INAUGURAL LECTURE

of

Prof Karina Mostert

Employee health and well-being within the South African context

31 May 2013

It all starts here ™

NORTH-WEST UNIVERSITY
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Inaugural lecture

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1. INTRODUCTION

Due to the multicultural context of South Africa, the cultural appropriateness of psychological tests as well as their usage was emphasised with the promulgation of the new Employment Equity Act. This Act stipulates that psychological testing and other similar assessments are prohibited unless the test or assessment has been scientifically shown to be valid and reliable, can be applied fairly to all employees, and is not biased against any employee or group. This law requires psychologists to be proactively involved by providing evidence that tests are fair for use in all cultural and ethnic groups. Tests should also be proven to be unbiased. One of the main goals of the assessment profession in South Africa is to bring practice in line with legal demands. It is therefore imperative to develop new instruments and validate existing instruments for use in multicultural and different ethnic groups. When my research commenced in 2002, there was a lack of empirical research systematically investigating the well-being of employees within the South African context. During that time, no research had yet been done on the validity and reliability of well-being questionnaires developed in other countries – specifically with regard to burnout and work engagement. Systematic research on work-home interference (WHI) was also virtually non-existing in South Africa. No validated instruments were available and no models existed where the relationship of WHI with job characteristics, burnout and work engagement had been tested within the South African context. It was also not clear whether WHI manifested in similar ways for South African employees and for employees in other countries or which coping and recovering strategies were effective in dealing with WHI. Although studies on these topics were published internationally (some of them very scarce), there was a need to explore these issues in non-Western societies and developing countries such as South Africa.

2. BURNOUT, WORK ENGAGEMENT, WORK-HOME INTERACTION AND JOB CHARACTERISTICS WITHIN THE SOUTH AFRICAN CONTEXT

The primary focus of my research was on the following three topics, which will be discussed in detail below:

1. Measurement and validation of work-related well-being constructs and instruments.
2. Prevalence, socio-demographic differences and structural models of work-related well-being.
3. Unique experiences of work-life interaction within the South African context and the development of a new work-life interaction instrument.

2.1 The measurement and validation of work-related well-being constructs and instruments

2.1.1 Background

In the beginning of this century, there was lacking evidence that instruments developed in other countries measuring job characteristics, burnout, work engagement and work-home interference were valid, reliable, equivalent and unbiased for use within the multicultural context of South Africa. Most of the instruments that had been used within the South African context suffered from various limitations. These include poor conceptualisation, a lack of sound psychometric properties (validity and reliability tests have not been conducted or yielded poor results) and a lack of insight into the degree to which these instruments were suitable for use in different cultural or ethnic groups. When instruments are used with these limitations, findings are unreliable. Furthermore, one unclear issue in the literature was whether the dimensions of burnout and work engagement were independent or each other's opposites. Only one international study (González-Romá, Schaufeli, Bakker & Lloret, 2006) focused on this issue, using sequential item selection and scale construction procedures – a technique that may not find the dominant underlying dimensionality of the responses to a set of items. It was therefore important to establish whether questionnaires measuring burnout, work engagement, WHI and job characteristics within the South African context were valid, reliable, equivalent and unbiased and to investigate the independence of the burnout and engagement constructs.

2.1.2 Research objectives

The objectives of this project were:

1. To determine the psychometric properties of four instruments:
   - The Maslach Burnout Inventory-General Survey (MBI-GS);
   - The Utrecht Work Engagement Scale (UWES);
   - The Survey Work-Home Interaction Nijmegen (SWING); and
   - The Job Demands-Resources Scale (JDRS).

2. To translate the MBI-GS and SWING into two different South African languages (Afrikaans and Setswana).

3. To determine the dimensionality of burnout and work engagement.

2.1.3 Research method

Research design

The data was collected using a cross-sectional survey design.

Participants

Random samples were taken from police stations in the North West Province (*N* = 685); the South African construction industry in Limpopo, Gauteng, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, KwaZulu-Natal and North West provinces (*N* = 528); mining houses in the Gauteng, North West and Northern provinces, which included gold, platinum and phosphate mines (*N* = 320); university students of a recently merged university (*N* = 353); and a diverse sample of employees in different working groups and environments, including insurance, engineering, correctional services, and higher education institutions (*N* = 2 717).

Measuring instruments

The following measuring instruments were used:

The *Maslach Burnout Inventory-General Survey* (MBI-GS) (Schaufeli et al., 1996) measures burnout. The MBI-GS has three sub-scales: Exhaustion (five items, e.g. "I feel used up at the end of the workday"), cynicism (five items, e.g. "I have become less enthusiastic about my work") and professional efficacy (six items, e.g. "In my opinion, I am good at my job"). Together, the sub-scales of the MBI-GS provide a three-dimensional perspective on burnout. All items are scored on a seven-point scale, ranging from (0) "never" to (6) "every day." High scores on exhaustion and cynicism indicate burnout.

The *Utrecht Work Engagement Scale (UWES)* (Schaufeli & Bakker, 2003; Schaufeli et al., 2002) was used to assess the two core dimensions of work engagement, namely vigour and dedication. *Vigour* was assessed with six items (e.g. "At my work, I feel bursting with energy"). *Dedication* was assessed with five items (e.g. "I find the work that I do full of purpose and meaning"). All items are scored on a seven-point rating scale, ranging from (0) "never" to (6) "every day." High scores indicate work engagement.

The *Survey Work-Home Interaction-NijmeGen (SWING)* (Geurts et al., 2005) was used to measure positive and negative WHI and home-work interference (HWI). The final version of the SWING that was used was a 22-item measure and assessed four types of work-home interference. The first was *negative WHI* (eight items, for example, "How often does it happen that you do not have the energy to engage in leisure activities with your spouse/family/friends because of your job?"). The second was *positive WHI* (five items, for example, "How often does it happen that you fulfil your domestic obligations better because of the things you have learned on your job?"). The third was *negative HWI* (four items, for example, "How often does it happen that you have difficulty concentrating on your work because you are preoccupied with domestic matters"). The fourth was *positive HWI* (five items, for example, "How often does it happen that you take your responsibilities at work more seriously because you are required to do the same at home?"). All items were scored on a four-point frequency rating scale, ranging from (0) "never to (3) "always". Biographical information was elicited with regard to gender, ethnicity, age, language, qualification, household situation, parental status, as well as the participant's working contract.

The *Job Demands-Resources Scale (JDRS)* was developed by Jackson and Rothmann (2005) to measure job demands and job resources. The scale was developed based on a literature review as well as interviews with participating groups in this study. Items were developed and checked for face validity. The JDRS consists of 40 items pertaining to pace and amount of work, mental load, emotional load, variety in work, opportunities to learn, independence in work, relationships with colleagues, relationship with immediate supervisor, ambiguities about work, information, communications, participation, contact possibilities, uncertainty about the future, remuneration, and career possibilities. The items were rated on a four-point scale ranging from 1 (never) to 4 (always). Jackson and Rothmann (2005) found that the dimensions of the JDRS consisted of seven reliable factors, namely organisational support ($\alpha = 0.88$), growth opportunities ($\alpha = 0.80$), overload ($\alpha = 0.75$), job insecurity ($\alpha = 0.90$), relationship with colleagues ($\alpha = 0.76$), control ($\alpha = 0.71$), and rewards ($\alpha = 0.78$).

Statistical analyses

The statistical analysis was carried out using the SPSS programme and the AMOS programme. The factorial validity of the instruments was tested with exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) using structural equation modelling (SEM) methods.

Multigroup confirmatory factor analysis was used in order to test the construct equivalence of the factor structures and the equivalence of parameter estimates (factor loadings, factor covariances and item error variances). The χ^2 statistic was used to determine the difference in statistical fit between the unconstrained and constrained models. Non-significant differences between models indicate statistical support for the hypotheses being tested. Equivalence can also be examined by comparing other indices of the compared models. In structural equation modelling, testing for the invariance of parameters across groups is accomplished by placing constraints on particular parameters. Therefore, the parameters are specified as being invariant (i.e. equivalent) across groups (Byrne, 2001). As adjuncts to the χ^2 statistics, the following goodness-of-fit-indices were used: the χ^2/df ratio, the Goodness-of-Fit Index (GFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA). Values of 0.90 and higher signify an acceptable fit for GFI, TLI and CFI; values of 0.08 and lower indicate an acceptable fit for RMSEA (Byrne, 2001). Such comparisons provide a test for equivalence at the practical level, where small differences are indicative of equivalence for groups compared. In general, before testing for measurement and structural equivalence, and differences in latent mean scores, it is necessary to ensure well-fitting models for the groups involved (Byrne, 2001). Therefore, baseline models were tested for each group. Cronbach's alpha was used to assess the reliability of the scales and product-moment correlations were used to determine the relationships between the dimensions. Descriptive statistics (e.g. means, standard deviations) were used to describe the data.

Item-level analysis (item bias analysis) was performed by using the analysis of variance (ANOVA) procedure for the SWING. 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, have the same expected score on the item. Although several statistical techniques are available to analyse item bias, analysis of variance has the advantage of computational simplicity, robustness, and the possibility of studying both uniform and non-uniform bias (Mellenbergh, 1982).

2.1.4 Results

The psychometric properties of well-being constructs

The psychometric properties of the MBI-GS and UWES (burnout and engagement)

In a sample of 2 396 police officers, SEM confirmed a three-factor model of burnout, consisting of exhaustion, cynicism and professional efficacy (Storm & Rothmann, 2003a), and a three-factor model of work engagement, consisting of vigour, dedication and absorption (Storm & Rothmann, 2003b). All these factors have acceptable internal consistencies. Exploratory factor analysis with target rotations showed equivalence of the three burnout and three engagement factors for different race groups in the SAPS. No evidence was found for uniform or non-uniform bias of the items of the MBI-GS or the UWES for different race groups.

In the sample of students (*N* = 353), structural equation modelling confirmed a two-factor structure (as opposed to a one-factor structure) for each instrument (Mostert, Pienaar, Gauché & Jackson, 2007). Burnout consisted of exhaustion and cynicism, while engagement consisted of vigour and dedication. The two-factor structure for burnout and engagement was also largely equivalent for the two language groups. All four scales were found to be reliable. The burnout and engagement scales were moderately negatively related to each other, with stronger relationships between exhaustion and vigour and between cynicism and dedication.

In the sample of police officers (*N* = 685), the results revealed that burnout can be characterised as a four-dimensional construct that distinguishes between the four dimensions, supporting previous

research undertaken regarding the proposed four-structure model of the MBI-GS (Coetzee & Rothmann, 2004; Van Horn et al., 2004). Cynicism had the highest loading on burnout, followed by cognitive weariness, exhaustion, and professional efficacy (Marais, Mostert & Rothmann, 2009).

The psychometric properties of the SWING (work-home interaction)

The first study to examine the factor structure of the SWING (Pieterse & Mostert, 2005) used exploratory factor analysis to determine the factorial validity of the SWING. Four factors were extracted, 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. These results were confirmed in other studies (Marais et al., 2009; Mostert & Oldfield, 2009; Rost & Mostert, 2007).

The psychometric properties of the JDRS (job demands and resources)

Rothmann et al. (2006) showed that five reliable factors were extracted using principal component analysis with a varimax rotation, namely overload, growth opportunities, organisational support, advancement, and job insecurity. All factors, except organisational support, showed acceptable equivalence for different organisations. All five factors showed acceptable internal consistencies.

The psychometric properties of translated versions of the MBI-GS and SWING

The MBI-GS (burnout)

Marais et al. (2009) tested the psychometric properties of the English and two translated versions (Afrikaans and Setswana) of the MBI-GS. The results support the construct validity of an adapted and translated MBI-GS for SAPS members. The adapted and translated MBI-GS, however, showed a lack of measurement invariance for participants who completed the English, Afrikaans and Setswana versions of the instrument. The reliabilities of the exhaustion and professional efficacy scales were acceptable for the three language groups. However, the reliabilities of the cognitive weariness scale and cynicism scale were not acceptable.

The SWING (work-home interaction)

With regard to the SWING, Marais et al. (2009) used structural equation modelling and showed that a four-factor model, distinguishing between the direction (work-to-home *vs*. home-to-work) and the quality (positive *vs*. negative) of interaction, fitted the data best. The SWING was equivalent and reliable for the three language groups and relevant sub-groups.

The dimensionality of burnout and engagement

Demerouti, Mostert and Bakker (2010) used a parametric scaling technique and found that the attitude constructs (cynicism and dedication) represented opposite ends of one continuum, but that the energy constructs (exhaustion and vigour) did not. Confirmatory factor analyses therefore showed that while the attitude constructs represent opposite ends of one continuum, the energy constructs do not – although they are highly correlated. These findings are also supported by the pattern of relationships between burnout and work engagement on the one hand, and predictors (i.e. work pressure, autonomy) and outcomes (i.e. organisational commitment, mental health) on the other hand.

2.2 Prevalence, socio-demographic differences and structural models

2.2.1 Background

Having established the validity and reliability of the above-mentioned instruments, it seemed important to investigate the prevalence, socio-demographic differences and relationships between job characteristics, WHI, burnout and work engagement. Although this had been researched in Western societies to some extent, the relationships between the above-mentioned variables had not often been tested in non-Western societies. In addition, there was a lack of international and South African studies on effective coping and recovery strategies associated with WHI, specifically strategies to enhance positive WHI.

2.2.2 Research objectives

The objectives of this project were:

1. To determine the prevalence of the four work-home interaction dimensions.
2. To investigate differences on work-home interaction in different socio-demographic groups.
3. To develop and test structural models of job demands and job resources, negative and positive work-home interaction, burnout and work engagement.
4. To investigate to what extent negative and positive work-home interference mediates the relationship between job characteristics and possible outcomes (burnout and work engagement).
5. To determine successful coping and recovery strategies to decrease negative work-home interference and increase positive work-home interference.

2.2.3 Research method

Research design

The data was collected using a cross-sectional survey design.

Participants

Samples (*N* = 2 040) were taken from four South African industries, including the police service (*N* = 685), the earthmoving equipment industry (*N* = 528), the mining industry (*N* = 320) and nursing (*N* = 300).

Measuring instruments

The following measuring instruments were used (as discussed above):

- The Maslach Burnout Inventory-General Survey (Schaufeli et al., 1996);
- The Utrecht Work Engagement Scale (Schaufeli & Bakker, 2003; Schaufeli et al., 2002);
- The Survey Work-Home Interaction-NijmeGen (Geurts et al., 2005); and
- The Job Demands-Resources Scale (Jackson & Rothmann, 2005).

Statistical analyses

Paired-sample *t*-tests were used to determine the prevalence of work-home interaction. Multivariate analysis of variance (MANOVA) was used to ascertain the significance of differences between the work-home interaction levels of different socio-demographic groups. Multiple regression analyses were carried out to determine the significant predictors of the four work-home

interaction dimensions. Structural equation modelling analyses were used to test the structural models. Competing models were tested using the χ^2 statistic. Additional Goodness-of-Fit indices included the Goodness-of-Fit Index (GFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA).

2.2.4 Results

The prevalence of the four work-home interaction dimensions

Paired-sample *t*-tests revealed that employees reported more negative WHI than negative HWI and more positive HWI than positive WHI (Marais, Mostert, Geurts & Taris, 2009; Mostert & Pieterse, 2005; Rost & Mostert, 2007).

Differences in work-home interaction in different socio-demographic groups

Marais and Mostert (2008) conducted a study among randomly selected members of the South African Police Service (*N* = 685) in the North West Province and examined how socio-demographic groups differ with regard to four dimensions of work-home interaction. In the MANOVA, they found significant differences in all the socio-demographic variables, including language, gender, marital status, parental status and education. They found the following specific differences in the ANOVA:

- *Language.* English-speaking participants experienced significantly higher levels on negative and positive WHI as well as on negative and positive HWI, compared to Afrikaans- and Setswana-speaking individuals. Afrikaans-speaking individuals experienced the lowest levels on all four dimensions.
- *Gender.* Males experienced significantly higher levels of negative WHI compared to women.
- *Marital status.* Unmarried individuals experienced significantly higher levels of positive WHI compared to married individuals.
- *Parental status.* Individuals with children experienced significantly higher levels of positive HWI compared to individuals without children.
- *Education.* Individuals with a higher education (post-school) experienced significantly higher levels of negative WHI compared to individuals with a school qualification.

A structural model of job demands and job resources, negative and positive work-home interaction, burnout and work engagement

Several models were tested to determine the relationships between job demands and resources, negative and positive WHI and burnout and engagement (Koekemoer & Mostert, 2006; Mostert, 2006, 2008, 2009, 2011; Mostert, Cronjé & Pienaar, 2006; Oldfield & Mostert, 2007). The most comprehensive model was tested by Mostert, Peeters and Rost (2011). The final model can be seen in Figure 1.

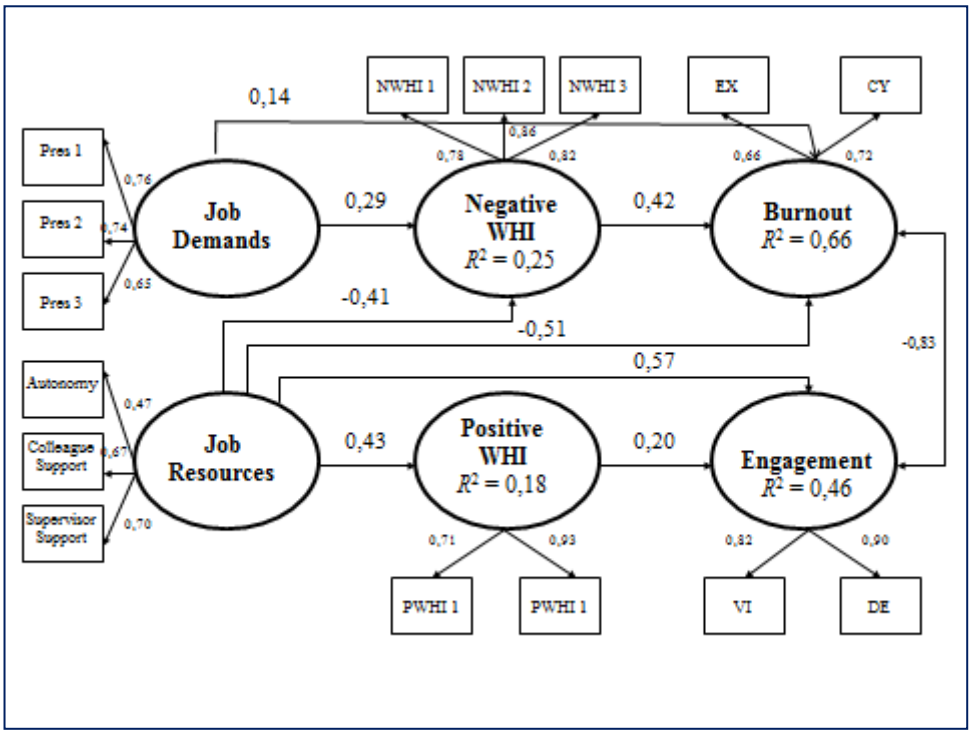

Figure 1: The hypothesised model (Model 1) with standardised coefficients (N = 528). WHI: work-home interference; Pres: Pressure; PWHI: Positive work-home interference; NWHI: Negative work-home interference; EX: Exhaustion; CY: Cynicism; VI: Vigour; DE: Dedication

The findings support the idea of a health impairment process that is influenced by job demands and a lack of job resources. The results also confirm the relationship between job characteristics and burnout and the partial mediating role that negative WHI plays in this relationship. The results suggest that when employees experience high work demands and insufficient resources to deal with these demands, it will likely result in the building up of negative load reactions that will spill over to the home domain. When this process of negative experiences becomes accumulative and no recovery occurs within an acceptable time limit, the well-being of the employee is affected, leading to feelings of exhaustion and cynicism.

The findings also underline the essential role of job resources. In this sample, job demands did not mainly initiate the health impairment process. A lack of job resources was more strongly related to negative WHI (−0.41) compared with job demands (0.29) and was also directly related to burnout (−0.51). The role of job resources in the motivational process was also confirmed – job resources were strongly related to positive WHI (0.43) and work engagement (0.57).

Coping and recovery strategies to decrease negative work-home interference and increase positive work-home interference

Mostert and Oosthuizen (2006) focused on the relationship of coping strategies with negative and positive work-home interference, while Oosthuizen, Mostert and Koekemoer (2011) focused on the relationship of recovery strategies on four types of work-home interference. The following results were reported:

Coping and WHI (Mostert & Oosthuizen, 2006)

- Problem-solving coping was associated with lower negative WHI (β = 0.13) and higher positive WHI (β = 0.16).
- Avoidance coping was associated with higher negative WHI (β = -0.13).
- Seeking social support had no effect on negative or positive WHI.

Recovery strategies associated with negative and positive WHI/HWI (Oosthuizen, Mostert & Koekemoer, 2011)

- Effective recovery strategies to deal with work-parent interference were relaxation (β = -0.16) and mastery (β = -0.14).
- Recovery strategies associated with work-spouse interference were psychological detachment (β = -0.09) and relaxation (β = -0.15).
- Relaxation (β = -0.13) and control (β = -0.14) were effective in decreasing work-domestic interference.
- The only effective recovery strategy to deal with work-religion/spirituality interference was psychological detachment (β = -0.11).

2.3 Investigating the unique experiences of work-life interaction and the development of a new work-life interaction instrument

2.3.1 Background

Even though a variety of WHI studies had been done in SA, the majority of these studies were cross-sectional quantitative studies (Koekemoer & Mostert, 2010a). With only a few additional studies exploring the occupancy of multiple social roles and role salience, along with limited qualitative studies, very little is known about the specific way in which employees within the South Africa context experience the interaction between work and various dimensions in their personal life, as opposed to employees from other societies and social contexts. Although we can learn from international studies, employees from different societies and cultures may experience WHI very differently than South African employees. It is therefore important to develop a comprehensive understanding of the complex relationships between work and family life within the South African context. Furthermore, no instrument exists that measures the unique experiences between work and different domains in one's personal life (e.g. interaction with the marital role, parental role, domestic role and religious role). Based on the findings of the above-mentioned qualitative research, it seemed important to develop a WHI instrument that would capture the unique interference between work and different domains in the private life as experienced by South African employees.

2.3.2 Research objectives

The objectives of this project were:

1. To determine how employees experience their work, their personal life and the interaction between these domains.
2. To determine which dimensions, domains or roles South African employees experience and how these dimensions, domains or roles interact with work.
3. To develop a unique instrument for the South African context that captures the interference between work and nonwork dimensions (i.e. work-spouse interference; work-parent interference; work-domestic interference; work-religion interference – measured in both directions).

4. To determine the construct validity, discriminant validity, convergent validity and reliability of the instrument.

2.3.3 Research method

Phase 1: Experiences of work-life interaction

Participants

A qualitative design from a phenomenological approach was used. A non-probability purposive voluntary sample was used to reach the objective of this phase. Data was gathered by means of 92 phenomenological interviews with African and white employees from four occupational groups, namely secondary school educators (*n* = 22), police officers (*n* = 22), miners (*n* = 25) and academics (*n* = 23) in the North West, Free State and Northern Cape provinces. The population included Afrikaans-, Setswana-, Sesotho- and isiXhosa-speaking employees. The sample size was governed by data saturation and was determined by the number of participants willing and accessible to participate.

Data collection

The data collection for this research consisted of a pilot study, qualitative interviews and field notes. The trustworthiness of the research and data was also an important aspect to consider.

Pilot study

A preliminary pilot study was conducted to identify the possible unforeseen problems, which could have emerged during the main investigation.

Interviews

Semi-structured interviews, based on the phenomenological paradigm, were used. All participants were asked three standard questions:

1) "You have a work life and a personal life. Can you please tell me how you experience the interaction between your work, and all facets of your personal life?";
2) What are the causes and consequences of the interaction between your work and personal life?"; and
3) "What strategies do you use to deal with the interaction between your work and personal life?".

Data analysis

The results of the interviews were analysed by using content analysis. The content analysis consisted of four steps:

1. To universalise the context that needed to be analysed.
2. The sub-units of the analysis, namely words and themes were determined.
3. To free the data from unnecessary information and to determine the meaning of the rest of the subunits by linking it to the whole picture.
4. The concrete language of the participants was converted into scientific language and concepts.

Phase 2: Developing a new work-life interaction instrument

In order to develop the new scale, a four-step procedure was followed:

Step 1: Initial construct conceptualisation

Prior to the development of the scale, it was important to define the construct to be measured (Koekemoer & Mostert, 2010b). Drawing on the theoretical perspective of role identity theory and previous work-family definitions (Burke, 1980; Geurts et al., 2005; McCall & Simmons, 1966; Netemeyer et al., 1996; Stryker, 1968; Wiley, 1991), work-nonwork interference was defined as:

a process in which the involvement of an individual in one domain (or social role) interferes with the functioning or involvement in another domain (role), where the interference affects the way in which the individual's self-identity is influenced by external stimuli to such an extent that it results in an inadequate performance or behaviour in order to conform to one or more highly-salient identities/roles.

Only four social roles were used and measured in this study (i.e. parental, spousal, religion/spirituality and domestic roles). Therefore, depending on the direction of interference and the roles interfered with, individuals might experience work-nonwork interference (W-NWI), including work-parent role interference (WPI), work-spouse interference (WSI), work-religion/spirituality interference (WRI) and/or work-domestic interference (WDI), and/or nonwork-work interference (NW-WI), including parent-work interference (PWI), spouse-work interference (SWI), religion/spirituality-work interference (RWI) and domestic-work interference (DWI).

Step 2: Item generation and item evaluation

During this step, an initial item pool (172 items) was generated from existing instruments to measure the negative interference between work and family/home. During the process of evaluating the items, two work-family subject matter experts (i.e. researchers in the area of work and family) independently classified the items into different categories using the above-mentioned criteria. The classifications done by these judges were then brought together in order to discuss which items could be used in the process that followed. During this process of item evaluation, 77 items were discarded on the basis of the evaluation criteria and categorisation. The remaining items were then used in the item development process that followed.

Step 3: Item development

During the item development phase, the remaining items from the initial item pool were re-evaluated and adapted in order to fit the different proposed definitions in the best possible way. In addition to the re-adapted items, new items were written for the dimensions that were not present in the initial item pool (e.g. religion/spirituality items) and for scales from the initial item pool that did not have a sufficient number of items that could be used.

Step 4: Item refinement and item judgement

Following the item development process, attention was paid to item refinement and judgement. During this step, a panel of 10 members was asked to judge the items. Based on their inputs and feedback, editorial changes were made to some items in the process of refining the items of the scale.

Phase 3: The psychometric properties of the new work-life interaction instrument

Research design

The data was collected using a cross-sectional survey design.

Participants

The study sample was obtained from employees working at a tertiary institution in the North West Province. Only married employees with children were selected to participate in the study (*N* = 366).

Statistical analysis

The Rasch analyses were carried out using the WINSTEPS program (Linacre, 2005). During the Rasch analyses, consideration was given to issues relating to reliability, item measures and item fit. The results of the Rasch analysis were used to eliminate undesirable items from the different dimensions in the instrument.

In order to examine the construct validity of the newly developed instrument, CFA was used with Amos structural modelling software (as described above). CFA analyses were also used to prove the discriminant validity of the various dimensions. Following the example of previous researchers (Anderson & Gerbing, 1988; Bagozzi & Philips, 1982; Mallard & Lance, 1998), discriminant validity was tested by making use of the chi-square ($\chi 2$) difference test. If the two models do not differ significantly on a chi-square difference test, the researcher fails to conclude that the constructs differ. However, a significantly lower chi-square value for the model in which the trait correlations are not constrained to unity would indicate that the traits are not perfectly correlated and that discriminant validity is achieved (Bagozzi & Philips, 1982; Bagozzi, Yi & Phillips, 1991).

Convergent validity was assessed by investigating the correlation coefficients between the various dimensions of the new questionnaire and the SWING instrument (Geurts et al., 2005) using the SPSS program. Cronbach's alpha coefficients were used to assess the reliability of the newly developed scales. Descriptive statistics (means, standard deviations) were used to describe the data.

2.3.4 Results

Phase 1: Experiences of work-life interaction

Koekemoer and Mostert (2010a) found the following results (similar results were found by Sekwena, Mostert & Wentzel (2007) and Jacobs, Mostert & Pienaar (2008)). Four main themes were extracted from the data:

Theme 1: The experience of work

It was evident that participants experienced certain aspects of their work as stressful, while other aspects were seen as more supportive. Subsequently, these aspects were categorised as *stressors at work* and *resources at work*. Table 1 shows the different stressors and resources as described and experienced by the participants. For illustrative purposes, associated keywords are also shown as mentioned by the participants.

TABLE1

Experiences in the Work Environment

Sub-theme	Associated keywords
Stressors at work	
Pressure, overload and workload	More responsibilities; Making difficult decisions; High workload; Time constraints; Heavy work demands.
Stressful working arrangements	Irregular and long hours; Overtime work; Shift work; Unfair promotions; Poor remuneration; Heavy work schedules.
Strenuous relationships at work	Managing different people's attitudes; Conflict with co-workers; Difficult parents (in the case of teachers*); Difficult co-workers and/or supervisors; Interacting with different role players with different views and opinions; Dealing with negative attitudes of people.
Nature of the job	Dangerous working conditions (in the police*); Exposure to traumatic situations; Lack of resources; Difficult class situations (in the case of teachers*); Dealing with abused or raped children (in the police*).
Not being valued in an unsupportive work environment	Oppressive work environment; Top–down commanding approach (in the police*); Lack of empowerment, recognition, support, or appraisals; Lack of support for personal problems; Lack of communication channels and strategic planning.
Resources at work	
Occupation satisfaction	Enjoying your work; Passion for your work; Understanding the purpose of your work; Experiencing work engagement; Showing love and care for the children (in the case of teachers*).
Supportive working arrangements	Flexible working hours; Extra remuneration for working overtime; Help from temporary workers; Working better shifts.
Supportive relationships at work	Good interpersonal relationships; Support and help from co-workers/supervisors; Mutual respect and understanding between colleagues; Friendships at work.

* Some stressors are more specific to certain occupations and are indicated in parentheses.

Theme 2: Experiences and domains in the personal life

In the second theme that emerged from the responses, participants emphasised their personal life. Table 2 illustrates the different dimensions that formed part of participants' personal life.

TABLE 2
Experiences in the Personal Life

Sub-theme	**Associated keywords**
Family	Involvement and interaction with family members (family includes parents, spouses/partners and children).
Domestic responsibilities	Taking care of children (e.g. getting ready for school, bathing, putting children to bed); doing house chores (e.g. cooking, cleaning; doing laundry, preparing meals).
Religion/spirituality	Attending church activities; believing in God; praying; practising religious activities (e.g. attending prayer meetings, attending Bible study groups).
Self	Taking time to reflect; taking personal time; experiencing personal growth.
Socialising	Spending time with friends; going out with friends or colleagues; taking time to relax with friends; socialising with people outside your work.
Exercise	Being active in a gym; participating in sports activities such as athletics, netball, rugby, tennis, football, soccer; participating in running and jogging.
Leisure activities	Participating in or pursuing activities outside work such as gardening, farming, and taking painting lessons; practising a hobby outside work.
Extended family	Taking responsibility and care for relatives (relatives included cousins, aunts, brothers, sisters and their children).
Community activities	Doing community work; trying to empower the community; receiving support from community members.
Studies	Pursuing studies outside work.
Work (second job)	Pursuing a second job after hours.

Theme 3: Interaction between work and personal life

The third major theme entailed different forms of interaction between work and personal life, which took on a specific direction of influence. Table 3 indicates the various forms of interaction and the meaning participants attached to these.

TABLE 3
Different Forms of Interaction

Forms of Interaction	Meaning
Influence of work on personal dimensions	Work ↔ personal life, e.g. family life, personal time, home life, religious activities, studies, leisure time, exercise and social activities.
Influence of personal dimensions on work	Personal dimensions ↔ work, e.g. family, home life, the extended family, leisure time and social activities.
Interaction between various personal dimensions	Personal dimensions ↔ personal dimensions e.g. family life, studies, social activities, exercise, home life, leisure time and the extended family.
Negative integration between work and personal dimensions	No proper balance; interference was omnipresent; incompatibility of various roles; juggling multiple responsibilities.
Segregation of work and personal dimensions	No interaction due to the physical and/or psychological separation of the dimensions; segregation of domains (e.g. intentionally not thinking about home matters at work or not taking work home); intentional cognitive decisions to separate various domains.

Theme 4: Consequences associated with interaction

The last major theme that emerged from the responses related to the consequences associated with the interaction. It seemed that specific consequences were related to the different forms of interaction.

Time-based consequences

- Work-to-personal life: Difficulty attending to various activities or role players in one's personal life due to time constraints; inability to attend to family activities due to a lack of time; no time or limited time available for friends or personal activities; a lack of time to spend on domestic activities such as cooking and cleaning.
- Personal life-to-work: Inability to attend to work activities due to family responsibilities (e.g. attending funerals during the week); difficult being at work on time due to unforeseen circumstances at home; lack of time to perform work-related tasks because of time spent with family or children.
- Interaction between personal dimensions: Inability to attend to various activities simultaneously; simultaneous demands, pressures and activities from various roles in personal life.

Mental preoccupation

- Work-to-personal life: Constantly thinking of work; inability to concentrate on things outside work due to thinking of work-related matters; overload of information and pressures/demands within the work environment; inability to do tasks at home due to preoccupation with work problems.

- Personal life-to-work: Thinking of personal demands or problems at work; inability to concentrate at work due to problems in personal life (e.g. worrying about your sick child); overload of information and pressures/demands in personal life.

Build up and spillover of emotions

- Work-to-personal life: Experiencing negative emotions (e.g. anger, frustration, hopelessness, etc.) at work that spill over to personal life; inability to control emotions that built up during the day; feeling irritable and edgy at home due to things that happened at work; tension between family members due to emotional tension that arises from problems at work.
- Personal life-to-work: Experiencing certain emotions (e.g. anger, frustration, hopelessness) in the personal life and the spillover thereof to work; inability to control emotions that arise from personal dimensions; tension between family members affecting one's emotions; lack of happiness at work due to lack of happiness in personal life (e.g. feeling discouraged from problems at home).
- Interaction between personal dimensions: Inability to control emotions that arise from having various demands and responsibilities in personal life; having simultaneous demands and pressures affecting your emotions; experiences anger, frustration and guilt.

Energy depletion

- Work-to-personal life: High workload resulting in the total depletion of energy; experiencing overall exhaustion, fatigue and tiredness due to long work hours; limited energy left after work to attend to other activities outside work (e.g. participating in sports activities); draining of energy due to the various work demands.
- Personal life-to-work: Lack of energy due to responsibilities in personal life (e.g. attending to small children during evenings); feeling tired when going to work due to attending to children the previous evening; total depletion of energy resulting in overall exhaustion, fatigue and tiredness.
- Interaction between personal dimensions: Energy depletion from having too many demands from various roles in personal life; limited energy left after attending to various roles in personal life.

Strain on relationships

Unable to attend to spouse/children or friends due to work obligations causes strain on the relationships; experiencing conflict in marital relationship; strain on relationships with friends or children as a result of not providing enough attention or not attending to their needs.

Managing responsibilities

Shifting of responsibilities between family members; attaining more responsibilities due to spouse's workload (e.g. attending to the children when spouse is working late); unable to perform certain tasks and responsibilities (e.g. unable to pick up children from school due to working late or unable to cook dinner because of work hours).

Limiting of work opportunities

Unable to pursue good work opportunities due to family situation (e.g. single parent cannot work long distances away from family); forfeit of certain work opportunities; limiting your career in terms of the type of work due to personal responsibilities or circumstances.

Energy generation

Feeling energised from personal life; having meaningful experiences in personal life resulting in more energy; stimulating personal life experiences; having meaningful relationships in your personal life that make life worthwhile.

Learned skills

Due to the variety and simultaneous demands in personal life, learning of new skills took place (learn more patience; learn interpersonal skills to help with own children, etc.).

Phase 2: The psychometric properties of the new work-life interaction instrument

Koekemoer and Mostert (2010a, 2010b) determined the psychometric properties of the new work-life interaction instrument. Initially, 89 items were developed. During the pilot study among mineworkers (*N* = 245), 41 poor items were eliminated on the basis of descriptive statistics, inter-item correlations, item-total correlations and the qualitative investigation of items highly redundant in terms of wording. Thereafter, the instrument (48 items) was administered to 366 support and academic personnel at a tertiary institution. Using Rasch analyses and item correlations, 18 additional items were eliminated, resulting in a 30-item instrument (15 items were retained to measure work-nonwork interference and 15 items to measure nonwork-work interference).

The results indicate that the four-factor hypothesised model of W-NWI explains the associations between the items significantly better than the competing models that were tested (the one-factor model, the two-factor home/religion model, the three-factor family model and the three-factor caretaker model). However, inspection of the modification indices and a high standardised residual covariance between work-parent item 4 and work-spouse item 2 suggest an improvement in the hypothesised model. It was therefore decided to delete one problematic item (work-parent item 4). The results of the comparison of the four-factor NW-WI model and the competing models also indicate that the hypothesised model explains associations between the 15 items significantly better than the alternative models. The results also provided evidence for construct, discriminant and convergent validity and reliability.

3. CONCLUSION

The research described above is innovative in the sense that it contributed to knowledge on employee health and well-being as well as to the fair assessment of well-being constructs such as burnout, engagement and WHI within the South African context. This research was among the first to be published in South Africa on several topics, including the psychometric properties of the MBI-GS, and UWES; the psychometric properties on a WHI instrument, the SWING, that measures four types of WHI (negative and positive interaction from work to home and home to work); the translation of these instruments into two indigenous languages (Afrikaans and Setswana); the development and testing of structural models tested with SEM, which included job characteristics, negative and positive WHI, burnout and engagement; the testing of the mediation effects of WHI; and the prevalence and demographic differences of WHI. Since no published research existed at the time, the development of a WHI instrument that measures the interference between work and different dimensions of private life, based on unique experiences of South African employees, was also initiated and executed.

4. REFERENCES

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 3*, 411-423.

Bagozzi, R. P., & Phillips, L. W. (1982). Representing and testing organizational theories: A holistic construal. *Administrative Science Quarterly, 27*, 449-489.

Bagozzi, R. P., Yi, P. Y., & Phillips, L. W. (1991). Assessing construct validity in organizational research. *Administrative Science Quarterly,* 36, 421-458.

Burke, P. J. (1980). The self: Measurement requirements from an interactionist perspective. *Social Psychology Quarterly, 43*(1), 18-29.

Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications and programming*. Mahwah, NJ: Erlbaum.

Coetzee, S. E., & Rothmann, S. (2004). An adapted model of burnout for employees at a higher education institution in South Africa. *South African Journal of Industrial Psychology, 30*(3), 29-40.

Demerouti, E., Mostert, K., & Bakker, A. B. (2010). Burnout and work engagement : A thorough investigation of the independency of both constructs. *Journal of Occupational Health Psychology, 15*(3), 209-222.

Geurts, S. A. E., Taris, T. W., Kompier, M. A. J., Dikkers, J. S. E., Van Hooff, M. L. M., & Kinnunen, U. M. (2005). Workhome interaction from a work psychological perspective: Development and validation of a new questionnaire, the SWING. Work & Stress, 19, 319-339.

Gonza´lez-Roma´, V., Schaufeli, W. B., Bakker, A. B., & Lloret, S. (2006). Burnout and work engagement: Independent factors or opposite poles? *Journal of Vocational Behavior, 62,* 165-174.

Jackson, L. T. B., & Rothmann, S. (2005). Work-related well-being of educators in a district of the North West Province. Perspectives in Education, *23*, 107-122.

Jacobs, D., Mostert, K., & Pienaar, J. (2008). Experience of work-life interaction in the mining industry: A phenomenological study. *SA Journal of Economic and Management Sciences, 11*(1), 17-36.

Koekemoer, F. E., & Mostert, K. (2006). Job characteristics, burnout and negative work-home interference. *SA Journal of Industrial Psychology, 32*(3), 87-97.

Koekemoer, E., & Mostert, K. (2010a). An exploratory study of the interaction between work and personal life: Experiences of South African employees. *SA Journal of Industrial Psychology*, *36*(1), Art. #801, 15 pages. DOI: 10.4102/sajip.v36i1.801.

Koekemoer, E., Mostert, K., & Rothman, S. Jr, (2010b). Interference between work and nonwork roles: The development of a new South African instrument. *SA Journal of Industrial Psychology, 36*(1), Art. #907, 14 pages. DOI:10.4102/ sajip.v36i1.907

Koekemoer, E., & Mostert, K. (2010c). Work-nonwork interference: Preliminary results on the psychometric properties of a new instrument. *SA Journal of Industrial Psychology, 36*(1), Art. #908, 13 pages. DOI: 10.4102/sajip.v36i1.908

Linacre, J. M. (2005). WINSTEPS Rasch measurement [computer program.]. Chicago, IL: Winsteps.com.

Mallard, A. G. C., & Lance, C. E. (1998). Development and evaluation of a parent-employee interrole conflict scale. *Social Indicator Research, 45*, 343-370.

Marais, C., & Mostert, K. (2008). Work-home interaction of police officers in the North West Province: Examining socio-demographic differences. *Acta Criminologica, 21*(1), 62-76.

Marais, C., Mostert, K., Geurts, S. A. E., & Taris, T. W. (2009). Measuring work-home interaction in indigenous languages: The psychometric properties of a translated version of the Survey Work-Home Interaction-Nijmegen (SWING) instrument. *SA Journal of Psychology, 39*(2), 202-219.

Marais, C., Mostert, K., & Rothmann, S. (2009). The psychometrical properties of translated versions of the Maslach Burnout Inventory-General Survey. South African Journal of Industrial Psychology, 35(1), 838-846.

McCall, G. J., & Simmons, J. L. (1966). *Identities and interactions*. New York: Free Press.
Mellenbergh, G. J. (1982). Contingency table models for assessing item bias. Journal of Educational Statistics, 7, 105-118.
Mostert, K. (2006). Work-home interaction as partial mediator between job resources and work engagement. *Southern African Business Review*, *10*(1), 53-74.
Mostert, K. (2008). Time-based and strain-based work-family conflict in the South African Police Service: Examining the relationship with work characteristics and exhaustion. *Acta Criminologica, 21*(3), 1-18.
Mostert, K. (2009). The balance between work and home: The relationship of work and home demands to ill health of employed females. *SA Journal of Industrial Psychology, 35*(1), 743-751. DOI: 10.4102/ sajip.v35i1.743.
Mostert, K. (2011). Job characteristics, work-home interference and burnout: Testing a structural model. *The International Journal of Human Resource Management*, *22*(5), 1036-1053 (0.83).
Mostert, K., Cronjé, S., & Pienaar, J. (2006). Job resources, work engagement and the mediating role of positive work-home interaction of police officers in the North West Province. *Acta Criminologica, 19*(3), 64-87.
Mostert, K., & Oldfield, G. R. (2009). Work-home interaction of employees in the mining environment. *SA Journal of Economic and Management Sciences, 12*(1), 81-99.
Mostert, K., & Oosthuizen, B. (2006). Job characteristics and coping strategies associated with negative and positive work-home interference in a nursing environment. *SA Journal of Economic and Management Sciences, 9*(4), 429-443.
Mostert, K., Peeters, M., & Rost, I. (2011), Work-home interference and the relationship with job characteristics and well-being: A South African study among employees in the construction industry. *Stress and Health, 27*(27), 238-251, DOI: 10.1002/smi.1374.
Mostert, K., Pienaar, J., Gauche, C., & Jackson, L.T.B. (2007). Burnout and engagement in university students: A psychometric analysis of the MBI-SS and UWES-S. South African Journal of Higher Education, 21(1), 147-162.
Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work-family conflict and family-work conflict. *Journal of Applied Psychology, 81*(4), 400-410.
Oldfield, G. R., & Mostert, K. (2007). Job characteristics, ill health and negative work-home interference in the mining industry. *SA Journal of Industrial Psychology, 33*(2), 68-75.
Oosthuizen, J., Mostert, K., & Koekemoer, F. E. (2011). Job characteristics, work-nonwork interference and the role of recovery strategies amongst employees in a tertiary institution. *SA Journal of Human Resource Management*, *9*(1), 356-371.
Pieterse, M., & Mostert, K. (2005). Measuring the work-home interface: Validation of the Survey Work-Home Interaction - Nijmegen (SWING) Instrument. *Management Dynamics, 14*(2), 2-15.
Rothmann, S., Mostert, K., & Strydom, M. (2006). A psychometric evaluation of the job demands-resources scale in South Africa. *SA Journal of Industrial Psychology, 32*(4), 1-11.
Rost, I., & Mostert, K. (2007). The interaction between work and home of employees in the earthmoving equipment industry: Measurement and prevalence. *SA Journal of Industrial Psychology, 33*(2), 54-61.
Schaufeli, W. B., & Bakker, A. B. (2003). *UWES – Utrecht Work Engagement Scale: Test Manual.* Utrecht, The Netherlands: Department of Psychology, Utrecht University.
Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). The Maslach Burnout Inventory-General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *Maslach Burnout Inventory.* Palo Alto, CA: Consulting Psychologists Press.
Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3,* 71-92.
Sekwena, E., Mostert, K., & Wentzel, L. (2007). Interaction between work and personal life: Experiences of police officers in the North West Province. *Acta Criminologica, 20*(4), 37-54.

Storm, K., & Rothmann, S. (2003a). A psychometric analysis of the Maslach Burnout Inventory General Survey in the South African Police Service. *SA Journal of Psychology, 33*(4), 219-226.

Storm, K., & Rothmann, S. (2003b). A psychometric analysis of the Utrecht Work Engagement Scale in the South African Police Service. *SA Journal of Industrial Psychology, 29*(4), 62-70.

Stryker, S. (1968). Identity salience and role performance: The relevance of symbolic interaction theory for family research. *Journal of Marriage and Family, 30*, 558-564.

Van de Vijver, F., & Leung, K. (1997). Methods and Analysis for Cross-cultural Research. Thousand Oaks, CA: Sage.

Van Horn, J. E., Taris, T. W., Schaufeli, W. B., & Schreurs, P. J. C. (2004). A multidimensional approach to measuring teacher wellbeing. *Journal of Occupational and Organizational Psychology, 77,* 365-375.

Wiley, M. G. (1991). Gender, work and stress: The potential impact of role-identity salience and commitment. *The Sociological Quarterly, 32*(2), 495-510.