	PHWI22	-0,05	0,72	-0,07	0,08
PHWI23	-0,20	0,30	0,08	0,28	PHWI23	-0,06	0,86	0,17	0,15
NWHI11	-0,10	0,07	0,67	-0,23	NWHI11	0,22	-0,03	0,67	-0,07
NWHI12	0,11	0,11	0,76	-0,12	NWHI12	0,19	0,19	0,67	-0,05
PHWI24	0,18	0,84	0,03	-0,02	PHWI24	-0,02	0,44	-0,02	-0,12
NHWI10	0,11	-0,11	0,49	0,20	NHWI10	-0,27	-0,06	0,73	0,08
PHWI25	-0,01	0,65	0,12	0,17	PHWI25	0,12	0,70	-0,14	-0,20
NHWI13	0,07	-0,12	0,75	0,15	NHWI13	0,17	0,08	0,71	-0,13
NHWI14	-0,21	0,25	0,70	-0,21	NHWI14	0,02	-0,12	0,40	-0,05
PHWI26	0,08	0,73	-0,09	0,14	PHWI26	0,27	0,59	-0,17	-0,25
PHWI27	-0,11	0,36	-0,20	0,33	PHWI27	0,01	0,27	-0,41	-0,33
NHWI15	0,02	-0,21	0,68	0,09	NHWI15	0,19	0,13	0,72	0,02

Factor labels: F<sub>1</sub>Negative Work-Home Interference F<sub>2</sub>Positive Home-Work Interference F<sub>3</sub>Negative Home-Work Interference F<sub>4</sub>Positive Work-Home Interference

The pattern matrices of the four-factor solutions for the Africans and English group were then used as an input for an exploratory factor analysis with target rotations. By rotating one solution to the other, the four-factor structure was compared across groups.

After rotation the following Tucker's phi coefficients were obtained: a) Factor 1 = 0,95 b) Factor 2 = 0,82 c) Factor 3 = 0,92 and d) Factor 4 = 0,85. The Tucker's phi coefficient for Factor 1 and Factor 4 compared favourably with the guideline of 0,90. However, Factor 2 and Factor 3 showed an unacceptable low equivalence for the two race groups.

After assessment of Table 3, it was revealed that three items were complex as well as problematic. Item 23 ("After spending a pleasant weekend with your spouse/family/friends, you have more fun at your job") loaded on Factor 2 as well as on Factor 4 for the African group and on Factor 2 for the English group, thus not loading as it should. Item 14 ("You arrive late at work because of domestic obligations") loaded on different factors for the two groups. Item 10 ("The situation at home makes you so irritable that you take your frustrations out on your colleagues") also caused some problems.

After removing the three items, a simple factor analysis was conducted once again. The scree plot and eigenvalues showed four factors, which explained 53,12% of the total variance. The pattern matrices for the African and English groups are reported in Table 4.

Table 4

*Pattern matrix of the 24-item SWING for the African and English Groups*

AFRICAN					ENGLISH				
Item	Factor 1	Factor 2	Factor 3	Factor 4	Item	Factor 1	Factor 2	Factor 3	Factor 4
NWHI1	<b>0,35</b>	-0,19	0,35	-0,02	NWHI1	<b>0,63</b>	-0,26	0,05	-0,06
NWHI2	<b>0,59</b>	-0,09	0,14	-0,04	NWHI2	<b>0,56</b>	-0,24	-0,22	-0,09
NWHI3	<b>0,76</b>	-0,08	0,01	-0,05	NWHI3	<b>0,64</b>	-0,17	-0,15	-0,12
PWHI16	-0,06	0,28	0,01	<b>0,42</b>	PWHI16	-0,27	-0,22	0,10	<b>-0,24</b>
PWHI20	-0,15	0,05	0,00	<b>0,68</b>	PWHI20	-0,24	0,41	-0,10	<b>-0,37</b>
NWHI4	<b>0,60</b>	0,12	-0,01	0,06	NWHI4	<b>0,56</b>	0,12	-0,09	0,09
PWHI21	0,06	0,03	-0,01	<b>0,78</b>	PWHI21	-0,09	0,02	-0,09	<b>-0,85</b>
PWHI19	-0,01	-0,01	-0,02	<b>0,80</b>	PWHI19	-0,02	-0,05	-0,01	<b>-0,73</b>
NWHI5	<b>0,74</b>	0,21	0,01	-0,11	NWHI5	<b>0,87</b>	0,12	0,00	0,17
NWHI6	<b>0,69</b>	0,10	0,08	-0,12	NWHI6	<b>0,73</b>	0,02	-0,11	0,00
NWHI7	<b>0,75</b>	-0,03	-0,21	-0,02	NWHI7	<b>0,75</b>	0,14	-0,02	0,09
PWHI18	0,11	0,05	-0,01	<b>0,77</b>	PWHI18	0,09	0,12	-0,03	<b>-0,82</b>
NWHI8	<b>0,65</b>	-0,25	0,08	0,15	NWHI8	<b>0,73</b>	-0,17	0,03	-0,16
NWHI9	<b>0,70</b>	-0,04	0,11	0,09	NWHI9	<b>0,80</b>	0,17	-0,04	0,06
PHWI22	-0,09	<b>0,48</b>	-0,05	0,02	PHWI22	-0,11	<b>0,64</b>	-0,02	0,05
NWHI11	0,02	0,14	<b>0,73</b>	-0,22	NWHI11	0,07	-0,08	<b>-0,78</b>	-0,06
NWHI12	0,04	0,19	<b>0,82</b>	-0,12	NWHI12	0,05	0,13	<b>-0,76</b>	-0,05
PHWI24	0,15	<b>0,85</b>	0,03	-0,04	PHWI24	-0,06	<b>0,59</b>	-0,09	0,03
PHWI25	-0,02	<b>0,66</b>	0,10	0,15	PHWI25	0,10	<b>0,83</b>	0,05	-0,08
NHWI13	0,02	-0,06	<b>0,77</b>	0,14	NHWI13	0,10	0,01	<b>-0,69</b>	-0,14
PHWI26	0,04	<b>0,74</b>	-0,02	0,14	PHWI26	0,25	<b>0,72</b>	0,07	-0,13
PHWI27	-0,11	0,36	<b>-0,20</b>	0,28	PHWI27	0,15	0,33	<b>0,52</b>	-0,32
NHWI15	-0,05	-0,16	<b>0,78</b>	0,10	NHWI15	0,07	0,10	<b>-0,77</b>	0,04
PWHI17	-0,04	<b>0,37</b>	-0,07	0,31	PWHI17	-0,09	<b>0,39</b>	0,08	-0,16

Factor labels: F<sub>1</sub>Negative Work-Home Interference F<sub>2</sub>Positive Home-Work Interference F<sub>3</sub>Negative Home-Work Interference F<sub>4</sub>Positive Work-Home Interference

A target rotation was subsequently carried out on the four pattern matrices, which resulted in the following acceptable Tucker's phi coefficients of a) Factor 1 = 0,96; b) Factor 2 = 0,92; c) Factor 3 = 0,91; and d) Factor 4 = 0,93 (considered against the parameter of 0,90). According to

this, the construct equivalence of the SWING is acceptable. However, the following items were complex: Item 16 (“You come home cheerfully after a successful day at work, positively affecting the atmosphere at home”) loaded on Factor 4 as well as on Factor 1 in the English group. Item 20 (“You manage your time at home more efficiently as a result of the way you do your job”) loaded on Factor 4 and also on Factor 2 in the English group. Item 27 (“You have greater self-confidence at work because you have your home life well organised”) loaded on both Factor 3 and Factor 2 in the African group.

In Table 5, the descriptive statistics and alpha coefficients of the four factors of the SWING are given.

Table 5

*Descriptive statistics and Alpha Coefficients of the SWING*

<b>Item</b>	<b>Mean</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>	<b><math>\alpha</math></b>
Negative WHI	8,93	5,07	0,43	-0,22	0,87
Negative HWI	2,52	2,26	1,16*	1,75*	0,79
Positive WHI	9,48	3,79	0,30	-0,40	0,79
Positive HWI	9,46	3,30	-0,04	-0,79	0,76

\* High skewness and kurtosis

From the results in Table 5, it can be seen that the scores of the SWING are normally distributed. However, the score of the Negative HWI scale were slightly skew. Overall, the Cronbach alpha coefficients of the four scales is highly acceptable compared to the guideline of  $\alpha > 0,70$  (Nunnally & Bernstein, 1994).

These findings provide partial support for Hypothesis 1, while Hypothesis 2 is accepted.

MANOVA and ANOVA analysis were used to determine the relationship between work-life balance and the different demographic characteristics such as gender, age, race, language, marital status, parental status and work-contract status. Demographic characteristics were first analysed

for statistical significance using Wilk's Lambda statistics. The results of the comparison are given in Table 6.

Table 6

*MANOVAs – Differences in Work-Home Interaction Levels of Demographic Groups*

Variable	Value	F	DF	Den DF	p
Race	0,95	1,02	16	956,87	0,44
Age	0,85	1,38	36	1129,7	0,07
Language	0,86	1,33	36	1174,7	0,09
Educational Level	0,87	1,83	24	1093,1	0,01*
Household Situation	0,90	1,62	20	1052,3	0,04
Working Contract	0,96	1,84	8	640	0,07
Travel Time	0,65	1,08	124	1155,9	0,26

\* Statistically significant difference:  $p < 0,01$

In an analysis of Wilk's Lambda values, no statistically significant differences ( $p < 0,01$ ) were found for race, language, household situation, working contract and the travel time of participants. A statistically significant difference ( $p < 0,01$ ) was found regarding the educational level of participants.

The relationship between work-life balance and educational level was further analysed in order to determine practical significance, using ANOVA, followed by a Tukey HSD test. However, this analysis did not find any practically significant difference in terms of the participants' educational level. Table 7 shows the differences between work-home interaction levels, based on gender.

Table 7

*Differences in Work-Home Interaction Levels, based on Gender*

Item	Male		Female		<i>p</i>	<i>D</i>
	Mean	<i>SD</i>	Mean	<i>SD</i>		
Negative WHI	9,75	4,79	6,28	5,07	0,01*	0,68**
Negative HWI	3,38	2,98	2,73	2,33	0,05	-
Positive WHI	9,57	3,76	9,12	3,91	0,38	-
Positive HWI	11,61	3,76	11,5	3,79	0,82	-

\* Statistically significant difference:  $p < 0,01$

\*\* Practically significant difference:  $d < 0,5$  (medium effect)

According to Table 7, male participants reported statistically significantly higher scores on Negative WHI than females. These findings were further analysed to determine the practically significant difference, and showed a practically significant difference ( $d < 0,5$ ) of a medium effect between males and females on Negative WHI.

## DISCUSSION

The general aim of this study was to determine the psychometric qualities of the SWING in a South African context and to determine if there exist any differences between various demographic groups regarding their work-family balance.

The first objective was to validate and determine the reliability of the SWING as a measuring instrument for work-life balance. The internal consistency of the four scales of the SWING was proven to be highly acceptable, confirming that the SWING is a reliable measuring instrument of work-home interaction and home-work interaction in both directions (negative vs. positive) in a South African context.

Furthermore, in concurrence with research done by Geurts et al. (in press), four factors were extracted by means of exploratory factor analysis, namely Negative Work-Home Interference, Negative Home-Work Interference, Positive Work-Home Interference and Positive Home-Work

Interference, confirming that work-home interaction may affect one's work and home life *positively* as well as *negatively* in both directions.

The study also intended to determine the construct equivalence and item bias of the SWING. The results indicated that there was no evidence for either uniform or nonuniform bias. However, exploratory factor analysis with target rotations showed that the construct equivalence of the four scales was not satisfactory. An inspection of the factor loadings revealed that three of the items (items 23, 14 and 10) were problematic. Item 23 ("After spending a pleasant weekend with your spouse/family/friends, you have more fun at your job") was supposed to measure positive HWI. Instead, it also measured Positive WHI for the African group. The reason for this may be that the item was differently interpreted by the various participants of the African group, as this group was compiled of different culture groups. Item 14 ("You arrive late at work because of domestic obligations") showed cross-loadings for the two groups. Again, culture differences might have had an influence on the loadings, as each culture may perceive this item (specifically the term "domestic obligations") differently. Item 10 ("The situation at home makes you so irritable that you take your frustrations out on your colleagues") was also found to cause problems. This may be due to the fact that the item is sample specific.

After removing the three problematic items, the construct equivalence for the four factors of the African and English groups resulted in acceptable Tucker's phi coefficients. However, three more items seemed to be complex. Item 16 ("You come home cheerfully after a successful day at work, positively affecting the atmosphere at home"), Item 20 ("You manage your time at home more efficiently as a result of the way you do your job") and Item 27 ("You have greater self-confidence at work because you have your home life well organised") proved to be problematic. All three of these items loaded on two factors, for one of the two language groups.

These findings suggested that the formulation of some of the items of the SWING is less than optimal. Problems encountered with the items may be the result of some English words that were more difficult to understand (for most South Africans, English is their second language). Moreover, the fact that all the participants were from diverse cultures and backgrounds, could have influenced the perception of the meaning of these items. It could therefore be advisable to

translate the SWING in the official languages of South Africa to *fully* improve the construct equivalence of the SWING.

The third objective of the study was to investigate if differences exist between various demographic groups and their work-life balance. The findings indicate that no practically significant differences exist between negative WHI/HWI or positive WHI/HWI and the demographic characteristics of the participants. However, the results indicate a practically significant difference (medium effect) between males and females on the negative WHI level, indicating that males reported a higher level of negative WHI than women did. This supports the findings of Geurts et al. (in press). The reason for this may be that men find it difficult to separate their work life (and problems) from their private life, thus allowing negative load reactions to spill over from their work to their home environment, hampering their performance at home.

To conclude, the results obtained in the study indicate that the SWING is a reliable and valid instrument for measuring the work-life balance of workers in the earthmoving equipment industry in a South African context. Therefore, the MBI-GS opens up further possibilities for work-life balance research in South Africa in other occupations.

A limitation was the research design employed in this study. A cross-sectional design was conducted and, as a result, no causal inferences could be drawn. The results from this study were also obtained solely by self-report questionnaires. This may lead to a problem commonly referred to as “method-variance” or “nuisance”. The size of the sample and the fact that it was homogeneous, consisting of individuals of a specific industry, namely the earthmoving equipment industry, can be seen as another limitation. It should be noted that unique characteristics (such as the specific organisational culture) probably exist within this industry, which could have influenced the participants’ responses.

## **RECOMMENDATIONS**

Based on the results of the study, the SWING is recommended to assess work-home balance in a South African context. Even though problems were experienced with some of the items, the four scales of the SWING can be used to provide information on the interaction from work to home and vice versa.

However, future research can gain by using longitudinal studies and quasi-experimental research designs that are needed to further validate the SWING, dealing with the limitations when a cross-sectional design is used. Furthermore, larger samples with more powerful sampling methods should be used to enable generalisation of findings to other similar groups. In future studies, the items that proved to be problematic (items 23, 14 and 10) could be changed to increase the understanding of these items. It is also recommended that the SWING be translated in the official languages of South Africa to make the problematic items more understandable. Although this study found the SWING to be reliable and valid, additional research is needed to further determine the reliability and validity in other samples in South Africa.

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## CHAPTER 3

### CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter comprises conclusions regarding the literature review and the empirical study according to the specific objectives. The limitations of the research are discussed, followed by recommendations for the research problem in the organisation. Lastly, suggestions are made for future research.

#### 3.1 CONCLUSIONS

The first objective of this research was to determine the reliability and validity of the SWING for employees in the earthmoving equipment industry in South Africa. The study population was divided into two language groups, an African group (consisting of Afrikaans, Sepedi, Sesotho, Setswana, Tshivenda, isiNdebele, isiXhosa and isiZulu) and an English group.

The exploratory factor analysis indicated that four factors could be extracted (i.e. negative Work-Home Interference, negative Home-Work Interference, positive Work-Home Interference and positive Home-Work Interference). This supports the findings of various other studies on the SWING (Wagena & Geurts, 2000; Geurts, Taris, Kompier, Dikkers, Van Hooff and Kinnunen, in press). This four-factor structure also confirms that work-home interaction may affect one's work and home life *positively* as well as *negatively* in both directions. By using Cronbach alpha coefficients, the results indicated that the four scales of the SWING proved to be reliable according to the guideline of 0,70 (Nunnally & Bernstein, 1994). This confirmed that the SWING is a reliable instrument to measure work-home interaction for workers in the earthmoving equipment industry.

The second objective was to test the item bias and construct equivalence of the SWING. Item bias concerns aspects of measurement validity in intercultural group comparisons (Van de Vijver & Leung, 1997). An unbiased item would provide the same average score on an item for two individuals from different cultural groups that could be regarded as similar in terms of a specific construct measured by an item. The danger associated with bias is that it

would lower the equivalence of the measuring instrument. Two types of bias can be distinguished, namely uniform and nonuniform bias (Van de Vijver & Leung, 1997).

Uniform bias refers to the main effects of cultural differences, in other words the influence of bias on an item is consistent for all the score levels of that particular item. Nonuniform bias refers to the interaction effects of cultural differences and score level, indicating that across all score levels of an item, significantly larger differences in terms of a particular item exist in one group when compared to the other group across the different score levels for the specific item (Mellenbergh, 1982). Various contributory causes exist for bias. It can be caused by incidental differences in appropriateness of item content, inadequate item formulation and translation from response characteristics of the sample, and also by administration effects.

Two effects were tested for significance in the subsequent variance analysis. The first being the main effects of culture (uniform bias) and the second being the interaction effects of culture and score level (nonuniform bias). If both the main effect of culture and the interaction of culture and score level are found to be non-significant, the item is taken as being unbiased. According to the results obtained from the study, no evidence for either uniform or nonuniform bias was found for the items of the SWING.

Construct equivalence indicates the extent to which the same construct is measured across the cultural groups under study, in other words, the comparison of cultural groups because their scores are related to the same construct. On the other hand, in the case of construct inequivalence, obtained scores are not related to the same construct and no comparison could be made. In consensus with research done by Wagena and Geurts (2000) and Geurts et al. (in press), four factors were extracted by using exploratory factor analysis. However, exploratory factor analysis with target rotations indicated that the construct equivalence of the four scales was not acceptable. After inspection of the factor loadings for the two language groups, it was revealed that three of the items (23, 14 and 10) were problematic and complex. After the removal of these three items, another target rotation was performed and this resulted in acceptable Tucker's phi coefficients, which confirmed the construct equivalence of the SWING.

The third objective was to investigate the relationship of the subscales with demographic variables such as gender, age, race, language, marital status, parental status and work-contract

status category for workers in the earthmoving equipment industry of South Africa. After conducting a MANOVA, no statistically significant differences were found for race, language, household situation, working contract and the travel time to work of participants. However, a statistically significant difference was found regarding the educational level of participants. The relationship between work-home balance and educational level were further analysed to determine practical significance using ANOVA, followed by a Tukey HSD test. However, this analysis did not find any practically significant difference in terms of the participants' educational level. Gender also showed a statistically significant difference and after a further analysis it was determined that there was a practically significant difference of medium effect between males and females in terms of perceived negative Work-Home Interference. Again, this was in consensus with Geurts et al. (in press) who also found that males reported more negative Work-Home Interference than females.

### **3.2 LIMITATIONS**

A cross-sectional design was used and, as a result, it was impossible to verify the assumptions concerning the causal directions of the four SWING scales. Prospective longitudinal studies and quasi-experimental research designs are needed to further validate the SWING. Furthermore, the results from this study were obtained solely by self-report questionnaires. This may lead to a problem commonly referred to as “method-variance” or “nuisance”.

Another limitation is that this research was conducted in a homogeneous sample consisting of individuals of a specific industry, namely the earthmoving equipment industry. It should be noted that unique characteristics probably exist within this industry – such as the specific organisational culture, which could have influenced the participants' responses. The implication is that the results could not be generalised to other contexts or professions. Consequently, there is still the need for replication in other occupational groups and in heterogeneous samples.

The size of the sample is another limitation, specifically the distribution of the language groups. Future studies could benefit greatly by utilising a sample with proportionate inclusion of all the official language groups of South Africa.

Lastly, English was the second (or even third) language of the majority of the respondents. This could have influenced the way in which the respondents answered the questionnaires, as a result of misunderstandings and incorrect interpretations.

### **3.3 RECOMMENDATIONS**

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

#### **3.3.1 Recommendations for the organisation**

Striving for balance between work and family roles poses a great challenge for organisations. Work-family issues are viewed as affecting company competitiveness and are therefore not only a problem for employees but also for organisations (Hall & Mirvis, 1995).

Extending research has explored the potential outcomes related to an imbalance in an individual's life. These include aspects such as stress and burnout, lack of engagement (Geurts et al., in press) as well as bad general health (Frone, 2003; Grandey & Cropanzano, 1999). Burke (1988) also reported a positive relationship between work-family conflict and negative affective states – including depression, the impulse and overt to aggression, anger, irritation and insomnia. Virtually all measures that focus on work-home interference measure work-family and family-work conflict and the negative spillover effect of one domain to the other (Carlson, Dacmar & Williams, 2000; Kopelman, Greenhaus & Connolly, 1983; Netemeyer, Boles & McMurrian, 1996; Stephens & Sommer, 1996). However, it should be noted that work-home interference is a much broader concept, which also encompasses a positive side, and it was found that there is a certain gap regarding research that focuses on the positive side of work-home balance (Frone, 2003; Geurts & Demerouti, 2003).

For this reason it is imperative that the organisation, more specifically top management, has a clear and accurate understanding of the work-home balance phenomenon. There should also be an acute awareness of the possible consequences of leading an unbalanced life, and also of the effect that spillover might have on their work as well as their home environment. Instruments such as the SWING may help organisations in developing and implementing wellness programmes. These wellness programmes, in turn, can be used in developing individuals and their work-home balance skills in such a way that it can greatly contribute to

their day-to-day functioning. (For example in utilising the positive spillover effect that work can have on private life, and vice versa.)

### **3.3.2 Recommendations for future research**

Future research in South Africa needs to focus on helping employees to create a healthy work-life balance and also on identifying the possible consequences of an unbalanced life in the South African context. This can be achieved by, for instance, investigating the relationship between work-life balance and burnout, stress or health.

Seeing as the majority of the respondents have English as a second or third language, questionnaires for future research regarding work-life balance should be translated into a language other than English (for example Afrikaans, Sepedi, Setswana or isiZulu). It is also recommended that larger samples with more powerful sampling methods be utilised to enable generalisation of the findings to other similar groups. The use of adequate statistical methods such as structural equation modelling, equivalence and bias analysis is recommended as well. In future studies, the wording of the items that proved to be problematic (23, 14 and 10) could also be changed so as to increase the understanding of these items.

Using cross-sectional data, it was impossible to verify the assumptions concerning the causal directions of the four SWING scales and external correlates. It would thus be advisable in future research to focus on longitudinal studies and quasi-experimental research designs to further validate the SWING and thus deal with the limitation set by using a cross-sectional design.

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