Profiling and measurement of work passion in South African nurses

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"Deur God se onverdiende goedheid,
is ek wat ek vandag is.
Hy het Sy goedheid nie tevergeefs aan my bewys nie.
Ek het harder gewerk as al die ander,
en tog was dit ook weer nie ek nie,
maar God se goedheid wat my gedra het"

(1 Korintiërs 15:10)

ʃʃʃʃʃʃʃ

"But by the grace of God I am what I am,
and His grace toward me was not in vain.
On the contrary I worked harder than any of them,
though it was not I,
but the grace of God that is with me"

(1 Corinthians 15:10)

REMARKS

The reader is reminded of the following:

- The American Psychological Association (APA) reference, which is prescribed by the publication manual (6th edition), was used in this thesis. The use of the APA reference and editorial format in scientific documents is in line with the policy of the School of Industrial Psychology and Human Resource Management of the North-West University (Potchefstroom Campus).
- This full dissertation is submitted in the form of three research articles. The editorial style of the South African Journal of Industrial Psychology guidelines (SAJIP) which is aligned with the APA style is used for all research articles.
- The articles are longer than the prescribed words of SAJIP, however the articles submitted to the journal will be shortened versions.
- Due to the statistical nature of Article 2 – Chapter 3, harmonious passion and obsessive passion is not abbreviated as in Chapter 1, 2, 4 and 5.

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This thesis is dedicated to my loving wife & wonderful children.

You make life worth living.

DECLARATION FROM LANGAUGE EDITOR

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9 December 2018

Dear Mr / Ms

Re: Language editing of thesis: Profiling and measurement of work passion in South African nurses

I hereby declare that I language edited the above-mentioned thesis by Mr Gerhard Rabie (12877085).

Please feel free to contact me should you have any enquiries.

Kind regards

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DECLARATION

I, Gerhard Hendrik Rabie, hereby declare that "Profiling and measurement of work passion in South African nurses' is my own work. The views and the opinions expressed in this dissertation are my own. All the relevant sources are cited in text and can be found in the reference lists.

I also declare that the content of this research project will not be handed in for any other qualification at any other tertiary institution.

Gerhard Hendrik Rabie **December 2018**

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ABBREVIATION LIST

A

ANOVA	Analysis of variance
APA	Americal Psychological Association

C

CTT	Classical Test Theory

D

DIF	Differential Item Functioning
DMP	Dualistic Model of Passion

E

EFA	Exploratory Factor Analysis

H

HP	Harmonious Passion

I

ICC	Item Characteristic Curve
IRT	Item Response Teory

K

KMO	Kaiser-Meyer-Olkin

M

M	Mean

ML	Maximum Likelihood

N

NPIS	Nursing Passion Indicator Scale
NHI	National Health Insurance

O

OCB	Organisational Citizenship Behaviour
OP	Obsessive Passion

P

PAF	Principle Axis Factor
PC	Principal Component
PCA	Principal Component Analysis
PDC	Passion-definition criteria
PHC	Primary Health Care
PSI	Person Separation Index

R

RUMM	Rasch Unidimensional Measurement Model
r	Pearson's Correlation Coeffient

S

SAJIP	South African Journal of Industrial Psychology guidelines
SANC	South African Nursing Council
SD	Standard deviation
SDT	Self-determination theory

ABBREVIATION LIST (continue)

SMS	Short Message Service

T

TEI	Tertiary Education Institution

SUMMARY

Title: Profiling and measurement of work passion in South African nurses

Nurses are seen as forming the backbone of the South African healthcare system and are regarded as playing an important role in achieving government's goal of a healthy life for all South Africans. However, research has suggested that some nurses end up in nursing for reasons other than having a passion for the profession. Passion for work has scientifically been linked with both positive and negative consequences for the wellbeing and performance of employees at work. If nurses are therefore not passionate about their profession, this may have a negative impact on the clinical practice environments where they operate. The effective management of the passion of employees in the workplace has been suggested to counter the negative impact thereof and to reap the benefits that passionate employees bring to the workplace. Unfortunately, research on work passion has focused mainly on Westernised countries and a literature search revealed no such research within the South African nursing context. The idea of this research project was therefore to introduce work passion research to the field of nursing in South Africa. This entailed an exploration of what nursing passion entails and an investigation into scientific measures that can be used to measure nursing passion.

The general objective (purpose) of this research project was therefore to draft a profile of professional nurses in terms of the passion they show towards nursing and to investigate ways of measuring this passion for the purpose of managing it effectively in future. This will benefit nurses themselves, their patients, clinical practice environments and ultimately the nursing profession as a whole.

In order to achieve the general objective (purpose) of this research project, three studies were conducted, which are reported on in three research articles in this thesis. Each of these had their own general objective (purpose) and specific objectives.

The general objective (purpose) of study 1 was to explore nursing passion within the South African context and to test an instrument (the passion scale) for the measurement thereof. This study followed a parallel mixed-method design. The expectation was that a combination of

qualitative and quantitative data would provide a clearer understanding of the passion construct and the measurement of passion within the nursing context.

The quantitative part of the study used a cross-sectional design and included a combined sample of 163 registered professional and student nurses to test the passion scale for use within the South African context. In line with the use of the scale in other countries, the exploratory factor analysis revealed a two-factor structure for the scale and Cronbach alphas higher than .70 for both Harmonious Passion (.85) and Obsessive Passion (.81). Partial correlations between Harmonious Passion and the Passion-definition Criteria while controlling for Obsessive Passion revealed some correlation. Partial correlations between Obsessive Passion and Passion-definition Criteria while controlling for Harmonious Passion revealed no correlation. Convergent validity was therefore not confirmed. Except for the latter, the scale operated similarly than in other countries and further investigation into its psychometric properties was recommended.

The qualitative part of study 1 followed a constructivist approach. Semi-structured interviews were held with a combined sample of 16 professionally registered and student nurses. Thematic analysis was used to analyse the data, while a phenomenological strategy was used to interpret the data. Findings revealed four main themes with their respective subthemes: (1) passion-definition criteria (love/like nursing, valuing nursing, time/energy involvement and autonomous internalisation), job investment (role model, change agent, empowering others, going the extra mile and life-long learning), compassion (empathy, caring and helping people and holistic care), and personal characteristics (competent and confident, commitment, resilience, interpersonal skills and leadership skills). Based on the findings, the nursing passion construct was conceptualised.

The general objective (purpose) of study 2 was to compare the psychometric properties of the subscales of an original and contextualised version of the passion scale using Rasch analysis; and an investigation into the impact of adding a frame-of-reference to the contextualised scale. A quantitative approach with a cross-sectional design was used to reach the purpose of the study. A sample of 447 professionally registered and student nurses was included in the study. Rasch analysis was used to analyse the data. The results revealed disordered thresholds for all the subscales being analysed; in terms of item location and item fit, the harmonious subscales revealed fit to the Rasch model, while the obsessive scales did not initially show fit. In terms

of targeting, all the scales revealed that participants were adequately separated by the items. Some items of the original harmonious passion subscale and modified adapted subscale violated the Rasch assumption of local independence. Uniform differential item functioning for ethnicity was found for all four subscales, while non-uniform differential item functioning was only found for the modified adapted obsessive passion subscale. A comparison of the subscales in terms of their operating characteristics revealed multi-dimensionality indicative that the two passion scales measured something slightly different after the frame-of-reference was added to the items. The findings of this study revealed that the items of the passion scale need further investigation and that the addition of a frame-of-reference improved the operating characteristics of the adapted passion scale over that of the original scale.

The general objective (purpose) of study 3 was to report on the development and psychometric properties of the nursing passion indicator scale. The steps of DeVellis (2012) were followed in the development of the scale. Items development were based on the qualitative data obtained in study 1. Items were developed for the main themes: job investment, compassion and personal characteristics to measure their respective subthemes. Items were not developed for the passion-definition criteria, as it was to be measured with the passion scale. This study followed a quantitative approach and a cross-sectional design. Data collection for study 2 and 3 was done simultaneously and therefore the 108-item nursing passion indicator scale was administered to the same sample (447) of nurses as was described in study 2. A separate exploratory factor analysis was conducted on each of the three main themes (now called scales) mentioned above. A five-factor structure was revealed for job investment with Cronbach alphas ranging between .80 and .88 and a Cronbach alpha of .91 for the total job investment scale. A three-factor structure for compassion was revealed with Cronbach alphas ranging between .79 and .88, and a Cronbach alpha of .88 for the total compassion scale. A five-factor structure was revealed for personal characteristics with Cronbach alphas ranging between .72 and .89, and a Cronbach alpha of .89 for the total personal characteristic scale.

This research project contributed towards the conceptualisation of nursing passion within the South African context. Furthermore, the two-factor structure of the passion scale and high internal consistency thereof confirmed that the scale operated similarly within the South African context than in Westernised countries. However, further analysis of its convergent validity is needed. It was also shown that the addition of a frame-of-reference to the passion scale improved its operating characteristics above that of an original scale. It was, however,

indicated that the passion scale items need to be revisited for future use to increase reliability and to eliminate item bias. This study also developed a new scale to identify nursing passion within the nursing context. The scale is to be used in conjunction with a passion scale contextualised to the field of nursing. Together, these two scales will in future contribute to the identification of passion and the management thereof in South African clinical practice environments.

Keywords: Self-determination theory, autonomous motivation, controlled motivation, dualistic model of passion, passion-definition criteria, passion scale, nursing passion, frame-of-reference effect, Rasch analysis

OPSOMMING

Titel: Profilering en meting van werkspassie in Suid-Afrikaanse verpleegkundiges

Verpleegsters word beskou as die ruggraat van die Suid-Afrikaanse gesondheidsorgstelsel en word beskou as 'n belangrike rolspeler in die bereiking van die regering se doelwit van 'n gesonde lewe vir alle Suid-Afrikaners. Navorsing het egter voorgestel dat sommige verpleegkundiges in verpleging beland vir ander redes as om 'n passie vir die beroep te hê. Passie vir werk is wetenskaplik gekoppel aan beide positiewe en negatiewe gevolge vir die welstand en prestasie van werknemers by die werk. As verpleegkundiges dus nie passievol oor hul beroep is nie, kan dit 'n negatiewe impak op die kliniese praktykomgewings waar hulle werk hê. Die effektiewe bestuur van die passie van werknemers in die werkplek is voorgestel om die negatiewe impak daarvan te bestry en om die voordele wat passievolle werknemers na die werkplek bring, te oes. Ongelukkig het navorsing oor werkspassie hoofsaaklik gefokus op Westerse lande en 'n literatuursoektog het nie so 'n ondersoek binne die Suid-Afrikaanse verpleegkonteks openbaar nie. Die idee van hierdie navorsingsprojek was dus om werkspassienavorsing op die gebied van verpleegkunde in Suid-Afrika bekend te stel. Dit behels 'n verkenning van wat verpleegkundiges se passie behels en 'n ondersoek na wetenskaplike maatreëls wat gebruik kan word om verpleegpassie te meet.

Die algemene doelstelling (doel) van hierdie navorsingsprojek was dus om 'n profiel van professionele verpleegkundiges op te stel in terme van die passie wat hulle toon vir verpleegkunde en om maniere te ondersoek om hierdie passie te meet met die doel om dit effektief in die toekoms te bestuur. Dit sal tot voordeel van verpleegkundiges hulself, hul pasiënte, kliniese praktykomgewings en uiteindelik die verpleegberoep as geheel wees.

Ten einde die algemene doelstelling (doel) van hierdie navorsingsprojek te bereik, is drie studies uitgevoer, wat in drie navorsingsartikels in hierdie proefskrif aangebied word. Elkeen van hulle het hul eie algemene doelstelling (doel) en spesifieke doelwitte.

Die algemene doelstelling (doel) van studie 1 was om verpleegpassie binne die Suid-Afrikaanse konteks te ondersoek en om 'n instrument (die passieskaal) vir die meting daarvan te toets. Hierdie studie volg 'n parallelle gemengde-metode-ontwerp. Die verwagting was dat 'n kombinasie van kwalitatiewe en kwantitatiewe data 'n beter begrip sal gee van die passie-konstruk en die meting van passie binne die verpleegkonteks.

Die kwantitatiewe gedeelte van die studie het 'n dwarsdeursnee-ontwerp gebruik en sluit 'n gekombineerde steekproef van 163 geregistreerde professionele en studentverpleegkundiges in om die passieskaal vir gebruik binne die Suid-Afrikaanse konteks te toets. In ooreenstemming met die gebruik van die skaal in ander lande het die verkenningsfaktoranalise 'n twee-faktorstruktuur vir die skaal en Cronbach alfas hoër as .70 vir beide Harmonieuse Passie (.85) en Obsessiewe Passie (.81) geopenbaar. Gedeeltelike korrelasies tussen Harmonieuse Passie en die Passie-definisie Kriteria terwyl dit vir Obsessiewe Passie beheer het, het 'n mate van korrelasie getoon. Gedeeltelike korrelasies tussen Obsessiewe Passie en Passie-definisie Kriteria terwyl dit vir Harmonieuse Passie beheer het, het geen korrelasie getoon nie. Konvergente geldigheid is dus nie bevestig nie. Behalwe vir laasgenoemde, het die skaal op dieselfde wyse as in ander lande presteer en is verdere ondersoek na sy psigometriese eienskappe aanbeveel.

Die kwalitatiewe deel van studie 1 het 'n konstruktivistiese benadering gevolg. Semi-gestruktureerde onderhoude is gehou met 'n gekombineerde steekproef van 16 professioneel geregistreerde en studenteverpleegkundiges. Tematiese analise is gebruik om die data te analiseer, terwyl 'n fenomenologiese strategie gebruik is om die data te interpreteer. Bevindings het vier hoof temas met hul onderskeie subtemas geopenbaar: (1) passie-definisie-kriteria (liefde/hou van verpleegkunde, waardeer verpleging, tyd/energie-besteding en outonome internalisering), werkbelegging (rolmodel, veranderingsagent, bemagtiging van ander, die ekstra myl en lewenslange leer), deernis (empatie, omgee, hulp verlening aan mense en om mense met holistiese sorg te help), en persoonlike eienskappe (bekwaam en selfversekerd, toewyding, veerkragtigheid, interpersoonlike vaardighede en leierskapsvaardighede). Gebaseer op die bevindinge is die verpleegkunde-passiekonsep gekonseptualiseer.

Die algemene doelstelling (doel) van studie 2 was om die psigometriese eienskappe van die subskale van 'n oorspronklike en gekontekstualiseerde weergawe van die passieskaal te vergelyk deur Rasch-analise te gebruik; sowel as 'n ondersoek na die impak van die byvoeging van 'n raamwerk van verwysing na die gekontekstualiseerde skaal. 'n Kwantitatiewe benadering met 'n dwarsdeursnee-ontwerp is gebruik om die doel van die studie te bereik. 'n Steekproef van 447 professioneel geregistreerde en studenteverpleegkundiges is by die studie ingesluit. Rasch-analise is gebruik om die data te analiseer. Die resultate het geaffekteerde drempels vir al die subskale wat geanaliseer word, onthul; in terme van item-lokaliteit en item-passing het die harmonieuse subskale gepas vir die Rasch-model, terwyl die obsessiewe skale nie aanvanklik gepas het nie. Wat die teiken betref, het al die skale geopenbaar dat deelnemers

voldoende geskei is deur die items. Sommige items van die oorspronklike harmonieuse passie-subskaal en gewysigde, aangepaste subskaal onderskryf het die Rasch-aanname van plaaslike onafhanklikheid verwerp. Uniforme differensiële item-funksionering vir etnisiteit is gevind vir al vier subskale, terwyl nie-eenvormige differensiële item-funksionering slegs gevind is vir die aangepaste obsessiewe passie-subskaal. 'n Vergelyking van die subskale in terme van hul bedryfskarakteristieke het multi-dimensionaliteit getoon, wat aandui dat die twee passie-skale iets effens anders gemeet het nadat die raamwerk van die items bygevoeg is. Die bevindings van hierdie studie het aan die lig gebring dat die items van die passieskaal verdere ondersoek vereis, en dat die byvoeging van 'n raamwerk van verwysing die operasionele eienskappe van die aangepaste passieskaal oor die oorspronklike skaal verbeter het.

Die algemene doelwit (doel) van studie 3 was om verslag te doen oor die ontwikkelings- en psigometriese eienskappe van die verplegingspassie-aanwyserskaal. Die stappe van DeVellis (2012) is gevolg in die ontwikkeling van die skaal. Item-ontwikkeling is gebaseer op die kwalitatiewe data wat in studie 1 verkry is. Items is ontwikkel vir die hooftemas: werksbelegging, deernis en persoonlike eienskappe om hul onderskeie subtemas te meet. Items is nie ontwikkel vir die passie-definisie-kriteria nie, aangesien dit met die passieskaal gemeet moes word. Hierdie studie volg 'n kwantitatiewe benadering en 'n dwarsdeursnee-ontwerp. Data-insameling vir studie 2 en 3 is gelyktydig gedoen en daarom is die 108-item verplegingspassie-aanwyserskaal toegedien aan dieselfde steekproef (447) van verpleegkundiges soos in studie 2 beskryf. 'n Afsonderlike verkenningsfaktor-analise is op elk van die drie hoof temas (nou genoem skale) hierbo gedoen. 'n Vyffaktorstruktuur is aan die lig gebring vir werkbelegging met Cronbach-alfa wat wissel tussen 0,80 en .88 en 'n Cronbach-alfa van .91 vir die totale werkbeleggingskaal. 'n Driefaktorstruktuur vir medelye is aan die lig gebring met Cronbach-alfas wat wissel tussen .79 en .88, en 'n Cronbach-alfa van .88 vir die totale deernisskaal. 'n Vyffaktorstruktuur is onthul vir persoonlike eienskappe met Cronbach-alfa wat wissel tussen .72 en .89, en 'n Cronbach-alfa van .89 vir die totale persoonlike karakterskaal.

Hierdie navorsingsprojek het bygedra tot die konseptualisering van verpleegkritiek binne die Suid-Afrikaanse konteks. Verder het die tweefaktorstruktuur van die passieskaal en die hoë interne konsekwentheid daarvan bevestig dat die skaal op dieselfde wyse binne die Suid-Afrikaanse konteks as in Westerse lande presteer. Nog verdere ontleding van die konvergente geldigheid daarvan is nodig. Daar is ook getoon dat die byvoeging van 'n raamwerk van verwysing na die passieskaal sy bedryfseienskappe verbeter het bo die oorspronklike skaal.

Daar is egter aangedui dat die passieskaal-items vir toekomstige gebruik heroorweeg moet word om betroubaarheid te verhoog en om vooroordeel uit te skakel. Hierdie studie het ook ’n nuwe skaal ontwikkel om verpleegpassie binne die verpleegkonteks te identifiseer. Die skaal moet gebruik word in samewerking met ’n passieskaal wat gekontekstualiseer word op die gebied van verpleegkunde. Saam sal hierdie twee skale in die toekoms bydra tot die identifisering van passie en die bestuur daarvan in Suid-Afrikaanse kliniese praktykomgewings.

Sleutelwoorde: Selfbeskikkingsteorie, outonome motivering, beheerde motivering, dualistiese model van passie, passie-definisie-kriteria, passie skaal, verpleegpassie, verwysingsraamwerkeffek, Rasch-analise

CHAPTER 1

INTRODUCTION TO THE STUDY

INTRODUCTION

1.1 Orientation

People often use the word 'passion' to express how much they enjoy or love something. In general, people attribute different characteristics (i.e. being more creative, disciplined, dedicated, hardworking and inspirational) to individuals who show passion towards their activities or work (activities/work) and these are also generally linked to increased performance (Boverie & Kroth, 2001). The opposite of these characteristics may, however, be linked to individuals who never had a passion for their activity/work or who have lost their passion for an activity/work that they used to like. These include activities in which they used to invest a great deal of time and energy or to which they attached a great deal of value. The two sides of passion have been labelled the bright and dark side of passion (Vallerand et al. 2003a).

These sides are reflected in the dualistic model of passion developed by Vallerand et al. (2003a). According to this model, passion for an activity/work may have either positive or negative outcomes in terms of wellness and performance of individuals. Vallerand and Houlfort (2003) have advised that the passion of individuals should be managed for the purpose of better performance. In recent years, more empirical research has confirmed this link between the passion that individuals show towards their activities/work and higher performance (see Astakhova & Porter, 2015; Burke, Astakhova, & Hong, 2015; Ho, Wong, & Lee, 2011; Quadeer, Ahmad, Hameed, & Mahmood, 2016). This sparked a renewed interest in the benefits of having passionate employees at work and ways as to manage this passion towards the benefit of employees and the organisations they function in (Astakhova & Porter, 2015; Ho, Kong, Lee, Dubreuil, & Forest, 2018; Lajom, Amarnani, Restubog, Bordia, & Tang, 2018; Li, Zhang, & Yang, 2017; Perrewé, Hochwarter, Ferris, Mcallister, & Harris, 2014). The latter can specifically be applied to the nursing profession.

One of the distinctive characteristics of professional nurses is the passion they show towards nursing (Bushart, Brent, Beal, Young, & Khosla, 2016). Research, however, indicates that nurses end up in nursing for reasons other (i.e. earning a salary, bursaries and having a job) than having a passion for nursing (Haskins, Phakathi, Grant, & Horwood, 2014; Mkhize & Nzimande, 2007). Haskins et al. (2014) even mentioned that some nurses end up in nursing without even liking it. Since nurses are seen as forming the backbone of the South African

healthcare system, this may have dire consequences for achieving the government's goal of creating "a long and healthy life for all South Africans" (South Africa: Department of Health, 2013, p. 4). Investigating and measuring passion in the nursing profession in South Africa becomes inevitable. The passion scale is indicated as a valid and reliable measure of passion (Vallerand et al; 2003a).

The passion scale (Vallerand et al., 2003a) has mainly been used within Westernised cultures (see Burke, 2015) with mostly individualistic cultural groups. It is viewed as a reliable measure with Cronbach alphas ranging between .73 and .94 (see Astakhova & Porter, 2015; Burke et al., 2015; Ho et al., 2011; Vallerand et al., 2003a). However, the research issue pertaining to this study will be whether this scale will be applicable in South Africa, which consists of individualistic and collectivistic cultures and is still a developing country. A literature review revealed no scientific results on the stance, conceptualisation and meaning of work passion in South Africa and the measurement of nursing passion in South Africa with the passion scale (Vallerand et al., 2003a). As far as has been determined, the scale has not been used within the South African context, or more specifically, the South African nursing context.

In order to address these research issues, it needs to be determined whether the passion scale functions the same within the South African context than in the Westernised countries where it is mostly used. An exploratory factor analysis can be applied to analyse the scale in terms of factor structure, internal consistency and convergent validity. Furthermore, if it is found that the scale is useable within the South African context, the scale needs to be adapted in order to contextualise the scale for specific use among nurses. For this purpose, adding a frame-of-reference (nurse/nursing) to the items of the passion scale is proposed. When administering a questionnaire or scale, the frame-of-reference increases the respondent consistency (Mlinarič & Podlesek, 2013), and therefore improves the measurement of constructs (Ovidiu, 2015). The addition of a frame-of-reference to the items of the passion scale will require a further investigation into its psychometric properties. Rasch analysis can be applied for this purpose.

Rasch analysis generates a great deal of information that can be used to check the quality of item performance of an instrument, while also indicating whether an instrument should be modified to improve the measurements of the traits under scrutiny (Hendriks, Fyfe, Styles, Skinner, & Merriman, 2012). In addition, it can also be used to examine the functioning of the rating scale within a measuring instrument to ensure that respondents respond in a consistent

manner to the different response options. A frame-of-reference that is added to the passion scale will be useful to determine the operating characteristics of a contextualised passion scale within the South African context.

Additionally, Rasch analysis is also expected to assist in comparing the operating characteristics of a contextualised version of the passion scale with an original version. According to Ho et al., (2018), certain contextualised factors may impact on how passion is experienced. The passion scale therefore provides information as to the presence or absence of passion and whether Harmonious Passion (HP) or Obessive Passion (OP) is present, but it does not provide contextual information that can help to understand why there is passion or not or why an individual experiences HP or OP. Another solution will be to develop a new instrument, the nursing passion indicator scale (NPIS). The NPIS will be developed to be used with a contextualised passion scale. It is expected that the simultaneous use of the two instruments may lead to a better understanding of nursing passion in clinical practice environments that will lead to the effective management thereof in future.

In light of the renewed interest (see Lajom et al., 2018) in the benefits of having passionate employees, research on the topic of work passion in nurses becomes vital. This research project therefore intended to do some of the groundwork to start a process of investigating nursing passion within the South African nursing context and to contribute to the future management of passion within this context. The conclusion can also be drawn that not only does the measurement of work passion in nurses become important, but also the understanding of work passion within the South African context.

1.2 Research purpose and objectives

The purpose of the present research project is therefore to explore the passion that South African nurses' show towards nursing in an attempt to profile the passionate South African nurse in terms of a 'nursing passion' conceptualisation. In addition, the purpose entails an investigation into the use of an established international measure of passion within the South African nursing context and the development of an instrument to measure contextualised nursing passion indicators within clinical practice environments. The findings and results reported in this thesis will contribute towards the effective management of nursing passion within clinical practice environments in the future.

Next, the literature review will provide more insight into the context of nursing in South Africa; present the links between work passion and work outcomes; discuss the dualistic model of passion and lastly investigate the self-determination theory (SDT) as the theoretical framework that the dualistic model departs from.

1.3 Literature review

The nursing context in South Africa

Although no empirical research on nursing passion in South Africa could be found during a literature search, there has been a number of indicators over the years that implied that something was wrong within the South African nursing profession. During a nursing summit held in 2011, former President Jacob Zuma slammed heads of state hospitals and nurses with regard to their attitudes and poor service delivery. He mentioned that the rude, impatient and non-caring attitudes of government officials and nurses must change in order to build a government and community that cares (Edwards, 2011). In addition, Oosthuizen (2012) found 161 media reports on nursing between 2005 and 2009 and most of these were negative. Issues such as "poor treatment of patients, inhumane care, infant and maternal deaths, negligence, lack of infection control, exceptionally negative attitudes, theft, bribery and corruption, assault, sexual and physical abuse, and abuse" (p.57) were reported.

Even more, complaints against nurses have increased three hundred fold since 1996, according to the South African Nursing Council (SANC) statistics (South Africa: Department of Health, 2013). Heyns (2014) also reported that nurse leaders, managers and the general public held negative opinions about the quality of healthcare in South Africa. Even the South African Department of Health itself reported that the standards of nursing have dropped and that there was a decline in the status of the nursing profession (South Africa: Department of Health, 2013). Even though the issues mentioned above cannot be scientifically ascribed to the absence of nursing passion, the conclusion can be drawn that they do not reflect a nursing workforce that is passionate about its profession.

Next, the dualistic model of passion (DMP) will be described followed by a description of the passion scale and an overview of some of the distinct findings made by using this scale in empirical research.

DMP

In order to gain insight into the work passion that nurses' show towards nursing in South Africa, the empirically tested DMP (Vallerand et al., 2003a) w'ill be applied throughout the research that this thesis reports on.

Studies by Vallerand et al. (2003a) have led to the development of the DMP, which entailed a new approach towards studying the passion people have for their activities. Vallerand and Houlfort (2003) also extended the use of the DMP to work environments. Within the context of the DMP, passion is conceptualised as a heightened tendency of individuals to take part in activities/work that they like, which they view as important or valuable and in which they tend to invest a great deal of time and energy. These passionate activities/work become internalised into the self to the extent that it becomes part of the identities of these individuals (Vallerand et al., 2003a; Spehar et al., 2016).

Drawing on SDT, depending on the way in which activity/work engagement is internalised (i.e. autonomously or controlled), the DMP proposes the existence of two types of passion, namely HP and OP (Vallerand, Paquet, Philippe, & Charest, 2010; Spehar, Forest, & Stenseng, 2016).

When the activity/work is internalised into the identity of an individual through an internalisation process that is autonomous in nature, HP will come to the fore (Vallerand et al., 2010). This autonomous internalisation of behaviour regulations produces the desire to engage willingly in an activity and approval of one's own engagement therein (Mageau et al., 2009). Although the activity/work becomes part of the individual's identity, the identity is not consumed by it. As a result, the activity/work remains in harmony with other aspects of the individual's life. (Vallerand et al., 2003a; Vallerand et al., 2010; Vallerand & Houlfort, 2003). HP people are flexible with regard to activity/work engagement and aware of the time spent on it; their autonomous participation in the passionate activity results in positive experiences (Mageau et al., 2009).

When the activity/work is internalised into the identity of an individual through an internalisation process that is controlled in nature, OP will come to the fore (Vallerand et al., 2010). This type of internalisation happens when motivational forces compel a person to engage in an activity. In this case, the individual is controlled by the activity/work and cannot refrain from engaging in it. Activity/work engagement gets out of control and starts consuming

the identity of the person to such an extent that conflict arises between the activity/work and other domains of life, which lead to non-optional functioning (Vallerand & Houlfort, 2003; Vallerand et al., 2003a).

In order to measure the dualistic nature of passion for activities/work, Vallerand et al. (2003a) developed the passion scale. The scale consists of two subscales that measure the two types of passion, HP and OP, described above. In addition, the passion scale includes items that are related to specific elements of the passion definition. These items are commonly referred to as passion criteria, but for the purpose of this research project, they will be referred to as the passion-definition criteria (PDC). They are used to measure the different elements of the passion definition, namely: (1) *the love or liking of the activity/work, (2) time and energy involvement therein, (3) the importance or value thereof to the individual, (4) whether the activity/work is a passion for the individual* and, *(5) whether it has been internalised into the identity of the individual.* These items can either be included in the passion scale when it is administered or they can be administered separately. They do, however, not form part of the two-factor structure of the passion scale.

In recent years, the applicability of the DMP in organisations has become all the more apparent (Thorgren, Wincent, & Sirén, 2013). Using the passion scale in a number of empirical studies has revealed some distinct results related to the possible consequence that both HP and OP may have for organisations. An overview of the results of some of these empirical studies is provided below:

Ho et al, (2011) found that workers showing HP towards their jobs are likely to experience a heightened cognitive state of engagement that results in more cognitive energy being channelled towards the job leading to increased work-engagement (experiencing high levels of emotional energy and fulfilment at work). OP, however, showed not to be related to work engagement (Trépanier et al., 2014; Qadeer et al., 2016). Ho et al. (2011) found a positive link between HP and work performance, whereas OP showed no significant relationship with performance. Although Burke et al. (2015) as well as Qadeer et al. (2016) also found this positive link between HP and work performance, Astakhova and Porter (2015) found both HP and OP to be positively related to work performance. This result is not abnormal, since both people with HP and OP are passionate about their work. However, the people experiencing HP are able to disengage from their activities, which leads to positive outcomes, whereas people

experiencing OP find it difficult to disengage from their work, which leads to negative outcomes in the long run.

In line with Carbonneau, Vallerand, Fernet, and Guay (2008), as well as Vallerand et al., (2010), Thorgren et al. (2013) found that HP within the work context was positively related to work satisfaction, while OP was found not to be related to work satisfaction. Spehar et al. (2016) found that belongingness partially mediated the relationship between HP and work satisfaction, while OP was not related to either belongingness or work satisfaction. In addition, Thorgren et al. (2013) also mentioned that the type of passion (HP or OP) that employees show towards their work had different implications for their work-life balance. Qadeer et al. (2016) also found direct and indirect links between HP and organisational citizenship (OCB) behaviour and came to the conclusion that HP might predict OCB.

Following up on the Vallerand and Houlfort (2003) study, Forest, Mageau, Sarrazin and Morin, (2011) confirmed mental health as being an additional consequence of passion. The mental state of flow involves immersing oneself in an intrinsically fulfilling task, being able to avoid distractions, while finding the task challenging enough to focus on it without being bored or anxious (Silverman, Baker, & MacDonald, 2016). In this regard, HP was found to be associated with variables related to flow (concentration, sense of control and autotelic experience), vitality and affective commitment, which are all seen as variables related to optimal human functioning. A negative relationship was found between OP and mental health, while a weak positive relationship existed between OP and autotelic experience (Forest et al., 2011).

OP was also found to be more likely to lead to behaviours that might cause intra- or interpersonal conflict as well as rigid persistence (thinking constantly of one's job even when at home, working overtime and during holidays) (Forest et al., 2011). Trépanier et al. (2014) had similar findings and linked this rigid persistence with the inevitable drainage of energy from the individual, which eventually leads to exhaustion. Astakhova and Porter (2015) predicted that rigid persistence may result in work-life imbalance in the long run, while Thorgren et al. (2013) confirmed this link between OP and work-life imbalance.

In contrast with OP, Forest et al. (2011) linked HP with behaviours that lead individuals to take control over their professional lives, career satisfaction and fun at work. According to Trépanier et al. (2014), these behaviours linked to HP assist individuals to disengage from work when

they are tired or find it difficult to concentrate. The disengagement from work goes without any feelings of anxiety or guilt by the individual and assists in reducing any further energy depletion.

Both Vallerand et al. (2010) and Carbonneau et al. (2008) found that OP promoted burnout while HP prevented it. Lavigne, Forest and Crevier-Braud (2012) also found that OP was related to burnout symptoms at work and thereby confirmed the implication of OP for wellness and performance in organisations. Lavigne et al. (2012) showed that a strong positive relationship exists between HP and flow experiences, which indirectly protects people from burnout. Trépanier et al. (2014) found that OP can lead to burnout via its impact on the relationship between job demands and burnout. In addition, they also found that although job resources lead to engagement, it also prevents burnout via HP. Similarly, research among university students also revealed that HP leads to higher levels of academic engagement and lower levels of academic burnout (Stoeber, Childs, Hayward, & Feast, 2011).

It is clear that HP and OP have implications for the wellbeing of employees, their performance and the performance of organisations. In a recent study, Perrewé et al. (2014) again confirmed the positive results yielded by HP and suggested that managers should nurture the HP that employees have for their jobs. This is similar to the view of Vallerand and Houlfort (2003) that HP is beneficial to organisations and that the development thereof should be facilitated. Personnel selection (searching for people with an autonomous internalisation style or those who already show HP for their work) and organisational interventions are proposed as ways of harnessing HP in organisations. Vallerand and Houlfort (2003) warn that if organisations do not intervene, HP will be subdued in the absence of organisational support and social forces will cancel out personality factors that might lead to HP.

The DMP is grounded in SDT (Mageau et al., 2009), which is briefly described below in terms of what it is about and its perspective on autonomous and controlled motivation that have bearing on the dualistic model of passion.

SDT

SDT is an overarching theory that investigates human motivation. What sets this theory aside from other motivational theories is that it focuses on the quality of autonomous versus

controlled motivation rather than the total amount of motivation experienced for certain activities (Gagné & Deci, 2005).

SDT has the following views on autonomous and controlled motivation: Firstly, they can be separated from one another based on their underlying regulatory processes together with the experiences that accompany these processes. Secondly, both lead to certain behaviours that can be characterised based on how autonomous or controlled they are; and thirdly, both autonomous and controlled motivations are intentional and differ from amotivation, which lacks intention and motivation (Gagné & Deci, 2005).

Autonomous motivation includes both intrinsic motivation and certain types of extrinsic motivation. Autonomously motivated people usually approve of their own actions or behaviours and they want to engage in these actions or behaviours because they find them valuable, interesting and enjoyable; their actions or behaviours are therefore voluntary or self-endorsed (Ryan & Deci, 2000; Deci & Ryan, 2008a). According to Ryan and Deci (2000), the types of extrinsic motivation that resort under autonomous motivation refer to the cases where people identify with an activity's value, and then, ultimately integrating it into their self-concept. Extrinsically motivated people take part in activities to reach some sort of separable outcome.

Controlled motivation focuses on those types of extrinsic motivation where the external and introjected regulatory styles are present. External regulation is where behaviour is controlled by things (e.g. rewards, punishment, coercion, bribes and fear) external to the self. In contrast, introjected regulation is where the regulation of a specific action or behaviour becomes partially internalised (part of the self). Approval motives, avoidance of shame, contingent self-esteem, and ego-involvements are some of the factors that ultimately lead to the partial internalisation of the regulations for an action or behaviour (Deci & Ryan, 2008b).
In summary, the ability to measure passion makes it possible to manage it to the advantage of employees and the organisations they function in. The absence of a clear conceptualisation of nursing passion and a scientific instrument to measure it necessitates an exploration of what nursing passion entail and an investigation into the use of the passion scale within the South African nursing context.

Based on the above problem statement and literature review, the following research questions are formulated, which leads to three different research articles:

Article 1:

- How are the dualistic model of passion, self-determination theory, passion scale and passion-definition criteria (PDC) conceptualised from the literature?
- Will the hypotheses related to the psychometric properties of the passion scale in terms of factor structure, internal consistency and convergant validity be accepted or rejected?

    - Will the scores on the passion scale fit a correlated two-factor model?
    - Will internal consistency with Cronbach alphas > .70 be achieved for both harmonious passion (HP) and obsessive passion (OP)?
    - Will there be correlation between harmonious passion and the passion definition criteria when controlling for obsessive passion?
    - Will there be correlation between obsessive passion and the passion definition criteria when controlling for harmonious passion?
    - Will convergent validity be present when both harmonious passion and obsessive passion correlate with the passion definintion criteria?

- How do professional and student nurses view a passionate nurse?
- How is 'nursing passion' conceptualised in the South African context?
- What recommendations can be made for organisations/practice and future research?

Article 2:

- How are the dualistic model of passion, the passion scale, frame-of-reference effect and Rasch analysis conceptualised from the literature?
- How do the response categories of the original and adapted passion scale subscales compare?
- How do the subscales of an original and adapted passion scale compare in terms of their item locations and the fit of the items to the Rasch model?
- How do the original and adapted passion scale subscales compare in terms of their item/person threshold distribution (Targeting)?

- Are the items within each of the original and adapted passion subscales dependent on one another?
- Do the items of the original and adapted passion scale subscales function the same across two ethnic groups (differential item functioning)?
- How do the operating characteristics of the original and adapted passion scale subscales compare?
- What recommendations can be made for organisations/practice and future research?

Article 3:

- How are the dualistic model of passion, the passion scale and nursing passion conceptualised from the literature?
- How was the NPIS developed?
- What will the factor structure of the NPIS comprise of?
- Is the internal consistency of the different scales within the NPIS adequate for future use?
- What recommendations can be made for organisations/practice and future research?

1.4 Expected contribution of this study

1.4.1 Contribution to the industrial psychology literature

Passion for work has positive and negative implications for employee well-being and performance that may affect the organisations they function in. Managers must be able to manage the passion of employees to the benefit of these employees and the organisation as a whole. Passion for work is a relatively new field of research done mainly in Westernised countries. A literature search on work passion within the South African context at the time when this study was conducted yielded no results. Therefore, the present study contributes to the industrial psychology literature in a number of ways.

Firstly, passion is to be conceptualised as a way of understanding it within the South African context. This will contribute towards the measurement of nursing passion in the sense that it is very difficult to measure something that is not known. *Secondly*, the investigation into the psychometric properties of the passion scale is expected to yield useful information for the future validation of a contextualised nursing passion scale within the South African nursing context. *Thirdly*, this study proposes the development of a nursing passion indicator scale to be

used in conjunction with a contextualised passion scale (i.e. the nursing passion scale) for the purpose of the future management of passion within clinical practice environments.

1.4.2 Contribution to organisations

As soon as organisations can be convinced of the benefits of fostering passion among employees, they will start taking action in this regard. Various studies as reflected on in the literature review have shown the importance of passion for performance and that it cannot be ignored. Vallerand and Houlfort (2003) propose that personnel selection and organisational interventions be used in order to get passion harnessed in organisations. This study will especially be relevant to clinical practice environments, and will contribute to the effective management of passion within them. The management of passion may in future reduce occurrences such as negligence, absence from work, disciplinary actions taken, patient complaints and nurse turnover.

1.4.3 Contribution for the individual

Intervention programmes implemented by clinical practice environments will benefit nurses and their organisations. In terms of nurses themselves, it will increase their job satisfaction, they will experience less wellness issue such as burnout, they will experience work-life balance and their performance may increase. Patients will have positive experiences while visiting clinical practice environments and will have fewer complaints about the nursing care they receive.

1.5 RESEARCH OBJECTIVES

1.5.1 General objective of this thesis

The general objective of this thesis was to profile professional nurses in terms of the passion they show towards nursing and to investigate ways of measuring this passion for the purpose of managing it to the benefit of nurses themselves, their patients, clinical practice environments and ultimately the nursing profession as a whole. A sample of professional nurses and nursing

students (enrolled for a nursing qualification leading to registration as professional nurse) was included in the study.

Three scientific articles leads to the achievement of the general objective (purpose) of this research project. The specific objectives of these articles are mentioned below:

1.5.2 General objective (purpose) and specific objectives of Article 1

To explore 'nursing passion' within the South African context and to test an instrument for the measurement thereof.

Specific objectives

- To conceptualise the dualistic model of passion, self-determination theory, passion scale and passion-definition criteria (PDC) from the literature.
- To test the psychometric properties of the passion scale by accepting or rejecting hypotheses related to its factor structure, internal consistency and convergent validity.

  H_1: Scores on the passion scale will fit a correlated two-factor model.
  H_2: Internal consistency (Cronbach alphas > .70) will be achieved for both harmonious passion (HP) and obsessive passion (OP)
  H_3: There will be a correlation between harmonious passion and the passion definition criteria when controlling for obsessive passion.
  H_4: There will be correlation between obsessive passion and the passion definition criteria when controlling for harmonious passion.).
  H_5: Convergent validity will be present when both harmonious passion and obsessive passion correlate with the passion definintion criteria.

- To explore passion among professional nurses and nursing students.
- To conceptualise 'nursing passion' for the South African context.
- To make recommendations for organisations/practice and future research.

1.5.3 General objective (purpose) and specific objectives of Article 2

To investigate the psychometric properties of the passion scale using Rasch analyses; and to determine whether the addition of a frame-of-reference had any significant effects on the scale.

Specific objectives

- To conceptualise the dualistic model of passion, the passion scale, frame-of-reference effect and Rasch analysis from the literature.
- To analyse the subscales of an original and adapted passion scale in terms of their response categories operation.
- To analyse the subscales of an original and adapted passion scale in terms of their item locations and the fit of the items to the Rasch model.
- To analyse the subscales of an original and adapted passion scale in terms of their item/person threshold distribution (targeting).
- To analyse the subscales of an original and adapted passion scale in terms of the extent to which the items are dependent on one another (local independence).
- To analyse whether the items of the original and adapted passion scale subscales function the same across two ethnic groups (differential item functioning).
- To compare the subscales of the original and adapted passion scale in terms of their operating characteristics (unidimensionality).
- To make recommendations for organisations/practice and future research.

1.5.4 General objective (purpose) and specific objectives of Article 3

To report on the development and psychometric properties of the NPIS.

Specific objectives

- To conceptualise the dualistic model of passion, the passion scale and nursing passion from a literature review.
- To report on the development of the NPIS.
- To determine the factor structure of the NPIS.

- To determine the internal consistency of the different scales within the NPIS.
- To make recommendations for organisations/practice and future research.

1.5.5 Literature review

A separate literature review is conducted for each of the three articles in order to conceptualise the constructs pertaining to each individual article. Scientific research articles and books are used for this purpose. Selected country-specific policy documents, newspapers and other articles are also used, where applicable.

Scientific literature is obtained via different academic search engines, such as Emerald, Science Direct, Google Scholar, PsychInfo, ProQuest, SACat, Academic Search Premier, Business Source Premier, SA ePublications and EBSCOhost. Country-specific policies, legislation, as well as white and green papers were obtained from the different governmental websites such as the South African Department of Health and the South African Nursing Council.

Some of the journals that are consulted for the purpose of the three articles includes: Journal of Personality and Social Psychology, Canadian Psychology, Journal of Business Psychology, Nursing Management, Journal of Educational Psychology, Health Services Research, Journal of Organizational Behaviour, Journal of Management Studies, Motivation and Emotion, British Journal of Health Psychology, Journal of Clinical Nursing, American Psychologist, and the more.

Next, the research design and methodology of Article 1 is presented, followed by a combined presentation of both Articles 2 and 3.

1.6 ARTICLE 1

Conceptualising and measuring passion among South African nurses: A mixed-method study.

1.6.1 Research design

A convergent parallel mixed-methods design (Creswell, 2014; Creswell & Plano-Clarke, 2007) was used in this study (Article 1). The design is used since the combination of the qualitative and quantitative data is expected to provide a clearer understanding of the passion construct and the measurement of passion within the South African nursing context.

1.6.1.1 Research approach

The use of a parallel mixed-method design involves following both a quantitative and qualitative research approach.

The *quantitative phase* of the study consists of a pilot study during which a cross-sectional design is used to reach the specific objectives. This type of design is characterised by the high number of people or cases that can be included in a study, data collection that takes place at a particular point in time, and the comparability of the data obtained from participants in terms of their demographic variables (Matthews & Ross, 2010). According to Shaughnessy and Zechmeister (2009), this type of design is descriptive and predicative in nature and usually gets linked to surveys and the use of questionnaires.

The *qualitative phase* of the study explores the social reality of the participating nurses. This assists in understanding what nursing passion entails. Ontology describes how the social world and those elements that make up this social world (or social phenomena) are seen (Matthews & Ross, 2010). Researchers may opt for different ontological positions such as objectivism, realism and constructivism when approaching their research. From a constructivism point of view, the present study takes the stance that (1) there is no single reality except for the meaning that participants ascribe to the social phenomenon of nursing passion; and (2) that it is possible to study the constructed meanings of nursing passion (Matthews & Ross, 2010). People construct different meanings with regard to passion in the workplace and it is these meanings that the current study intends to explore.

Where ontology describes the different lenses through which the social world and the social phenomena are seen, epistemology refers to a theory of knowledge. According to Nieuwenhuis (2012a), it explores at how one knows that something is real and not just a simple belief. Matthews and Ross (2010) refer to three different epistemological viewpoints, namely positivism, interpretivism and realism. The qualitative phase of the present study is approached from the interpretivism perspective, since it reflected the way in which individuals understood the social phenomenon of nursing passion. Therefore, the information obtained from participants are interpreted to make sense of their different social realities. A phenomenological research strategy is followed to interpret nurses' lived experiences of the nursing passion phenomenon (Simon & Goes, 2011).

1.6.1.2 Research strategy

Due to the parallel mixed-method design that is followed in this study, quantitative and qualitative data are collected simultaneously, while data analysis is done separately. Integration takes place during the discussion (interpretation) phase (Creswell, 2014). A contiguous approach towards the integration of quantitative and qualitative information is followed, and therefore the findings and results are reported in different sections (Fetters, Curry, & Creswell, 2013). The quantitative and qualitative research methods are presented below as Part 1 (quantitative) and Part 2 (qualitative).

1.6.2 Research method: Part 1

The research method of the quantitative part of Article 1 is discussed in terms of the research participants, measuring instruments, research procedure and ethical considerations as well as statistical analysis

1.6.2.1 Research participants

The inclusion criteria for Part 1 and Part 2 of this study are similar. Professional nurses as well as nursing students (studying towards a qualification that leads to professional registration) are allowed to participate in the study. The participants are registered as either a professional or student nurse at the SANC. Participants are able to read and speak English in order to be interviewed during the qualitative part of the study and to complete the measuring instruments during the quantitative part of the study.

Since the tertiary education institution (TEI) provides post-basic nursing education via a distance learning platform, it attracts a large number of registered professional nurses from across South Africa. Convenience sampling is easier to approach a large number of registered nurses at the TEI than trying to gain access to a variety of clinical practice environments. Purposive sampling assists with the inclusion of participants with specific characteristics related to the purpose of the study. Non-probability sampling makes it possible to include any nurse who adhered to the inclusion criteria of the study.

According to Yong and Pearce (2013), the sample size required to conduct a factor analysis can be determined by including between five and 10 participants per scale item. Since the passion scale consists of 17 items, a sample of between 85 and 170 participants is therefore needed. However, the intention is to get as close to 170 participants as possible. A number of 300 questionnaires are distributed to make make provision for non-returned quesionnaires.

1.6.2.2 Measuring instruments

A biographical questionnaire is used to obtain information such as sex, language, ethnicity, age, education level, student or registered nurse and employment status from participants. No identifiable information is requested.

The passion scale (Vallerand et al., 2003b) is used to measure the passion of the participants in this study. The scale consists of 17 items; five of these questions measured the PDC and they are included to measure the presence of passion (i.e. “I spend a lot of time on this activity”). HP is measured with six items (i.e. “This activity is in harmony with the other activities in my life”). Similarly, OP is also measured with six items (i.e. “I have difficulties controlling my urge to do my activity”).

All items are measured on a seven-point Likert-scale ranging between 1 (not agree at all) and 7 (very strongly agree). A study conducted by Vallerand et al. (2003a) among male football players in the Province of Québec Canada yielded Cronbach alphas of .73 for HP and .85 for OP, respectively. Since both HP and OP are types of passion, it is expected that both will correlate with the items that measure the PDC. Correlation is indicative of convergent validity of the passion scale. The five PDC items are therefore included to test whether these

correlations existed. The passion scale is used mostly in Westernised countries; as far as could be established it has not yet been used in South Africa.

1.6.2.3 Research procedure and ethical considerations

Ethical clearance (EMS15/04/21-01/04) for the research is obtained from a TEI in a province of South Africa. This TEI is approached since it contains a School of Nursing that presents full-time nursing education for both undergraduate and postgraduate students. This School of Nursing is also responsible for the delivery of post-basic nursing education via a distance learning programme. The administration for distance learning is, however, provided by the TEIs distance learning department. The department heads of both the School of Nursing and the distance learning department are approached for data collection purposes. After approval is obtained, academic programme managers of both departments are approach to make arrangements to gain access to the potential participants.

At the School of Nursing, undergraduate students are approached inbetween classes. The aim of the research is explained to them verbally. Ethical aspects related to participation in the study are explained to the students. This includes their responsibilities in terms of the research, benefits of taking part in the research, risks involved (there were no risks involved), voluntary participation, withdrawal from the study as well as anonymity (the identity of the participants was not needed for the purpose of the study) and confidentiality. An informed consent form is distributed, which also containes all the aforementioned information. A biographic questionnaire as well as passion scale are also handed over to the students. Students are allowed to complete the biographic questionnaire and the passion scale at home and they return it on an agreed-upon date.

Students are also asked to volunteer to take part in the interviews that are held to achieve the specific objectives of the qualitative part of the research. Students are reminded via the TEIs internal communication platform to return the completed forms. The completed documentation is collected on the date as was agreed upon. Data are captured on an Excel sheet by an independent data capturer. This is the used for statistical analysis purposes.

At the distance learning department, data collection takes place on Saturdays when students are attending classes on the campus of the TEI. Although there are a number of study centres across South Africa, only the study centre on the campus of the TEI is approached for data

collection. The academic programme leader is approached in order to make arrangements for data collection. Students are approached before the start of their classes and are provided with the same information as was the case with the full-time students. They are, however, asked to return the completed documentation at the end of the day after completion of their classes. Students are also asked to volunteer for the interviews of the qualitative part of the study. The completed documentation is collected by the end of the day. It is expected, that some participants may however return their documentation a week or two later.

1.6.2.4 Statistical analysis

The quantitative data is statistically analysed using SPSS Version 23.0 (IBM Inc., 2015). The data is cleaned and the adequacy of the means and standard deviations (*SDs*) are determined. Item analysis is used to determine whether the items of the scales are adequate. Items with skewness > 2 or kurtosis > 4 are excluded from further analysis (DeCarlo, 1997).

A factor analysis is used to indicate which items of the subscales belong together and whether these items measure the same factors. Of the 17 items in the passion scale, only the 12 items related to HP (6 items) and OP (6 items) are analysed. The remaining five items do not form part of the factor structure of the two subscales of the passion scale. These items are called the PDC and are used to determine the presence of passion, but not whether this passion is harmonious or obsessive in nature. The dualistic nature of passion is determined by the items related to OP and HP. Since both OP and HP are seen as types of passion, they are both expected to correlate with the five PDC for the purpose of convergent validity of the passion scale (Vallerand et al., 2003a).

The PDC (5 items) are used to determine whether these correlations exist in order to confirm convergent validity. The process is started with a principal component analysis (PCA) to determine the number of dimensions to be extracted. Communality tables are used to check the proportion of variance that the principle components explained for each item. Items with communality values less than .30 are removed. Eigenvalues ≥ 1 and a scree plot are indicative of the number of components to extract. In order to check the feasibility for extracting the identified number of factors, the component matrix are analysed to check for any random or double loadings in the factors.

Next, the exploratory factor analysis (EFA) is conducted using the principal axis factor (PAF) extraction method with oblimin rotation (Kaiser normalisation). Again, items with communalities less than .30 are discarded. Eigenvalues ≥ 1 are indicative of the number of items to extract. The pattern matrix indicates which items loaded onto which factors; items with loadings less than .32 are discarded.

The structure matrix is used to check the relationships between the items and the factors. The factor correlation matrix is used to check for correlations between extracted factors. When correlations are found, oblique rotation are used for further analysis; alternatively, orthogonal rotation are used. The process is repeated until an adequate factor structure is obtained. Descriptive statistics (mean, *SD*, skewness, kurtosis and Cronbach's alpha) as well as Pearson's correlation coefficient (*r*) are indicated for the factors contained in the final factor structure.

Lastly, partial correlations are done between HP and the PDC, while controlling for OP. Partial correlations are also done for OP and the PDC, while controlling for HP. Correlations are analysed based on their effect size: 0.1 small, 0.3 medium and 0.5 large effect. Since both HP and OP are types of passion, they are supposed to correlate with the PDC in order to confirm convergent validity.

1.6.3 Research method: Part 2

The research method of the qualitative part of Article 1 is discussed in terms of the research setting, entree and the establishment of researcher roles, participants, sampling , data collection, data recording, strategies employed to ensure data quality and integrity, data analysis, reporting style and ethical considerations.

1.6.3.1 Research setting

The research setting as described in Part 1 above (see 1.6.2.3 Research procedure and ethical considerations) is the same for Part 2 and is therefore not repeated in this section.

1.6.3.2 Entrée and establishing researcher roles

Entree is described in Part 1 above (see 1.6.2.3 Research procedure and ethical considerations) and will not be repeated in this section of Part 2. This section therefore continues with the roles that the researcher play during the qualitative part of the research process. Many of these roles overlap with the roles that researcher play during the quantitative part of the research.

Firstly, as planner, the researcher plans all the details pertaining to the research project. This includes aspects such as what the research is supposed to entail, where it conducted, when the research is supposed to take place, who the participants are supposed to be, how access to participants is established, how data are collected and how data are analysed and reported.

Secondly, during the preparation phase of the study, the researcher plays the role of organiser. This entails obtaining the necessary ethical approval from the institution where the research is conducted as well as permission for data collection from the two department heads. Arrangements for gaining access to participants are organised with relevant academic programme managers. It is also necessary to organise the qualitative data collection process in terms of issues such as the venues, accessibility during certain hours and keeping track of participants' appointments.

Thirdly, during the execution stage, the roles differ slightly between the quantitative and qualitative stages. In the quantitative part of the study, the researcher uses questionnaires for data collection and therefore will not need much contact with the participants in order to obtain the data. The qualitative stage, however, requires the researcher to be directly involved with participants while playing the role of interviewer and observer.

Qualitatively, the researcher takes on the role of analyst after the data are collected. This involves checking the transcriptions for correctness and interpreting the data with the assistance of a co-coder. Quantitatively, the researcher also plays the role of data analyst, but in terms of statistical data.

The finalisation phase involves the integration of the findings of both the quantitative and qualitative stages of the research. Here, the researcher has the role of objectively reporting on the findings of the study.

1.6.3.3 Research participants and sampling methods

The same inclusion criteria that apply to Part 1 (see 1.6.2.1 Research participants) also apply to the participants of Part 2 and are therefore not repeated. Also similar to Part 1 is the use of a mix of convenience and purposive non-probability sampling methods in Part 2. In line with Strydom and Delport (2011), there are no rules for sample size when the qualitative inquiry is conducted, since sample size is dependent on data saturation. Data saturation refers to that point during data collection where nothing new is heard by the researcher and repetition of the same information occurs (Greeff, 2011).

1.6.3.4 Data collection methods

Semi-structured interviews are used to collect the data. This type of interview makes it possible for the researcher to probe the participant to explore the nursing passion construct even further. In line with Nieuwenhuis (2012a), this allows the researcher to obtain rich descriptive data that makes it possible to understand how participants construct their own knowledge and social reality with regard to nursing passion. The interview schedule for the purpose of the interviews is indicated in Table 1 below:

Table 1

Interview schedule

No.	Questions
1	What does it mean to you when someone tells you that he/she has a passion for his work/job?
2	Think of a nurse whom you thought had a passion for nursing and describe this nurse in detail.
3	Do you think that this person places a lot of value on nursing and does nursing play a significant role in this person's life?
4	Do you think that this person really likes or enjoys what he/she is doing or is he doing it because he has to?
5	Does this person put a lot of energy and time into nursing? Motivate.
6	In your opinion does the word 'nurse' define this person's being, why?
7	In your opinion, is the passion that this nurse shows towards nursing in harmony with other aspects of this person's life or, do you think that the passion this person has for nursing makes him/her neglect other aspects of life? Motivate.
8	Are there nurses in your working environment who previously showed a passion towards nursing but lost this passion over time? If yes, how did you notice this and, why do you think they lost their passion?
9	In your opinion, have South African nurses lost their passion for nursing? Why?
10	Think back to the time when you had to make a decision what you wanted to do with your life, how did you end-up studying nursing? What do other nurses tell you about how they ended up in nursing?

1.6.3.5 Data recording

Participants sign an informed consent form that indicates that the interviews are recorded. However, before each interview, the participants are reminded about the recording thereof and verbal permission is obtained. After verbal and written permission are obtained from the participants, the researcher commences with the interviews using an interview schedule. In order to keep the recording anonymous, no identifiable information is captured with the digital recorder. The recordings are numbered in the sequence they are held. The anonymous interviews are transcribed verbatim by an independent transcriber and are checked for correctness by the researcher after receiving the transcriptions.

1.6.3.6 Strategies employed to ensure data quality and integrity

From a qualitative perspective, it is important to ensure trustworthiness and credibility of the research. Trustworthiness refers to the way in which the researcher shows that the results of the research are of a high standard and worth reading. In qualitative research, the constructs of credibility and trustworthiness are used instead of validity and reliability (Nieuwenhuis, 2012b). In the work of Schurink, Fouché, and de Vos (2011), credibility, transferability, dependability and conformability are referred to as the constructs that reflect the validity and reliability of the research from a qualitative perspective. These constructs are addressed in the present study.

Credibility refers to the way that the enquiry is conducted to ensure the correct identification and description of the problem and it can be seen as the alternative way of determining internal validity. The description of the data obtained from the setting must be appropriate to explain the different variables and interactions therein (Schurink et al., 2011). In line with Botma, Greeff, Mulaudzi, and Wright (2010), the perspectives of the participants taking part in the semi-structured interviews are reported as clear as possible by the researcher.

Transferability refers to the ability to demonstrate that one set of findings within a particular context can be transferred to another context; it can be seen as an alternative to external validity or generalisability. Purposive sampling is used to achieve transferability. This allows the researcher to target participants who are knowledgeable about the topic under investigation

(Botma et al., 2010). Data saturation are ensured before data analysis begins. This will increase the probability that the findings could be transferred to alternative contexts.

Dependability (the alternative to reliability) is about the attempts made by the researcher to explain changes in the state of the phenomenon under investigation as well as changes in the design thereof (Schurink et al., 2011). Those reading the research must believe that the findings occurred as it was stated by the researcher. In order to ensure dependability, in this study, two coders are used to ensure high inter-coder reliability, which refers to the consistency among different coders. The researcher will furthermore ensure that all data are included and that nothing is left out (Matthews & Ross, 2010).

Conformability is similar to the concept of objectivity. The criterion here is whether the data confirms the general findings and leads to the implications (Schurink et al., 2011). Pre-test interviews are held with a small number of participants. This will ensure that the questions asked during the interviews yield findings that are based exclusively on the information provided by the participants and not on anything else (Bothma et al., 2010).

1.6.3.7 Data analysis

Data are analysed by both the researcher and an independent co-coder, using thematic data analysis. Braun and Clark's (2006) six steps of thematic analysis are followed.

In phase 1 (*Getting to know the data),* the transcriptions are read to obtain an overview of the content thereof and to formulate ideas on how to proceed with the rest of the process. During phase 2 (*Initial coding),* initial codes are allocated to the data after reading through the transcriptions. By coding the data, significant latent features about the raw data are identified, which contribute to the meaningful assessment of the phenomenon (nursing passion) under investigation. The initial codes differ from the units of analysis (themes) that are identified in the follow-up phase. Phase 3 (*The search for themes)* involves the analysis of the coded data and the identification of potential new themes that are used to sort the data. During phase 4 (*Re-examine the themes),* the themes identified during phase 3 are refined. Both the researcher and co-coders participate in the process. The one co-coder assists in coding the data and also

identify the themes, while the second co-coder re-examines the themes and suggests certain changes, where necessary.

All the themes and sub-themes are re-checked and recommendations of the co-coders are addressed and the identified themes confirmed. In phase 5 (*Defining and naming themes),* appropriates names are allocated to the themes to reflect the content resorting under them. Lastly, phase 6 (*Reporting)* entails the reporting of the data within a table. Themes, sub-themes and direct responses of participants are indicated. The codes allocated to the transcripts are also added as a way to keep track of where the direct responses of participants are found if needed.

1.6.3.8 Reporting style

Results are reported in table format indicating the themes and sub-themes. Direct quotes from the data are included in the tables. Some of these direct quotes are also used in text. Integration of the findings of both Part 1 and Part 2 of the research takse place in the discussion section of the research article. This is in line with the design, approach and strategy of the present study (see 1.6.1, 1.6.1.1 & 1.6.1.2 Research design, approach and strategy).

1.6.3.9 Ethical considerations

Obtaining ethical clearance and obtaining permission from the departments where data are collected are similar to Part 1 (see 1.6.2.3 Research procedure and ethical considerations) of the study and are not repeated in Part 2. However, ethical considerations in terms of the research procedure differ slightly from that mentioned in the quantitative phase.

As was mentioned in Part 1 above, participants are asked to partake in the interviews during the quantitative data collection process. Arrangements that are convenient to the volunteers are made pertaining to the date, time and place of the interviews. Before the start of the interviews, participants are asked if they are comfortable to continue with the interview. The participants are informed that they may withdraw from the interview at any time without any penalty against them. They are also again asked for permission to record the interviews.

The same informed consent form that is used in Part 1 is also used in Part 2. An additional space is initially provided on the consent form to make provision for participants who volunteer to partake in the interviews. Those who participate in the quantitative phase signs the section related to that particular part of the research. Those who take part in the interviews sign the part related to the qualitative phase. Those participants who take part in both parts of the study sign twice. The content of the informed consent form are explained in Part 1 (see 1.6.2.3 Research procedure and ethical considerations) above and is not repeated here. The content of the informed consent are verbally explained to them.

All interviews are conducted in a private office. The office has a 'do not disturb' sign on the outside of the door and the telephone is silenced. The researcher ensures that there is a comfortable chair for the participant. The room is ventilated with an air conditioner to use when necessary. Beverages include water and/or juice for the participant to drink during the interview in order to prevent discomfort. The interviews are recorded without identifying the participants. Anonymity is therefore ensured. The independent transcriber is therefore not able to identify the participants on the recording. Although this is the case, the data is still kept confidential. Only the transcriber, the researcher and the co-coder have access thereto. The interviews are only deleted after the researcher confirms that the transcribing are a true reflection of the recordings. All alternative copies of the data are destroyed. After completion of the research the transcripts are shredded.

Next, the research design and methodology of both Articles 2 and 3 are presented.

1.7 ARTICLES 2 & 3

Article 2: The passion scale: Rasch analysis of its psychometric properties and the frame-of-reference effect.

Article 3: The nursing passion indicator scale: Development and initial psychometric evaluation.

Since Articles 2 and 3 both report on quantitative studies that are based on the same dataset, it is decided to present the research design of these two articles together in order to avoid

repetition. Both studies have the same design and approach, while the methodology overlaps in terms of the participants, research procedures and ethical considerations. The similarities of the two studies are therefore presented together in the section below, while the differences in terms of measuring instruments and statistical analysis are presented separately.

1.7.1 Research design

1.7.1.1 Research approach

The research approaches reported on in Articles 2 and 3 are both quantitative in nature. A cross-sectional design are used to research the objectives. This design is chosen based on the fact that it is descriptive and predicative in nature and usually gets linked to surveys and the use of questionnaires (Shaughnessy & Zechmeister, 2009). According to Matthews and Ross (2010), this design can be used to include a large number of participants and to compare participants in terms of demographic information; data collection takes place at a certain point in time. The design is useful since the researcher can work with both historical and current data about the experiences people had or have, which may help in finding links between cause and effect (Matthews & Ross, 2010).

1.7.1.2 Research method

The research method of the quantitative part of Article 2 and 3 consists of the research participants, measuring instruments, research procedures and ethical considerations and statistical analysis.

1.7.1.3 Research participants

Data collection for studies 2 and 3 comprises a whole new sample of professional and student nurses. The inclusion criteria are similar to that of study 1 and reported on in Article 1. Professional nurses as well as nursing students (studying towards a qualification which leads to professional registration) are allowed to participate in the study. The participants have to be registered as either a professional or student nurse at the SANC. Participants also have to be

able to read and speak English in order to complete the questionnaires and to ask questions if the need arose.

Nursing educators (professional registered nurses) and undergraduate student nurses from the first-year level up to the fourth-year level are approached at a School of Nursing on the campus of a TEI in South Africa. Other professional registered nurses are approached via a department that is responsible for distance learning at the same TEI. These nurses are all enrolled for post-basic nursing qualifications. Classes are attended on Saturdays at study centres across South Africa. The students registered for distance learning programmes are all working in different hospitals and clinics across South Africa.

A mix of convenient, purposive non-probability sampling are used. Sampling is used to target the participants. These sampling methods are used for the following reasons: Firstly, convenience sampling makes access to a large number of professional registered nurses much easier than approaching them in different clinical practice environments where gaining access is often very difficult. Secondly, purposive sampling keeps the focus on specific participants who showed specific characteristic related to this study. Thirdly, non-probability sampling makes it possible to include other nurses adhering to the same inclusion criteria in the study.

Since there are various guidelines available for determining the adequate sample size for a factor analysis, this study combined the recommendations of Tabachnick and Fidell (2007) and that of Yong and Pearce (2013). According to Tabachnick and Fidell (2007), a sample of at least 300 is needed for a factor analysis. Yong and Pearce (2013), however, suggest the use of the ratio between participants and items. Ratios of between five participants per item on the scale (5:1) and ten participants per item on the scale (10:1) are considered to be adequate. The sample size for studies 2 and 3 is therefore determined as indicated below:

Studies 2 and 3 both test different questionnaires. In order to stick to the guideline of Yong and Pearce (2013), the questionnaire with the most items are considered to be the baseline for determining the sample size for both studies. The NPIS, tested in study 3, consists of 108 items and are therefore used to determine the sample size. In terms of the NPIS, it is calculated that a sample size of between 540 and 1 080 will be needed. If this sample is unobtainable, the bare minimum that are considered for conducting a factor analysis would have been 300 according to the rule of thumb by Tabachnick and Fidell (2007). This study therefore considers a sample

size of between 300 and 539 as adequate and between 540 and 1 080 as good for conducting a factor analysis.

1.7.1.4 Measuring instruments (Study 2 and Study 3)

Studies 2 and 3: Biographic questionnaire

A biographical questionnaire are used to obtain information (i.e. sex, language, ethnic group, age, educational level, etc.) pertaining to the participants. The identities of participants are not needed, and therefore participants are not required to provide any identifiable information. Since both studies 2 and 3 test the psychometric properties of instruments, the biographic information are used to provide an adequate description of the samples in which the instruments are tested.

Study 2: The passion scale

Two version of the passion scale are used in Study 2.

Version 1: The original English version of the passion scale (Vallerand et al., 2003b) is used to measure passion for work/activities. Permission to use this scale is provided on the website where it is retrieved from (Vallerand et al., 2003b). The scale determines whether passion is present in an individual and also whether this passion is either harmonious or obsessive in nature. It consists of 17 items of which five items determine the presence of passion in the individual. These items are referred to as the PDC. Both OP and HP are assessed with six items each. All items are measured on a seven-point Likert scale ranging from 1 (not agree at all) to 7 (very strongly agree). The presence of passion is determined by items such as *"This activity is important to me,"* OP is assessed by items such as *"I have difficulties controlling my urge to do my activity"* and HP is assessed by items such as *"This activity is in harmony with the other activities in my life."* A study conducted by Vallerand et al. (2003a) among male football players in the Province of Que'bec Canada yielded Cronbach alphas of .73 for HP and .85 for OP, respectively. The questionnaire has been used in various studies across the globe, but as far as could be established, it has not yet been used in South Africa. Although the full 17-item passion scale are administered, only the items measuring the dualistic nature of passion in terms of HP and OP are included for analysis. The 5 PDC does not for part of the two-factor structure of the passion scale and are therefore excluded during the analysis.

Version 2: An adapted version of the passion scale is used in the study. A frame-of-reference (nurse/nursing) is added to each of the passion scale items to contextualise the scale for the nursing profession. In the adapted passion scale, 'this activity' is substituted with either 'nurse' or 'nursing' (i.e. PDC: *Nursing is important to me*; HP: *Nursing is in harmony with the other activities in my life*; OP: *I have difficulties controlling my urge to nurse*). Since this adapted version is never been used before, no reliabilities are available yet.

Study 3: The NPIS

The NPIS is used to measure the nursing passion indicators within the South African nursing context. The scale is developed based on the data and the nursing passion conceptualisation of study 1 in Article 1. It consists of three factors, namely compassion, job investment and personal characteristics. The factors that load onto these subscales as well as sample items are provided below.

Compassion is measured in terms of empathy (7 items; i.e. *I truly show an understanding for what my patients are going through*); caring/helping people (9 items; i.e. *I help and care for my patients with all my heart*) and holistic care (8 items; i.e. *I pray for my patients*). The ***job investment*** factor measures nurses in terms of them being role models (7 items; i.e. *Other nurses tend to imitate the way I nurse*), change agents (9 items; i.e. *I embrace change in the field of nursing*), life-long learners (8 items; i.e. *I consider myself to be a life-long learner*), whether they empower others (7 items; i.e. *I help other nurses to become better at what they do*), and going the extra mile for others (8 items; i.e. *I go beyond what's expected of me for those under my care*). ***Personal characteristics*** are measured with items related to competence/confidence (9 items; i.e. *I think my colleagues perceive me as being able, knowledgeable and skilful*; *I am certain that I will handle most nursing related challenges successfully*), commitment (10 items; i.e. *I tell my friends and family that nursing is a great career to follow*), resilience (7 items; i.e. *I quickly recover after experiencing negative incidents at work*), interpersonal skills, namely communication (7 items; i.e. *I find it easy to start a conversation with most patients and members of staff*) and listening (6 items; i.e. *People who know me would say that I am a good listener*), and leadership in terms of the motivation of others (6 items; i.e. *I have an ability to inspire people at work*). A seven-point Likert scale ranging between 1 (not agree at all) and 7 (very strongly agree) are used.

1.7.1.5 Research procedure and ethical considerations (Study 2 and Study 3)

The initial ethical clearance number obtained in study 1 also applies to studies 2 and 3. However, a second round of data collection are started for the purpose of studies 2 and 3. Data are collected at the same departments as the case in study 1. Since the second round of data collection takes place almost a year after the first round of data collection, the School of Nursing and the department for distance learning are again approached for the purpose of data collection. The researcher is requested to get permission from the TEIs Research Data Gatekeeper Committee before any further data collection is allowed. After permission is granted by this committee, access for data collection are allowed at both departments. Academic programme leaders are again approached to gain access to the potential participants.

At the School of Nursing, the students are approached inbetween classes. The aim of the research, as stated in the survey booklet, are explained to them. The ethical aspects related to participation in the study are explained to the students. These include aspects such as anonymity, confidentiality, the voluntary nature of participation and that no incentives are offered for taking part in the study. As is mentioned in the survey booklet, students are also verbally informed that submitting the completed survey booklet serves as consent to the research. The survey booklet contains information about the study, a biographic questionnaire, and scales relevant to studies 2 and 3, and are handed over to the students. Students are allowed to complete the documentation at home. They are reminded via the TEIs internal communication platform to return the completed booklets on the agreed-upon date.

At the distance learning department, data collection are slightly more complicated than in study 1. Instead of only targeting on-campus students, as is the case in study 1, off-campus students are now also approached. Since classes for these students are only presented on Saturdays and in different provinces of South Africa, data collection takes longer. The survey booklets containing all the relevant information pertaining to the aim of the study, confidentiality, anonymity, the voluntary nature of participation and test instructions are couriered to the different study centres. Arrangements are made with the study centre coordinators to hand out the booklets to the students when they attend classes on Saturdays. They are asked to collect the booklets from the students and return it on a certain date. The researcher remindes each study centre coordinator on a weekly basis via Short Message Service (SMS) to hand out and collect the booklets. The academic programme leader uses the university's internal

communication platform to remind the students on a weekly basis to complete the booklets and to return it to their study centre coordinators. The completed booklets are couriered back to the researcher.

All the completed booklets are put together and sent to the TEIs Statistical Consultation Services, who captures the data on an Excel sheet. This data sheet are later used for statistical analysis purposes.

1.7.1.6 Statistical analysis

1.7.1.6.1 Statistical analysis (Study 2: Article 2)

The psychometric properties of both the original and adapted sub-scales of the passion scale are analysed using the Rasch Unidimensional Measurement Model software (RUMM2030) (Andrich & Sheridan, 2009). Since more than two response categories are present, a polytomous Rasch model is applied (Hecimovich & Marais, 2017). The statistical analysis is presented below in the same sequence as it is conducted in study 2.

Thresholds. In order to check for disordered thresholds, the response categories operations are analysed. Item misfit often occurs in the form of disordered thresholds when participants or raters are inconsistent in the use of response options (Elhan, Küçükdeveci, & Tennant, 2010). In order to check whether participants responded according to the intended ordering of the passion scale, the thresholds are analysed. The response category probability curves are specifically used to determine whether participants responded as is intended (Hendriks et al., 2012). Based on the analysis, decisions are made whether response categories are to be collapsed (grouped together) in order to improve model fit or not.

Model fit. In order to analyse item locations and the fit of the items to the Rasch model, a chi-square item trait interaction statistic are used. A non-significant chi-square probability value are indicative of overall fit to the model. Invariance, an assumption of the Rasch model, are violated if a significant chi-square value is obtained. If this happens, it means that the hierarchical ordering of the items differs across the trait.

Item-person interaction statistics are used to check the fit between individual items and the Rasch model. In order to check the overall fit between the items of the subscales of the passion and the Rasch model, the item log residual test of fit are used. The mean person log residual test of fit are used to determine overall fit between the persons and the Rasch model. In both these tests, means closer to 0 and standard deviations closer to 1 are indicative of good fit. Item characteristic curves are used to check the probability of a response over a range of participant locations and whether the ordering is as intended (Hendriks et al., 2012).

***Person-item targeting*.** In order to check the targeting of the different subscales, the person-item threshold distribution are analysed. For the purpose of assessing the ability of the participants versus the difficulty level of the items, the person-item threshold distribution maps are used. If the sub-scales of the original and adapted passion scale are well targeted, the person locations are also centred on zero (Tennant & Conaghan, 2007; Christensen, Oernboel, Zatzick, & Russo, 2017). The person separation index (PSI) and Cronbach alphas are used as indicators of internal consistency reliability. The two indicators of reliability share similar cut-off values, .70 for group use and .85 for individual use (Tennant & Conaghan, 2007; Pontekotto & Ruckdeschel, 2007; Di Pietro et al., 2014).

***Item dependency (local independence)*.** In order to check the extent to which items in the subscales are dependent on one another, local independence of the subscales are analysed. The Rasch assumption of local independence requires that the responses on items must be independent of responses on other items. Response dependence or multidimensionality can lead to a violation of local independence and affect model fit (Andrich & Kreiner, 2010). A visual examination of the patterns between standardised item residuals is done. High correlations between these item residuals are indicative of a violation of the local independence assumption (Ayele, Zewotir, & Mwambi, 2014). An inter-item residual correlation (r) larger than .4 are considered as a violation of local independence (Hill, 2015).

Principal component analysis of the item residuals are used as a test for multidimensionality. If multidimensionality is found, it will violated the Rasch assumption of local independence. If meaningful patterns are found in the residuals, multidimensionality are inferred, while the absence of these patterns in the residuals reveal unidimensionality (Ayele et al., 2014).

Differential item functioning (DIF). In order to check whether the items of the different subscales function the same across two ethnic groups, DIF are analysed. This is done since DIF may affect fit to the Rasch model. The different subscales are checked to determine whether different groups in the sample respond differently to a specific item on the scales, even though they have matching levels of the underlying trait (Christensen et al., 2017). Analysis of variance (ANOVA) together with Bonferroni-adjusted significance levels are used to compare each individual subscale item across ethnicity and class interval. Uniform DIF is present if there is a systematic difference in responses to items. Non-uniform DIF is present when an inconsistent difference in responses is found.

The procedure of Hagquist and Andrich (2017) are followed if DIF is found to be present. This involves conducting an ANOVA of residuals; rank-ordering the F-values of the items and checking for statistical significant F-values (highest F-values indicated real DIF); resolving items with the highest F-value; and repeating the ANOVA on all items, including the resolved item simultaneously. The aforementioned steps are repeated on the revised item set and steps 1 to 3 are repeated until all real DIF is removed. Decisions are then made about the retention or removal of items. This involves either the splitting of the item by group or separately calibrating the items for each group or the removal of the item (Pallant & Tennant, 2007; Müller, 2012; Ayele et al., 2014).

DIF is examined by means of the item characteristic curve (ICC). Uniform DIF is expected to appear on the ICC as parallel lines in contrast to the non-parallel lines indicating non-uniform DIF (Van der Wal, Tuinebreijer, Lundgren-Nilsson, Middelkoop, & Van Zuijlen, 2014).

Unidimensionality. In order to compare the operating characteristics of the two versions of the passion scale in terms of their similarity, they are analysed by checking the Rasch assumption of unidimensionality. The PCA/*t*-test protocol followed in Hagell (2014, p.456) are used for this purpose, and involves: (1) the identification of two item sets from the PCA of residuals, (2) an estimation of separate person measures based on these two item sets, (3) conducting *t*-tests to compare the two estimates on a person-by-person basis, and (4) identifying the number of cases with a significant difference at the 0.05 level. The *t*-test estimates outside the -1.96 to 1.96 range should not exceed 5% (Elhan et al., 2010).

1.7.1.6.2 Statistical analysis (Study 3: Article 3)

An EFA are conducted to determine the appropriateness of the items and internal structure of the constructs measured by the NPIS. The steps that are followed for statistical analysis are set out below.

As a point of departure, the data are screened to check the accuracy thereof. This is done by examining missing values, outliers and the distribution assumptions of skewness and kurtosis (Zygmont & Smith, 2014). Missing values are replaced by means of the linear trend of point procedure. In order to identify multivariate outliers, Mahalanobis distance are examined in terms of a chi-square (χ^2) statistic, degrees of freedom and p-values. Participants with a high number of missing values or extreme outliers are deleted.

For the purpose of testing for multivariate normality, the univariate normality are tested first by means of skewness and kurtosis. Cut-off values of 2 and 7 are set for skewness and kurtosis, respectively (Zygmont & Smith, 2014).

Next, the EFA is conducted to examine the construct validity of the NPIS. The factors are analysed separately to determine the loadings of the items on the representative facets. The following steps are followed for each of the three factors.

Step 1. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the correlation matrix and Bartlett's test of sphericity are used to test the appropriateness for conducting a factor analysis. KMO values ranging between 0.5 and 1 are considered to be adequate (Zygmont & Smith, 2014; Williams, Brown, & Onsman, 2010). In terms of Bartlett's test of sphericity, some degree of correlation between items is required and therefore a significant chi-square (χ^2) statistic indicated by a p-value ($p<0.05$) is required (Cornish, 2007; Williams et al., 2010; Zygmont & Smith, 2014).

Step 2. In order to reduce the data and to determine the number of factors to extract, a PCA is performed (Yong & Pearce, 2013). The communalities are checked and values less than .40 are considered for removal. Eigenvalues larger than 1, scree plots and parallel analysis are used to determine the number of factors to extract.

Step 3. The maximum likelihood (ML) factor extraction method with direct oblimin rotation and Kaiser normalisation are applied. The pattern matrix are analysed to check for potential factor solutions. Retention of factors are based on the following criteria (see Asiwe, Hill, &

Jorgensen, 2015): (1) cut-off values for item loadings are set at .30 (see Beavers et al., 2013); (2) items are only allowed to load onto one factor; (3) at least three items have to load highly onto each factor; and (4) the factors had to be interpretable within the context of the study. The factors are renamed based on the items that represented them (Asiwe et al., 2015; Beavers et al., 2013).

The factor correlation matrix is used to analyse correlations between the identified factors. Correlations of .70 or higher are considered as being too high and indicative of them being too similar. If high values are to be obtained, it is considered to merge them together. Cronbach's alpha is used as indicator of internal consistency, values of .90 and higher are interpreted as excellent, .70 to .90 as high, .50 to .70 moderate and, .50 to .70 as low (see Taherdoost, 2016).

1.8 Chapter division

This thesis consists of five chapters:
Chapter 1: Introduction to the study
Chapter 2: Research article 1
Chapter 3: Research article 2

Chapter 4: Research article 3
Chapter 5: Conclusions, limitations and recommendations

1.9 Chapter summary

This chapter provided the research problem for the total research project. It was indicated that different parts of the problem were to be addressed in three different research studies and presented in the form of three research articles. A literature review provided clarity on the concepts being used throughout. The general objectives (or purpose) of each article were shown and specific objectives were listed to achieve them. The designs and methodologies to be used in each article were provided. The chapter ended with an indication of the chapter division to be followed in this thesis.

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CHAPTER 2

RESEARCH ARTICLE 1

Conceptualising and measuring 'nursing passion' among South African nurses: A mixed-method study

ABSTRACT

Orientation: Research have shown that work passion have both positive and negative implications for the wellbeing and performance of employees, which may impact on the organisations they operate in. Nurses form the largest single group of healthcare workers in South Africa. Many of these nurses are the first point of contact between the patient and the healthcare system, and therefore the image they portray and the quality of patient care they provide will impact widely. Managing these nurses' passion may impact positively on the clinical environments they work in.

Research purpose: The purpose of this study was to explore 'nursing passion' within the South African nursing context, and to test an instrument for the measurement thereof.

Motivation for the study: In the absence of a 'nursing passion' conceptualisation and a scientific instrument to measure it with makes it difficult to manage the passion of nurses in South Africa. Addressing these issues became essential for managing 'nursing passion' in the South African context.

Research design/approach and method: A convergent parallel mixed-method design was used. Quantitative and qualitative data were collected simultaneously while data analysis was done separately. A contiguous approach towards the integration of the information was followed. Quantitatively a cross-sectional survey design was used. Qualitatively a phenomenological research strategy were used and thematic analysis was used to analyse the data.

Main findings: In line with international studies, the passion scale revealed a correlated two-factor structure with good internal consistency for both harmonious and obsessive passion. Convergent validity was not confirmed due to inadequate correlation between the passion-definition criteria and the two subscales of the passion scale. An exploration of nursing passion revealed four main themes (passion-definition criteria, compassion, job investment and personal characteristics) together with their subthemes. Further interpretation of the themes and subthemes resulted in a conceptualisation of 'nursing passion'.

Practical/managerial implication: Conceptualising and measuring 'nursing passion' can assist in the development of strategies to harness passion, to address obsessive passion and to manage harmonious passion; all to the benefit of clinical practice environments.

Contribution/value-add: This study introduced research on passion for work in the South African nursing context by contextualising 'nursing passion.' Furthermore an established scientific instrument (the passion scale) were tested for future validation and use in the aforementioned context. This was considered to be some of the groundwork for the effective management of 'nursing passion' within clinical practice environments in future.

Keywords: Dualistic model of passion, self-determination theory, controlled motivation, autonomous motivation, harmonious passion and obsessive passion

INTRODUCTION

Orientation

The passion that professional nurses show towards their work is considered a distinguishing characteristic (Bushardt, Brent, Beal, Young, & Khosla, 2016). Usually, individuals who show passion for their work or during activities are described positively through words such as enthusiastic, driven, persistent, blissful, intense, dedicated, hardworking, disciplined, inspirational, and creative (Boverie & Kroth, 2001; Perrewé, Hochwarter, Ferris, Mcallister, & Harris, 2014). Positive descriptions of passion are also found in three foundational conceptualisations (Perrewé et al., 2014). These conceptualisations refer to the strong preference or affection people show towards their activities or work, its importance to them, the time and energy they invest, and the integration of these activities/work into their identities (Vallerand et al., 2003a). Employees who show passion for their work also experience a state of well-being that leads to reliable and positive intentions and behaviours regarding their work (Zigarmi, Nimon, Houson, Witt, & Diehl, 2009). This involves "a vigorous immersion in rewarding activities that build self-efficacy" (Maslach & Leiter, 2008 as cited in Perrewé et al., 2014, p.145).

There may be a perception that being passionate about one's activities/work provides only positive outcomes (Perrewé et al., 2014). However, passion may also cause destructive outcomes such as uncontrolled rumination, inflexibility, causing social stress for others, aggressive behaviours, and rigid persistence. Bushardt, et al. (2016) acknowledge this dark side of passion, which may lead to negative outcomes in the nursing profession, such as work-life imbalance, emotional exhaustion, and burnout, stronger intentions to quit, challenging relationships, rigid thinking and engaging in risky behaviours. Such negative outcomes become evident when nurses' passion is neglected or managed ineffectively.

On the flip side, Perrewé et al. (2014) and Vallerand and Houlfort (2003) suggest that organisations should facilitate the development of passion by nurturing its positive side. They warn that unless organisations intervene, the passion shown by their employees will be subdued due to the lack of organisational support, while social forces will cancel out personality factors that are supposed to lead to passion. Nursing practice environments should therefore harness and manage passion among nurses and apply intervention strategies to prevent and/or address

the dark side of passion; failing to do so may have dire consequences. In order to do this, the scientific measurement and exploration of the meaning of work passion in nurses become vital.

Nursing is not the same as it was before. This is the impression created when reading about, or listening to the negative opinions of nurse leaders, managers, the general public, and media reports about the poor quality of healthcare in South Africa (Heyns, 2014). Between 2005 and 2009, Oosthuizen (2012) found 161 nursing-related media reports that reflect mostly negatively on the nursing profession. Specific themes were identified such as "poor treatment of patients, inhumane care, infant and maternal deaths, negligence, lack of infection control, exceptionally negative attitudes, theft, bribery and corruption, assault, sexual and physical abuse" (Oosthuizen, 2012, p.57).

In 2011, the then President of South Africa, Jacob Zuma, criticised nurses for their attitudes and deficient service delivery. He urged nurses to get rid of the rude, impatient, and non-caring attitudes (Edwards, 2011). The South African Strategic Plan for Nursing Education, Training and Practice 2012/13-2016/2017 further highlighted the fact that the standards of nursing have lowered and the status of the nursing profession has declined. Statistics from the South African Nursing Council (SANC) revealed a 300-fold increase in complaints against nurses since 1996 (South Africa: Department of Health, 2013). The question arose whether certain complaints could be ascribed to a loss of passion among South African nurses.

Whatever the case may be, nursing in South Africa must be revitalised urgently since this service forms the backbone of the South African healthcare system. The importance of nursing will increase in future, once South Africa's envisaged National Health Insurance (NHI) system is implemented. The NHI will be underpinned by primary healthcare (PHC), in which nurses will be the first point of contact between patients and the healthcare sector (South Africa: Department of Health, 2011). The image that nurses portray and the quality of patient care they provide will impact widely. This input will reflect on the nursing profession, the healthcare facilities where they work, educational institutions, the healthcare sector and on the success of the NHI. Revitalising the nursing profession requires registered nurses as well as student nurses who portray a positive image of the profession and provide quality patient care. Harnessing passion among nurses may assist this revitalisation.

Research purpose and specific objectives

Managing the passion of nurses in practice environments is critical for their optimal functioning. Exploring 'nursing passion' is therefore an essential first step to understand this inclination among nurses, before it is being measured in order to develop intervention strategies.

The purpose (general objective) of the present study was therefore to explore 'nursing passion' within the South African context, and to test an instrument for the measurement thereof.

The specific objectives for this study was:

- To conceptualise the dualistic model of passion, self-determination theory, passion scale and passion-definition criteria (PDC) from the literature.
- To test the psychometric properties of the passion scale by accepting or rejecting hypotheses related to its factor structure, internal consistency and convergent validity.

  H_1: Scores on the passion scale will fit a correlated two-factor model.
  H_2: Internal consistency (Cronbach alphas > .70) will be achieved for both harmonious passion (HP) and obsessive passion (OP).
  H_3: There will be correlation between harmonious passion and the passion definition. criteria when controlling for obsessive passion.
  H_4: There will be correlation between obsessive passion and the passion definition criteria when controlling for harmonious passion.
  H_5: Convergent validity will be present when both harmonious passion and obsessive passion correlate with the passion definintion criteria.

- To explore passion among professional nurses and nursing students.
- To conceptualise 'nursing passion' for the South African context.
- To make recommendations for organisations/practice and future research.

Literature review

Vallerand and his colleagues (Vallerand, 2008; Vallerand & Miquelon, 2007; Vallerand & Houlfort, 2003; Vallerand et al., 2003a) developed the dualistic model of passion (DMP), which investigates the passion people have for their activities/work. The DMP is grounded in the self-determination theory (SDT) (Astakhova & Porter, 2015; Mageau et al., 2009). SDT is a macro-theory of human motivation that investigates the autonomy of human behaviour while considering personal and contextual determinants of individual self-determination (Ntoumanis, Edmunds, & Duda, 2009). The SDT focuses on the quality of autonomous motivation against controlled motivation, rather than the extent of motivation people experience for certain activities, as proposed by alternative motivational theories (Gagné & Deci, 2005). Quality, more than the quantity of motivation contributes more towards psychological health and well-being, effective performance, creative problem-solving, and deep or conceptual learning (Deci & Ryan, 2008b).

According to SDT, *autonomous motivation* consists of intrinsic motivation and certain types of extrinsic motivation. Intrinsic motivation refers to people engaging in behaviour because it provides them pleasure and enjoyment without contingencies linked to such an engagement (Deci & Ryan, 2008b). Types of extrinsic motivation resorting under autonomous motivation entail those where people identify with an activity's value, and ultimately integrate it into their self-concept (Ryan & Deci, 2000).

Controlled motivation consists of those types of extrinsic motivation where the external and introjected regulatory styles are present. External regulation means that behaviour is controlled by elements external to the self (e.g. rewards, punishment, coercion, bribes and fear). In contrast, introjected regulation means that the regulation of a specific action or behaviour becomes partially internalised. Factors such as approval motives, avoidance of shame, contingent self-esteem, and ego-involvements may ultimately lead to such partial internalisations (Deci & Ryan, 2008b).

As mentioned above, activities, behaviours, or work can be internalised into a person's self-concept either autonomously or in a controlled way (Mageau & Vallerand, 2007). Controlled internalisation concerns eventualities that may interfere with the basic psychological needs that people want to satisfy when they engage in their activities/work (Vallerand, 2008). These include autonomy (freedom of choice, behaviour and decision-making), competence (dealing

effectively with their environments) and relatedness (having meaningful connections with other people). When the internalisation is autonomous, individuals approve of their own actions or intended behaviours since they find these aspects valuable, interesting, and enjoyable (Ryan & Deci, 2000; Deci & Ryan, 2008a). When basic psychological needs are not met, those who autonomously internalise the regulation of activities will become less effective in coping with them (Parastatidou, Doganis, Theodorakis, & Vlachopoulos, 2012). Social contexts hold implications for motivational regulations. Employees' basic psychological needs are therefore more likely to be met in work environments that support autonomy. When this happens, self-determined motivation will come to the fore. Controlling environments will have the opposite effect (Parastatidou et al., 2012).

Similar to SDT, the DMP also suggests that people take part in activities/work to satisfy the basic psychological needs. There are also similarities in terms of the DMP and the SDT's view on intrinsic motivation, since both share an interest and liking towards an activity/work (Vallerand, 2008). However, where SDT proposes the development of intrinsic motivation in the presence of an autonomous internalisation of a behaviour or activity/work into the individual's self-concept, the DMP does not consider these intrinsically motivated activities/work as being a passion for the individual. This is based on the DMP's view that very few of these behaviours and activities/work are internalised to the extent that they become central to the individual's identity (Bonneville-Roussy, Lavigne, & Vallerand, 2011; Spehar, Forest, & Stenseng, 2016). At most, intrinsic motivation is seen as the pleasure and fulfilment that individuals gain over the short term from person-task interactions (Vallerand, 2008; Perrewé et al., 2014). As a result, internalisation of the activity/work into the identity lacks, which prevents the individual from becoming passionate about it. This implies that one can experience a high level of intrinsic motivation without being passionate. However, it is highly unlikely that someone will experience a high level of passion without being motivated intrinsically (Perrewé et al., 2014).

Depending on the way in which activity/work engagement is internalised (either autonomous or controlled), the DMP proposes two different types of passion, namely harmonious passion (HP) and obsessive passion (OP) (Vallerand, Paquet, Philippe, & Charest, 2010; Burke, Astakhova, & Hang, 2015).

According to Vallerand et al. (2010) and Trépanier, Fernet, Austin, Forest, and Vallerand (2014), HP emerges when the activity is internalised into the individual's identity through a

process of autonomous internalisation. Both Mageau et al. (2009) and Trépanier et al. (2014) describe this process as an autonomous internalisation of behaviour regulations that produces the desire to take part willingly in an activity/work, and approve of one's own engagement. Although the activity occupies a significant space in the individual's identity, such personal identity is not consumed by the activity/work. Therefore, individuals' identities remain in harmony with other aspects of their lives (Trépanier et al., 2014; Vallerand & Houlfort, 2003; Vallerand et al. (2003a); Vallerand et al., 2010). People presenting HP are flexible when engaging in activities/work and are aware of the time spent on it. Therefore, their autonomous participation in the passionate activity/work leads to positive experiences (Mageau et al., 2009; St-Louis & Vallerand, 2015).

In contrast, OP (the dark side of passion) (Bushardt et al., 2016) emerges when the activity/work is internalised into an individual's identity in a controlled way (St-Louis & Vallerand, 2015). This form of internalisation takes place when motivational forces compel the individual to partake in an activity/work. The individual becomes controlled by the passion and cannot refrain from engaging in the activity/work. Activity/work engagement gets out of control and begins to consume the identity of the individual, to such an extent that there is conflict between the passionate activity/work and other domains of life. This conflict results in non-optimal functioning (Spehar et al., 2016; Vallerand & Houlfort, 2003; Vallerand et al., 2003a).

In order to measure the dualistic nature of passion, Vallerand et al. (2003a) developed the passion scale, measuring whether passion is present and whether it is harmonious or obsessive in nature. Certain conditions are assumed to be in place if someone is to be considered as passionate about an activity/work (Vallerand et al., 2003a). These conditions are found in the definition of passion and the present study refers to these as the PDC. The PDC imply that individuals show a strong preference for an activity/work based on (1) their love or liking of it, (2) its importance (value) to them, and (3) the time and energy they invest in it. The activity/work must also (4) become self-defining through an autonomous or controlled process of internalisation to symbolise a central element of the individuals' identity. The extent to which the identity is absorbed by the activity/work, together with the form of internalisation, will determine whether HP or OP is present. HP and OP can be identified by examining the degree to which individuals experience conflict with other activities in their lives (Vallerand et al., 2003a).

Initial research on non-work activities such as gambling, gaming, and cycling has shown that HP and OP have distinct outcomes. Vallerand and Houlfort (2003), however, also applied the dualistic model of passion successfully to the work context. In recent years, the applicability of the DMP in organisations became all the more apparent (Thorgren, Wincent, & Sirén, 2013). The passion scale became established as a useful instrument for measuring the dualistic nature of passion within the work context. This scale yielded prominent findings for both HP and OP on relevant topics. These are: *work performance (work-engagement)* (Astakhova & Porter, 2015; Burke et al., 2015; Ho, Wong & Lee, 2011; Qadeer, Ahmad, Hameed, & Mahmood, 2016; Trépanier et al., 2014); *work satisfaction* (Carbonneau, Vallerand, Fernet, & Guay, 2008; Spehar et al., 2016; Thorgren et al., 2013; Vallerand et al., 2010); *work-life balance and work-life imbalance* (Astakhova & Porter, 2015; Thorgren et al., 2013;); and *organisational citizenship behaviour* (Qadeer et al., 2016). There also were findings for topics such as *mental health* including psychological well-being, concentration at work, sense of control, autotelic experience, vitality, and affective commitment (Forest, Mageau, Sarrazin, & Morin, 2011); satisfaction of the *basic psychological needs* (autonomy, competence and relatedness) and the effect on work outcomes (Forest et al., 2011). The focus was also on *rigid persistence* (Trépanier et al., 2014); *burnout* (Carbonneau et al., 2008; Lavigne, Forest, & Crevier-Braud, 2012; Vallerand et al., 2010;) and *flow experiences* (Lavigne et al., 2012).

In the mentioned instances, HP led to optimal functioning at work, whereas OP resulted in non-optimal long-term functioning. Both HP and OP have implications for the well-being of employees, their performance and the performance of organisations.

The workplace issues identified with the passion scale are relevant to the issues present within the South African nursing context. A search of the literature revealed no studies where the passion scale was either used within South Africa or within the South African nursing context.

RESEARCH DESIGN

Research design, approach and strategy

A convergent parallel mixed-methods design was followed (Creswell, 2014; Creswell & Plano-Clarke, 2007); quantitative and qualitative data were collected simultaneously, while data analysis was done separately. Integration took place during the discussion (interpretation)

phase (Creswell, 2014). A contiguous approach towards the integration of quantitative and qualitative information was followed and therefore the findings were reported in different sections (Fetters, Curry & Creswell, 2013). This design was used since the combination of the qualitative and quantitative data was expected to provide a clearer understanding of the passion construct and the measurement of passion within the nursing context.

In terms of the quantitative stage, a cross-sectional survey design (Zheng, 2015) was used to test the use of the passion scale within the South African context during an initial pilot study. The pilot study provided answers with regard to the feasibility of the follow-up study and whether alterations such as the wording of the scale, refinement of its items or the development of new items would be required (Hazzi & Maldaon, 2015).

The qualitative stage followed the constructivist approach, which has its roots in the interpretivist paradigm. Constructivism views peoples' different experiences and their reflection on such experiences as important in constructing their own understanding and knowledge about the world around them (Adom & Ankrah, 2016). Constructivism views peoples' different experiences and their reflection on such experiences as important to construct their own understanding and knowledge about the world around them (Adom & Ankrah, 2016). Constructivism's ontological view assumes that there is no single reality or truth; individuals and groups create their own reality (Patel, 2015). For this purpose, the present study had to explore the meaning nurses ascribe to the phenomenon of nursing passion. In terms of its epistemological view, the way in which reality can be known is through interpretation (Patel, 2015). Therefore, the information obtained from participants had to be interpreted to make sense of their different social realities. A qualitative research approach was followed to explore the meaning that participants attributed to nursing passion. In order to interpret nurses' lived experiences of the nursing passion phenomenon a phenomenological research strategy was followed (Simon & Goes, 2011).

Next, the research methods of the qualitative and quantitative parts of the mixed approach will be presented. The quantitative method (Part 1) (inclusive of the research results) will be presented, followed by the qualitative method (Part 2) inclusive of its research findings. The chapter will end with a discussion of the results and findings of both Parts 1 and 2.

RESEARCH METHOD: PART 1

Research participants

The quantitative and qualitative stages of the study had identical inclusion criteria for participation in the study. Participants had to be registered at the SANC as a qualified professional nurse or as student nurse. Student nurses had to be enrolled for an undergraduate nursing degree or diploma leading to professional registration with the SANC. English was a requirement for completing the passion scale in the quantitative stage and for being interviewed during the qualitative stage. The majority of students enrolled in the distance education programme, and nursing educators were registered as qualified professional nurses. Participants were affiliated with a tertiary education institution in South Africa.

Quantitative and qualitative data collection took place during the same timeframe and therefore a mix of convenience and purposive non-probability sampling methods was used for both the quantitative and qualitative stages of the study. Convenient sampling made it easier to gain access to a high number of registered professional nurses across South Africa via the tertiary education system than approaching individual clinical practice environments. Purposive sampling made it possible to sample participants with specific characteristics related to the specific purpose of the study. Non-probability sampling provided the opportunity to include any nurse adhering to the inclusion requirements of the study. The aforementioned sampling strategies was applied by sampling undergraduate nursing students, post-basic nursing students (working in clinical practice environments) as well as nursing educators at a tertiary education institution. Any student nurse (undergraduate or post-basic) and nursing educator who was willing to take part in the study was sampled. The participants had to adhere to specific inclusion criteria in order to be sampled.

In terms of the quantitative stage, a sample of between 85 and 170 participants (5 to 10 participants for each item of the 17-item passion scale (Yong & Pearce, 2013) were required for the purpose of conducting a factor analysis. A total of 300 questionnaires were distributed and 163 usable questionnaires were returned (response rate: 54.3% and respondent/item ratio: 9.6:1). Biographic information of participants sampled during the quantitative stage is presented in Table 1:

Table 1

Characteristics of participants (n=163)

VARIABLE	*f*	%	VARIABLE	*f*	%
GENDER			**LANGUAGE**		
Male	14	8.6	English	21	12.9
Female	146	89.6	Afrikaans	54	33.1
Missing	3	1.8	isiXhosa	4	2.5
			isiZulu	10	6.1
AGE			Sepedi	7	4.3
19-25	74	45.4	Sesotho	13	8
26-35	31	19	Setswana	26	16
36-45	31	19	SiSwati	1	0.6
46-55	15	9.2	Tshivenda	8	4.9
56-64	9	5.5	Xitsonga	4	2.5
Missing	3	1.8	Missing	15	9.2
ETHNICITY			**SANC STATUS**		
Black	79	48.5	Professional nurse	83	50.9
Coloured	4	2.5	Student nurse	80	49.1
White	62	38			
Indian	18	11			

SANC status = South African Nursing Council registration category

The total sample consisted of 49% student nurses and 51% professional nurses. Females represented the majority (89.6%) of the sample; this was to be expected in a female-dominated profession (Ross, 2017). According to Ross (2017), only 10% of males in modern society end up in professional nursing; in line with this, males represented 8.6% of the sample. Aligned with the composition of the South African population, black and white participants comprised 45.8% and 38% of the sample, respectively. Ten of the 11 official South African languages were taken up in the sample; most participants, however, spoke Afrikaans (33.1%), Setswana (16%) or English (12.9%).

Measuring instrument

An English version of the passion scale was retrieved from the 'Research Laboratory on Social Behavior' website for the purpose of the current study (Vallerand et al., 2003b). The scale comprises 17 items measured on a seven-point Likert-scale ranging between 1 (not agree at all)

to 7 (very strongly agree). PDC are measured with five items (i.e. '*I like this activity'),* while both OP and HP are assessed with six items each (i.e. 'M*y activity is well integrated in my life; I have almost an obsessive feeling for this activity').* Cronbach alpha coefficients ranging between .73 and .94 for HP and .85 to 94 for OP were obtained in studies by Vallerand *et al.* (2003a), Ho *et al.* (2011), Astakhova and Porter (2015) and Burke *et al*. (2015). In this study, the items related to OP and HP were used to determine the dualistic nature of passion. Since HP and OP are seen as types of passion, they were also expected to correlate with the PDC (Vallerand et al., 2003a). If correlations were found it would have been an indication of the convergent validity of the scale. The five PDC items were therefore used to determine the convergent validity of the two subscales of the Passion Scale.

A biographic questionnaire accompanied the passion scale. Information such as sex, age, ethnic group were required in order to provide a detailed report on the sample on which the passion scale were tested. For the purpose of the study no identifiable information were required.

Research procedure and ethical considerations

For the present study, the researcher approached a campus of a specific tertiary education institution (TEI) within a province of South Africa. In the mentioned institution, a School of Nursing is responsible for both undergraduate and post-graduate nursing education. In addition, post-graduate nursing education is provided through distance learning, where students attend classes over weekends at certain study centres across South Africa. Although nursing education resorts under the School of Nursing, the administration of distance learning is sourced to another department on the premises of the tertiary institution.

Ethical clearance (EMS15/04/21-01/04) was obtained from the tertiary education institution, and permission for data collection was acquired from departmental heads. Arrangements for data collection were made with academic programme managers and nurse educators. An informed-consent form explained the rationale of the study and specified the participants' responsibilities. The form also elucidated benefits of participating, the risks involved; it guaranteed voluntary participation, assured withdrawal from the study as well as the anonymity and confidentiality of the participants throughout the process. Participants were requested to read and sign the informed-consent form prior to participation.

Statistical analysis

Statistical analysis was performed with SPSS Version 23.0 (IBM Inc., 2015). The data was cleaned and the acceptability of the means and standard deviations was determined. Item analysis was done where items with skewness values higher than 2 and kurtosis values higher than 4 were excluded from further analysis. This was based on the rule recommended by De Bruin (2009), where it provides stability of the data, especially when further construct analyses will be done on the instrument.

In order to test the dualistic nature of the passion scale, the 12 items related to HP and OP were analysed. Factor analysis was conducted starting with a principal component analysis to determine the number of dimensions to be extracted (Yong & Pearce, 2013). Communalities were used to check each item's proportion of the variance, which was explained by the principal components; items with communality values less than .30 were removed. Eigenvalues ≥ 1 (a number indicating the amount of variance in the data) and a scree plot were used to determine the number of principal components to be extracted. The component matrix was analysed to check for the viability of the number of factors identified for extraction by checking for double and random loadings on the factors.

Exploratory factor analysis (EFA), using the principal axis factor (PAF) extraction method with oblimin rotation (Kaiser normalisation), was done to determine on which factors the items loaded. Items with communalities less than .30 were discarded. Eigenvalues were used as indicator of the number of factors to be extracted. The pattern matrix was analysed to determine which items grouped with which factors; items with factor loadings less than .32 were discarded. In order to check for relationships between the items and the factors, the structure matrix was analysed. A factor correlation matrix was used to check for correlation between the extracted factors. Oblique rotation was to be used if relationships were found, while orthogonal rotation was to be used in the absence thereof. The process was to be repeated until an adequate factor structure was obtained.

Descriptive statistics (mean, standard deviation, skewness, kurtosis and Cronbach's alpha) as well as Pearson's correlation coefficient (r) were indicated for the factors contained in the final factor structure. Interpretation of the reliability of the subscales were based on the work of Hinton (2004) as cited by Taherdoost (2016, p.33). Cronbach alpha values of .90 and higher (excellent reliabillity), .70 to .90 (high reliability), .50 to .70 (moderate reliability) and, .50 and lower (low reliability).

In order to determine the convergent validity of the passion scale partial correlations were done between HP and the PDC (items 13 to 17) while controlling for OP. Partial correlations were also done between OP and the PDC while controlling for HP. Correlations were analysed based on their effect size: .1 small, .3 medium and .5 large effect.

RESULTS PART 1

Initial item analysis (see Table 2) revealed Item 17 as having the highest mean score (5.68); a possible reason for this was that the majority of participants might really have identified with their profession (nursing). Item 11 had the lowest mean score (3.15); it might be that participants did not clearly understand this item in the sense that they might have been confused on how one can lose control over nursing. The standard deviations (*SD*) ranged between 1.407 (Item 5) and 2.058 (Item 12), which meant that the responses of participants on all items clustered relatively close around the mean scores of the items; this was deemed acceptable. Skewness values ranged between -1.229 and 0.362, and kurtosis values between -1.337 and 1.073, all within the boundaries of their respective cut-off values. There were no extreme scores that might have had implications for the assumption of normality.

Table 2

Item analysis of the 17-item passion scale (n=163)

Item no.	Item description	Mean	Std. deviation	Skewness	Kurtosis
HP(a1)	This activity is in harmony with other activities in my life.	4.32	1.815	-0.196	-0.954
OP(a2)	I have difficulties controlling my urge to do my activity.	3.19	1.701	0.362	-0.76
HP(a3)	The new things that I discover with this activity allow me to appreciate it even more.	5.57	1.491	-0.92	0.028
OP(a4)	I have almost an obsessive feeling for this activity.	3.76	1.783	-0.226	-1.048
HP(a5)	This activity reflects the qualities I like about myself	5.39	1.407	-0.962	0.67
HP(a6)	This activity allows me to live a variety of experiences.	5.47	1,561	-0,979	0,272
OP(a7)	This activity is the only thing that really turns me on.	3.2	1,842	0.325	-1.017
HP(a8)	My activity is well integrated in my life.	4.8	1.531	-0.519	-0.382
OP(a9)	If I could. I would only do my activity.	3.37	1.869	0.077	-1.334
HP(a10)	My activity is in harmony with other things that are part of me.	4.43	1.644	-0.367	-0.695
OP(a11)	This activity is so exciting that I sometimes lose control over it.	3.15	1.782	0.323	-1.013
OP(a12)	I have the impression that my activity controls me.	3.7	2.058	0.045	-1.337
PDC(a13)	I spend a lot of time doing this activity.	5.36	1.756	-1.229	0.687
PDC(a14)	I like this activity.	5.28	1.541	-0.897	0.338
PDC(a15)	This activity is important for me.	5.58	1.469	-1.104	0.946
PDC(a16)	This activity is a passion for me.	5.52	1.596	-1.153	0.815
PDC(a17)	This activity is part of who I am.	5.68	1.452	-1.205	1.073

HP = Harmonious passion; OP = Obsessive passion; PDC = Passion-definition criteria

The principal component analysis produced the communality table, which indicated the extraction values. Extraction values represented the proportion of each item's variance explained by the principal components; the higher the value was, the more it was represented by the principal component. All items showed communality values of .30 and higher and were deemed acceptable. Based on the eigenvalues (eigenvalues ≥ 1), three principal components were extracted, which explained 63.68% of the total variance and 41.76%, 13.32% and 8.59% of the variance, respectively.

Table 3

Component matrix

Item no.	Item description	Component 1	Component 2	Component 3
HP(a1)	This activity is in harmony with other activities in my life.	**0.576**	**-0.327**	-0.240
OP(a2)	I have difficulties controlling my urge to do my activity.	0.193	**0.465**	**0.575**
HP(a3)	The new things that I discover with this activity allow me to appreciate it even more.	**0.640**	**-0.370**	**0.383**
OP(a4)	I have almost an obsessive feeling for this activity.	**0.703**	0.292	0.043
HP(a5)	This activity reflects the qualities I like about myself	**0.668**	-0.177	**0.384**
HP(a6)	This activity allows me to live a variety of experiences.	**0.700**	**-0.349**	0.205
OP(a7)	This activity is the only thing that really turns me on.	**0.681**	**0.323**	**-0.319**
HP(a8)	My activity is well integrated in my life.	**0.762**	-0.257	-0.058
OP(a9)	If I could. I would only do my activity.	**0.747**	0.283	**-0.380**
HP(a10)	My activity is in harmony with other things that are part of me.	**0.766**	**-0.315**	-0.138
OP(a11)	This activity is so exciting that I sometimes lose control over it.	**0.705**	**0.404**	-0.080
OP(a12)	I have the impression that my activity controls me.	**0.342**	**0.624**	0.172

Extraction method: Principal component analysis:

a. 3 components extracted.

b. HP = Harmonious Passion; OP = Obsessive Passion

Analysis of the component matrix (see Table 3 above) revealed numerous double loadings between the extracted components, and some loadings seemed to be random; it therefore appeared as if a third factor was not viable. Analysis of the scree plot suggested the extraction of two components. It was decided to test for a two-factor model during further analysis.

An EFA was conducted. Item A2 was omitted from further analysis based on its low (.08) communality value, which was far less than the cut-off value of .30. The communality value (.26) of Item A12 was, however, much closer to .30, and it was decided to keep an eye on this item during further analysis.

Eigenvalue analysis (eigenvalues ≥ 1) in the total variance explained table revealed three possible factors for extraction. Since a two-factor model was tested for, the first two identified factors, explaining 55.09% of the total variance, were used. Individually, the two factors explained 41.76% and 13.33% of the variance.

The factor matrix table contained the unrotated factor loadings and revealed the correlations (values ranging between -1 and +1) between the variables (items) and factors that were obtained after six iterations. The unrotated factor matrix was, however, difficult to interpret

since both factors tended to load onto the same variables, which made it difficult to see the required patterns. Based on the aforementioned, the fact that we were dealing with more than one factor and the assumption that some correlation was expected, an oblique rotation method was followed. Oblimin rotation with (Kaiser normalisation) converged in five iterations and resulted in the rotated factor matrix (pattern matrix), structure matrix and factor correlation matrix.

The pattern matrix indicated the factor loadings of each of the 12 variables and was used to determine which items grouped with which factors. Items A1, A3, A5, A6, A8 and A10 loaded onto factor one (HP), while items A2, A4, A7, A9, A11 and A12 loaded onto factor two (OP). In line with Costello and Osborne (2005), a minimum of .32 was set for the loading of items onto the respective factors. Item A2 (as was the case in the communality table) did not make the cut-off value with its .31 value in the pattern matrix; the item was not to be included in further analysis. Item A12, however, now loaded highly (.54) onto factor 2 (OP) and it was retained for further analysis.

Correlations between the variables (items) and factors were checked by analysing the structure matrix. Some items loaded highly onto both factors simultaneously (e.g. Items A4, A5, A7, A8, A9, A10, and A11). It was therefore concluded that the two factors (HP and OP) were interrelated. This was confirmed with the factor correlation matrix revealing a correlation of .41 between HP and OP. Based on this correlation, oblimin rotation was deemed adequate for further analysis.

The EFA was repeated to test for a two-factor solution, but item A2 was omitted. Except for item 12, communality values were all acceptable in terms of the .30 cut-off value. Based on its communality value (0.224) and its performance during EFA1, item 12 was retained for further analysis. Eigenvalue analysis (eigenvalues ≥ 1) in the total variance explained table revealed two factors explaining 58.99% of the total variance. Individually, these two factors contributed 45.29% and 13.7% to the total variance explained.

As was the case during EFA1, the unrotated factor matrix was difficult to interpret. Oblimin rotation (with Kaiser normalisation) was used to rotate the factors. Rotation converged in six iterations (with two factors extracted) and resulted in the rotated factor matrix (pattern matrix), structure matrix and factor correlation matrix.

The pattern matrix (see Table 4) indicated that six items (A1, A3, A5, A6, A8 and A10) loaded onto factor one (HP), while 5 items (A4, A7, A9, A11 and A12) loaded onto factor two (OP). Item A12 loaded adequately (.53) onto the OP factor. All items loading onto the respective factors ranged between .53 and .77 and were therefore above the cut-off value of .32.

Table 4

Pattern matrix excluding item A2

Items	**F1**	**F2**
HP(a1) This activity is in harmony with other activities in my life	0.566	0.010
HP(a3) The new things that I discover with this activity allow me to appreciate it even more.	0.744	-0.098
OP(a4) I have almost an obsessive feeling for this activity.	0.237	0.548
HP(a5) This activity reflects the qualities I like about myself.	0.586	0.103
HP(a6) This activity allows me to live a variety of experiences.	0.746	-0.013
OP(a7) This activity is the only thing that really turns me on.	0.121	0.673
HP(a8) My activity is well integrated in my life.	0.696	0.129
OP(a9) If I could, I would only do my activity.	0.165	0.732
HP(a10) My activity is in harmony with other things that are part of me.	0.766	0.059
OP(a11) This activity is so exciting that I sometimes lose control over it.	0.139	0.675
OP(a12) I have the impression that my activity controls me.	-0.138	0.527

Extraction method: Principal axis factoring.
Rotation method: Oblimin with Kaiser normalisation.[a]
a. Rotation converged in 5 iterations.

The structure matrix revealed that some items (A4, A5, A6, A7, A8, A9, A10 and A11) loaded highly onto both factors (HP and OP), confirming the interrelatedness between HP and OP. Further confirmation of this interrelatedness was through the factor correlation matrix. Correlation between HP and OP increased from .41 in EFA1 to .50 in EFA2.

The descriptive statistics for both HP and OP after conducting EFA2 are indicated in Table 5. Cronbach alphas of .85 and .81 were obtained for HP (six factors) and OP (five factors), respectively, revealing high internal consistency (reliability) for both factors after omitting item A2. HP showed a mean of 5 (*SD* = 1.19), while OP showed a mean of 3.43 (*SD* = 1.41). On factor level, skewness values (HP = -0.60 and OP = 0.08) and kurtosis values (HP = -0.07 and OP = -0.10) fell within their individual cut-off values ranging between +1 and -1 and +2 to -2, respectively. A significant positive correlation ($r = 0.525^{**}$) between HP and OP at the 0.01 level with a significant (2-tailed) value of 0.000 was revealed. The closer the *r* value gets to either +1 or -1, the stronger the association between HP and OP will be.

Table 5

Descriptive statistics for the two passion scale factors (n=163)

	No. of items	Mean	SD	Skewness	Kurtosis	Cronbach's alpha (α)	Pearson's' correlation (*r*)	
							HP with OP	OP with HP
HP	6	5	1.19	-0.60	-0.07	0.85	0.525**	1
OP	5	3.43	1.41	0.08	-0.10	0.81	1	0.525**

**. Correlation is significant at the 0.01 level (2-tailed).
HP = Harmonious passion; OP = Obsessive passion

Partial correlation between HP and PDC (while controlling for OP) and OP and PDC (while controlling for HP) was conducted (see Tables 6 and 7 below).

Table 6

Pearson correlation coefficients (r) between HP and PDC while controlling for OP

Variables	Descriptions	HP	PDC (a13)	PDC (a14)	PDC (a15)	PDC (a16)	PDC (a17)
HP	Factor 1	1.000					
PDC(a13)	I spend a lot of time doing this activity.	0.053	1.000				
PDC(a14)	I like this activity.	0.540	0.264	1.000			
PDC(a15)	This activity is important for me.	0.536	0.317	0.671	1.000		
PDC(a16)	This activity is a passion for me.	0.616	0.283	0.790	0.764	1.000	
PDC(a17)	This activity is part of who I am.	0.585	0.242	0.571	0.646	0.689	1.000

**. Correlation is significant at the 0.01 level (2-tailed).
Effect Size: 0.1 = Small; 0.3 = Medium; 0.5 = Large

Table 7

Pearson correlation coefficients (r) between OP and PDC while controlling for HP

Variables	Descriptions	HP	PDC (a13)	PDC (a14)	PDC (a15)	PDC (a16)	PDC (a17)
OP	Factor 2	1.000					
PDC(a13)	I spend a lot of time doing this activity.	0.117	1.000				
PDC(a14)	I like this activity.	0.097	0.289	1.000			
PDC(a15)	This activity is important for me.	0.092	0.349	0.540	1.000		
PDC(a16)	This activity is a passion for me.	0.134	0.329	0.693	0.656	1.000	
PDC(a17)	This activity is part of who I am.	0.043	0.264	0.375	0.487	0.515	1.000

**. Correlation is significant at the 0.01 level (2-tailed).

Effect Size: 0.1 = Small; 0.3 = Medium; 0.5 = Large

Except for Item 13 (in Table 6), correlations with a large effect were found between HP and the remaining PDC items (14 to 17). In contrast, no correlations were found in Table 7 between OP and any of the PDC items.

RESEARCH METHOD: PART 2

Research setting

Qualitative data collection took place at the same tertiary education institution as was described earlier in the quantitative stage (Part 1 of this study). Over weekends, interviews were held with participants at the distance education department and during the week, at the School of Nursing. All interviews were held in pre-arranged private offices of the respective departments.

Entrée and the establishment of researcher roles

Ethical clearance obtained from the tertiary education institution (as mentioned in Part 1) also applied to Part 2 of the study. Entrée at the School of Nursing and distance learning department was established as was described in Part 1 (see 'Research procedure and ethical considerations'). The researcher played different roles during the planning, preparation, execution and finalisation of both Part 1 (quantitative) and 2 (qualitative) of the study. The role of planner involved elements such as what the study was expected to entail, who the participants were supposed to be, where the research was supposed to be conducted, how and

when data were supposed to be gathered, analysed and reported. The preparation phase required the researcher to play the role of organiser. This entailed, for example, obtaining the necessary ethical approval, permissions from gatekeepers, department heads and programme managers to gain access to participants and arrangements with lecturers and students to collect data.

The roles played during the execution stage differed between the quantitative and qualitative stages. Due to the use of questionnaires during data collection in the quantitative stage, the researcher was less involved with participants than in the qualitative stage. However, an informed consent letter was used to inform participants about the study itself as well as the ethical considerations pertaining to it.

The qualitative stage required the researcher to be directly involved with participants while acting as interviewer and observer. Trust between researcher and participants had to be established by sharing information about the research (e.g. objectives of the study, kind of data collected and why they were included in the study). This also included ethical issues such as the rights, roles and responsibilities of participants during the study; how anonymity and confidentiality will be ensured; the recording of interviews; the duration of their participation; and withdrawal from the study. After receiving the transcribed data back from the transcriber, the researcher took on the role as data analyst to interpret the data. This differs from the quantitative stage where the role of statistical analyst was required.

The finalisation phase involved the integration of the findings of both the quantitative and qualitative stages of the research. Here, the researcher had the role of objectively reporting on the findings of the study.

Research participants and sampling methods

Participants in Part 2 of the study had to adhere to the same requirements as participants in Part 1 before being allowed to partake in the study. A mix of convenience, purposive and non-probability sampling methods was repeated and 16 interviews were held before data saturation occurred (Greeff, 2011). Biographic data of participants are indicated in Table 8 below.

Table 8

Participants interviewed during qualitative stage (n=16)

SEX	*f*	**%**	**AGE**	*F*	**%**	**ETHINICITY**	*f*	**%**	**LANGUAGE**	*f*	**%**
Male	3	18.75	**19-25**	0	0	**Black**	10	62.5	**English**	2	12.5
Female	13	81.25	**26-35**	7	43.75	**Coloured**	0	0	**Afrikaans**	5	31.25
			36-45	6	37.5	**White**	5	31.25	**isiZulu**	1	6.25
			46-55	3	18.75	**Indian**	1	6.25	**Sepedi**	2	12.5
			56-64	0	0				**Sesotho**	1	6.25
									Setswana	2	12.5
									Tshivenda	3	18.75

From Table 8, it is clear that females represented the majority (81.25%) of the participants in the sample; this was to be expected in a female-dominated profession (Ross, 2017). The age of participants ranged between 26 and 55. In line with the composition of the South African population, black participants (62.5%) made up the largest portion of the sample, followed by white participants (31.25%). African home languages were spoken by 56.25% of participants.

Data collection methods

Semi-structured interviews were conducted to collect the data. Before being interviewed, prospective participants were informed about the objectives of the research as well as their responsibilities, benefits of participation and the risks involved. Furthermore, they were assured of their right to withdraw from the study at any time without repercussions. They were also informed of the use of electronic recordings (including its saving and transcribing); assured of anonymity, confidentiality, and that their participation was voluntary without incentives.

Those who decided to participate signed the informed consent form before completing the biographic questionnaire and being interviewed. The recorded interviews were transcribed by a third party. Rich descriptive information was obtained and used to understand how participants constructed their knowledge and their own social reality of the mentioned nursing passion (Nieuwenhuis, 2012a). The interview schedule that was followed is provided in Table 9 below.

Table 9

Interview schedule

No.	Questions
1	What does it mean to you when someone tells you that he has a passion for his work/job?
2	Think of a nurse whom you thought had a passion for nursing and describe this nurse in detail.
3	Do you think that this person places a lot of value on nursing and does nursing play a significant role in this person's life?
4	Do you think that this person really likes or enjoys what he is doing or is he doing it because he has to?
5	Does this person put a lot of energy and time into nursing? Motivate.
6	In your opinion does the word 'nurse' define this person's being, why?
7	In your opinion, is the passion that this nurse shows towards nursing in harmony with other aspects of this person's life or, do you think that the passion this person has for nursing makes him neglect other aspects of life? Motivate.
8	Are there nurses in your working environment who previously showed a passion towards nursing but lost this passion over time? If yes, how did you notice this and, why do you think they lost their passion?
9	In your opinion, have South African nurses lost their passion for nursing? Why?
10	Think back to the time when you had to make a decision what you wanted to do with your life, how did you end-up studying nursing? What do other nurses tell you about how they ended up in nursing?

Data recording

The use of a recording device was explained to participants in the informed consent form. For the purpose of the study, no identifiable information was used. Anonymity and confidentiality of the recordings were assured by avoiding the recording of personal details about the participant during the interview. Recordings were numbered in the order the interviews were held. After completing the interviews, the recordings were handed over to an independent transcriber who had no access to the identities of participants.

Strategies employed to ensure data quality and integrity

Trustworthiness and credibility of the research were ensured. Semi-structured interviews were used to achieve credibility. Probing questions by the interviewer and elaboration by the participant made it possible to report the participants' perspectives clearly (Botma, Greeff, Mulaudzi, & Wright, 2010). Purposive sampling ensured transferability by targeting participants who were knowledgeable about the topic (Anney, 2014; Botma et al., 2010). Dependability was achieved by using multiple coders (double coding) to obtain high inter-coder reliability (Nieuwenhuis, 2012b). The researcher also checked whether all the relevant data were included (Matthews & Ross, 2010). Conformability was achieved by conducting pre-

test interviews to assess the interview design and questions before official data collection commenced. The researcher ensured the interview questions yielded findings based exclusively on the participants' information (Botma et al., 2010).

Data analysis

A thematic analysis was used to identify, analyse, and report patterns or themes captured from the data. The phases of thematic analysis by Braun and Clarke (2006) were followed, which are expounded below.

- Phase 1 (*Get to know the data)*: The transcriptions were read for an overview of the content and to formulate ideas on ways to continue the process.
- Phase 2 (*Initial coding):* Coding was generated manually by reading through the transcripts and linking initial codes to the data. By coding the data, significant latent features about the raw data were identified, which contributed to the meaningful assessment of the phenomenon (nursing passion) under investigation (Braun & Clarke, 2006). Initial codes differed from the units of analysis (themes) that were identified in the follow-up phase.
- Phase 3 (*The search for themes):* The coded data were analysed and potential themes identified, under which the data were sorted. In certain instances, new themes emerged from the coded data, while sub-themes were also captured.
- Phase 4 (*Re-examine the themes):* During this phase, the themes identified during the previous phase were refined. Two co-coders participated in the process. One co-coder helped code and identify the themes. The second co-coder re-examined the codes and themes and suggested certain changes. Afterwards the themes were re-checked, recommendations of the co-coders were addressed and the identified themes confirmed.
- Phase 5 (*Defining and naming themes):* Proper names were allocated to the themes to reflect the content resorting under each theme. The themes were defined in terms of the essence they represented.
- Phase 6 (*Reporting):* Finally, the data were reported in table format, through themes and sub-themes, while participants' responses were presented.

Reporting style

Integration of the findings of both Part 1 and Part 2 of the research took place in the discussion section and was reported separately. This was in line with the research design, approach and strategy mentioned earlier.

FINDINGS

Table 10 below reflects the themes and subthemes resulting from data analysis; this includes excerpts from participants' responses. Excerpts can be found in the transcribed data by referring to the codes that follow them (i.e. the code I4:7-8 refers to Interview 4 Line 7 to 8). In the case where participants responded in Afrikaans, the excerpts were translated to English and indicated in *italic*. Although language editing was done, the excerpts were reported as they were transcribed verbatim for the sake of authenticity.

Table 10

Themes, subthemes and responses about passion amongst nurses

Themes	Subthemes	Responses
Passion-definition criteria (PDC)	Love or like nursing	It means he's doing that job with all his soul all his heart he loves the job that he's doing not because somebody forced him or her to do the job (**I4:7-8**)
		… like what they are doing **(I1:97)**
	Valuing nursing	They value the profession (**I1:73**)
		Nursing was really a calling in most of the people (**I6:133**)
		… gives me gratitude (**I1:91** nursing)
		… somebody who gets fulfilment **(I1: – 5)**
		Daai persoon gaan uit sy pad uit om die beroep uit te bou op verskillende maniere; sê betrokke raak by uhm 'n verenigings wat die beroep se beeld verbeter, en wat sy wat ontwikkeling bevorder *[That person goes out of his way to build out the profession in different ways; say getting involved with uhm societies that enhance the image of the profession, and promote its development]* (**I13:118-120**)
	Time/energy investment	She's putting more energy, she's putting extra time, extra hours, she lives for this job **(I6:81-82)**
		As hulle 'n kondisie sien in die hospitaal, en hulle gaan huis toe, dan gaan hul bietjie oplees daaroor of bietjie kyk: Maar wat kan ek rêrig doen om dit beter te kan maak? *[I they see a condition in the hospital and they go home then they read up a little about it or will look: What can I really do to make it better?]* **(I7:115-117)**
		… moeite wat sy gedoen het *[… effort that she have put in]* **(I14: 206)**
		… daai bietjie ekstra doen vir 'n beroep *[doing that little extra for a profession]* **(I15: 5-6)**
		… the care that you put in your work, the effort that you do (**I16:13)**
		She was like showing that she should put more energy in her job; she really liked it (**I5: 67-69)**
		That person is committed ... her job maybe gave a lot of energy, lots of time (**I11:3-4)**

	Autonomous internalisation	You are not doing it because you want to please somebody (**I2:24-25**)
		It's not like it is a matter of: must she does that? because, she loves doing it (**I3: 36**)
		Somebody who does it beyond the incentives and what they get (**I1: 10-11**)
		He loves the job that he's doing, not because somebody forced him or her to do the job (**I4: 7-8**)
		You do the work willingly (**I6: 6-7**)
		Nursing is not about status (**I16: 360-361**)
		She's doing it from he's heart with passionate with love, with that caring attitude **(I4: 63-64)**
Compassion	Empathy	I am one with the patient I understand: I don't know what you are going through but I might understand what you are going through, and we can walk we can walk this journey together but you know I'm not gonna feel what you're feeling but I do understand what it is what you are feeling (**I1:104-107**)
		They can understand what you're going through (**I3: 14-15**)
	Caring and helping people	… a person who takes cares of the patients (**I8: 17-18**)
		They are always willing to help (**I3: 19**)
	Holistic care	Treating each person as a whole and not an entity (**I1:77**)
		Verpleegkunde dit gaan oor die pasiënt in totaliteit en jy moet na alles kyk *[Nursing, it is about the patient in totality and you must look at everything]* (**I15 217**)
Job investment (JI)	Role model	She's a role model, she's paving the way that you can follow (**I6: 96)**
		You admire them when they are doing their job **(I9: 41-42**)
	Change agent	Hulle doen alles wat hulle kan doen en hulle wil 'n positiewe verskil maak. Hulle wil actually 'n vordering sien in iemand *[They do everything they can and they want to make a positive difference; they actually want to see progress in someone]* (**I7: 46-47**)
		… rêrig iets om 'n verkil in iemand anders se lewe te maak *[… truly something to make a difference in someone else's life]* (**I7: 103**)

	Empowering others.	… om die kennis met ander te deel en ander opleiding te gee, om ook in daai vir hulle te help om beter te wees en ook kwaliteit sorg vir ander te gee *[… to share knowledge with others and to provide training to others, also in that regard to help them be better and also provide quality care to others]* (**I14: 167-169**)
		… lot of energy teaching nurses and telling them: "If you don't do it right now, you gonna fail" (**I16: 124-125**)
	Going the extra mile	Go an extra mile in assisting their patients or their community members (**I3: 20**)
		Hulle sal altyd alles doen vir 'n pasiënt. As jy hulle sien, dan, hulle gaan hulle doen; 'they walk the extra mile', hulle sal meer doen as wat eintlik van hulle verwag word *[They will always do everything for their patients. When you see them then, they go, they walk the extra mile; they will do more than is actually expected of them]* (**I7: 20-21**)
	Lifelong learning	… want jy's 'n lewenslange leerder *[since you are a life-long learner]* (**I12: 286-287**)
		Jy moet sorg dat jy op hoogte van sake bly. Dis 'n belangrike standpunt en dis ook een van die goed wat vir my uitstaan *[You must ensure you stay up to date with matters. This is an important viewpoint and it is also one of the things that stands out for me]* (**I13: 71-72**)
Personal characteristics	Competent and confident	… competent ... what she was doing, and confidence (**I5: 78**)
		She has done everything perfect… every record that she has been, is done and is complete and is accurate (**I10: 98, 101**)
		… kundig – jy kon weet sy't die teorie en die praktiese kennis en vaardighede gehad *[knowledgeable – you knew that she had the practical knowledge and skills]* (**I11: 36-37**)
		Applies the knowledge, the nursing knowledge (**I4: 45**)
	Commitment	… always punctual at work (**I11: 17**)
		This person must or is always doing what he's expected to do (**I2: 19**)
		… nursing who is a hard worker (**I8: 153**)
		… very professional the one that those who love their work, they are always professional (**I3: 13**)
	Resilience	She's very much resilient (**I1:37**)

Interpersonal skills	The way that he interacts at work with other nurses – he's more different from other nurses (**I4: 58**)
	People that would negotiate with or discuss with the doctor, even the doctor would come and say, "No sister let's give this and this." She would say, "No but doctor, I understand what you are saying" (**I10: 58-60**)
	They are very good listeners; they are very good communicators, they can communicate with you, but they can understand what you're going through just by maybe taking history or just by listening attentively (**I3: 13-15**)
	She listens to the patient attentively, and also gives the patient a chance to verbalise his thoughts, and then thereafter, then the nurse will ah respond to clarify issues with that patient (**I4: 35-37**)
Leadership skills	Being passionate means stepping up being a leader **(I16: 73)**
	… sterk leierseienskappe ook sodat hy kan ook bou en hy kan mense ook motiveer, en hulle uhm aanspoor, in die rigting van sy leierskap *[… strong leadership characteristics also in order to build and motivate people, and encourage them in the direction of his leadership]* (**I13: 148-151**)

PDC

Sub-themes related to the PDC were: (1) love or like nursing; (2) valuing nursing; (3) time/energy investment; and (4) autonomous internalisation.

Participants described passionate nurses as those who serve with their hearts and souls; they love their work and fully enjoy what they are doing.

> It means he's doing that job with all his soul all his heart he loves the job that he's doing not because somebody forced him or her to do the job (**I4:7-8**)

> … like what they are doing **(I1:97)**

They value the nursing profession and experience fulfilment and gratification from their work; they will go out of their way to enhance the image of their profession and many of them ended up in nursing due to an inner calling.

> They value the profession (**I1:73**)

> Nursing was really a calling in most of the people (**I6:133**)

Passionate nurses are seen as those who invest additional time and energy into their work

> She's putting more energy, she's putting extra time, extra hours, she lives for this job **(I6:81-82)**

> She was like showing that she should put more energy in her job; she really liked it (**I5: 67-69)**

These nurses do their work willingly (unconditionally); not for status, incentives, to please others, or because they are forced. They described nursing as being 'within them'.

> You do the work willingly (**I6: 6-7**)

> He loves the job that he's doing, not because somebody forced him or her to do the job (**I4: 7-8**)

Compassion

The sub-themes that supported the compassion theme were: (1) empathy; (2) caring and helping people; as well as (3) holistic care.

According to participants, passionate nurses are able to empathise with their patients by understanding what they are going through.

> I am one with the patient I understand: I don't know what you are going through but I might understand what you are going through, and we can walk we can walk this journey together but you know I'm not gonna feel what you're feeling but I do understand what it is what you are feeling (**I1:104-107**)

> They can understand what you're going through (**I3: 14-15**)

These nurses are viewed as caring individuals who are willing to help the people they care for in the practice environment.

> … a person who takes cares of the patients (**I8: 17-18**)

> They are always willing to help (**I3: 19**)

Passionate nurses render holistic care by treating patients as a whole, caring for the patient in totality.

> Treating each person as a whole and not an entity (**I1:77**)

> Nursing, it is about the patient in totality and you must look at everything (**I15 217**)

Job investment

The following sub-themes supported the job investment theme: (1) role model; (2) change agent; (3) empowering others; (4) going the extra mile; and (5) life-long learning.

Passionate nurses were described as role models who are paving the way for others to follow and who are admired for the way they nurse.

> She's a role model, she's paving the way that you can follow (**I6: 96)**

> You admire them when they are doing their job **(I9: 41-42**)

As change agents, passionate nurses strive to make a positive difference in the lives of others.

> They do everything they can and they want to make a positive difference; they actually want to see progress in someone (**I7: 46-47**)

> … truly something to make a difference in someone else's life (**I7: 103**)

They view empowerment as a way to share their knowledge, thereby enabling other nurses to provide quality care.

> … to share knowledge with others and to provide training to others, also in that regard to help them be better and also provide quality care to others (**I14: 167-169**)

> … lot of energy teaching nurses and telling them: "If you don't do it right now, you gonna fail" (**I16: 124-125**)

These nurses are willing to go the extra mile (doing more than is expected) in assisting their patients, colleagues, or the community.

> Go an extra mile in assisting their patients or their community members (**I3: 20**)

> They will always do everything for their patients. When you see them then, they go, they walk the extra mile; they will do more than is actually expected of them (**I7: 20-21**)

Life-long learning is important for them to stay abreast of matters, not only to improve themselves, but also to take better care of their patients.

> You must ensure you stay up to date with matters. This is an important viewpoint and it is also one of the things that stands out for me (**I13: 71-72**)

> … since you are a life-long learner (**I12: 286-287**)

Personal characteristics

Participants attributed certain personal characteristics to passionate nurses as represented by the following sub-themes: (1) competent and confident; (2) commitment; (3) resilience; (4) interpersonal skills; and (5) leadership skills.

Passionate nurses are perceived as those who know their job and who are capable of applying their nursing knowledge in practice; they therefore view knowledge as power. Such nurses show competence through the outstanding execution of their duties; they are confident in what they do and strive towards perfection to such an extent that others refer to them as specialists in their field.

knowledgeable – you knew that she had the practical knowledge and skills (**I11: 36-37**)

… competent ... what she was doing, and confidence (**I5: 78**)

Furthermore, they show commitment by being punctual for work, continually doing what is expected of them, acting professionally, and working hard.

This person must or is always doing what he's expected to do (**I2: 19**)

… very professional the one that those who love their work, they are always professional (**I3: 13**)

These nurses are resilient and stay passionate about nursing despite the negative experiences they come across in practice.

She's very much resilient (**I1:37**)

Furthermore, the findings indicate that these nurses show sound interpersonal skills, especially with regard to communication and listening, thereby ensuring they understand what their patients are going through. The nurses listen attentively, give their patients the chance to verbalise their thoughts and then respond to clarify issues with these patients. They are also adept at interacting with other staff and health professionals.

They are very good listeners; they are very good communicators, they can communicate with you, but they can understand what you're going through just by maybe taking history or just by listening attentively (**I3: 13-15**)

The way that he interacts at work with other nurses – he's more different from other nurses (**I4: 58**)

Regarding leadership, these nurses are efficient at motivating others to follow them. When actions are required, they will take the lead and not sit back and watch others do the work.

Being passionate means stepping up being a leader **(I16: 73)**

… strong leadership characteristics also in order to build and motivate people, and encourage them in the direction of his leadership (**I13: 148-151**)

DISCUSSION

Outline of results

The discussion follows the sequence in which the specific objectives of this study was reached.

Specific objective 1: *To conceptualise the dualistic model of passion, self-determination theory, passion scale and PDC from the literature.*
In order to reach specific objective 1 a literature review was conducted focussing on the most relevant concepts used in this study. The dualistic model of passion was described as being grounded in self-determination theory and the links to this macro theory was explained. The dualistic model of passion was explained in terms of HP and OP and how they develop in terms of autonomous and controlled internalisation processes. HP led to optimal functioning while HP led to non-optimal functioning in the workplace.

The dualistic nature of passion is measured with the passion scale which have become an established instrument in westernised countries. The scale was explained in terms of the two types of passion it measures as well as the PDC that is used to determine the presence of passion in individuals. These PDC was described as a liking of one's work, finding it important or valuable, investing time and energy into it and an internalisation of work into the identity. The literature review ended off with a short summary of scientific research that have been done with the help of the passion scale.

Next, Part 1 (the quantitative findings) is discussed followed by Part 2 (the qualitative findings).

Part 1: Quantitative findings

Specific objective 2: *To test the psychometric properties of the passion scale by accepting or rejecting hypotheses related to its factor structure, internal consistency and convergent validity.*
The passion scale was used during a pilot study to determine its future use within the South African nursing context. This was the first step of a larger project to validate a scale to measure 'nursing passion' in South Africa.

In line with the passion scale developers, Vallerand et al. (2003a) and other researchers such as Serrano-Fernàndez, Boada-Grau, Gill-Ripoll, and Vigil-Colet (2017), this study also revealed the dualistic nature of passion. ***Hypothesis 1*** (*Scores on the passion scale will fit a correlated two-factor model)* was therefore confirmed with passion scores fitting a correlated two-factor structure after omitting item A2. It might be that some participants had difficulty understanding item A2, especially in a country with 11 official languages and English being most participants second or third language. Within this two-factor structure, HP (with 6 items) and OP (with 5 items) explained 58.99% (HP 45.27% and OP 13.70%) of the total variance. The strength of the linear relationship between the factors (HP and OP) revealed a significant positive relationship ($r = 0.525$).

In line with other research studies, such as that of Houlfort, Philippe, Vallerand, and Ménard (2014), as well as Zhao, St-Louis, and Vallerand (2015), this study obtained Cronbach alphas higher than .70 for HP (.85) and OP (.81). ***Hypothesis 2*** *(Internal consistency (Cronbach alphas > .70) will be achieved for both harmonious passion (HP) and obsessive passion (OP)* was therefore confirmed and it was concluded that the internal consistency of the two-factor scale was high in terms of its reliability coefficients.

Mageau et al. (2009), Marsh et al. (2013) and Vallerand et al. (2003a) found both HP and OP to be highly correlated with the PDC. Since the PDC represent different aspects of passion, the assumption was that they will be related to both HP and OP and that such correlation can serve as a test for convergent validity (Marsh et al., 2013). In this study, both HP and OP were therefore correlated with the five items (A13 to A17) measuring the PDC. HP correlated significantly with all items except Item A13. ***Hypothesis 3*** (*There will be correlation between harmonious passion and the passion definition criteria when controlling for obsessive passion.)* was therefore partially confirmed. OP did not correlate with any one of the items, and ***Hypothesis 4*** (*There will be correlation between obsessive passion and the passion definition criteria when controlling for harmonious passion.)* was therefore rejected. Possible reasons for the absence of correlations may include problems with test instructions or item wording; in the presence of possible outliers, the small sample size (163) may have played a role and the characteristics of different groups in the sample may have had an influence on the correlations (Goodwin & Leech, 2006). The partial confirmation of Hypothesis 3 and the rejection of Hypothesis 4 indicated a lack of convergent validity and therefore ***Hypothesis 5 (***Convergent

validity will be present when both harmonious passion and obsessive passion correlate with the passion definintion criteria.) was rejected.

This pilot study confirmed the dualistic nature of passion among South African nurses. Despite hypothesis 3 being partially confirmed and Hypotheses 4 being rejected, the passion criteria were confirmed to be present among South African nurses during the qualitative phase of this study (see Part 2 below). The passion criteria also assisted in the conceptualisation of 'nursing passion.' Further investigation into the use of the contextualised version of the passion scale (the nursing passion scale) to measure 'nursing passion' was therefore warranted.

Part 2: Qualitative findings

The purpose of the qualitative part of the study was to explore 'nursing passion within the South African context. The exploration of 'nursing passion' was considered to be important in order to conceptualise it for the context in which it was intended to be measured and managed.

The specific research questions that were posed to participants intended to explore whether the PDC, as proposed by Vallerand, et al. (2003), were present in the nursing context. The use of the passion scale in the South African nursing context were deemed adequate when these PDC were found to be present.

Next, the elements of the 'nursing passion' conceptualisation are discussed.

Specific objective 3*:* *To explore passion among professional nurses and nursing students.*

The exploration of passion led to the extraction of four main themes (PDC, compassion, job investment and personal characteristics) from the qualitative data. These are discussed below.

PDC

PDC consists of the following sub-themes: love/like nursing, valuing nursing (viewed as important, beneficial, or having a high opinion of it) (Oxford English Dictionary, 2018b); time/energy investment and autonomous internalisation. These captured sub-themes were similar to the PDC measured with the passion scale of Vallerand et al. (2003b). According to

Mullen, Davis, and Polatajko (2012), these criteria represent the aspects required before being considered passionate about one's activity/work.

In terms of SDT, an autonomous internalisation occurs when someone acts without external contingencies factored in. From the qualitative findings, it is clear that participants referred to passionate nurses as if they are internalising nursing *autonomously* into their self-concepts. In terms of SDT, such internalisation leads to intrinsic motivation. Combining intrinsic motivation with the other PDC (extracted from the present study) sets the stage for nurses to autonomously internalise nursing into their identities and to become passionate about nursing. When referring to the DMP, the type of passion that results from such autonomous internalisation is HP. When compared to the definition of passion, participants actually described passionate nurses as showing HP towards their profession.

Although this is the case, it is important to remember that the DMP also makes provision for controlled internalisations of activities/work into the identities of individuals. Nurses with a controlled internalisation may become passionate about nursing. However, this passion would tend to be more obsessive in the long term (Verner-Filion & Vallerand, 2016).

Next, the South African nursing pledge was used to differentiate the themes, compassion, job investment, and personal characteristics. The pledge states that the primary responsibility of South African nurses is to look after the total health (holistic care) of their patients (SANC, 2018). This implies that the compassion theme was regarded as the primary responsibility of nurses by focusing on empathy, caring, and helping people as well as providing holistic care.

Compassion

Day (2015, p. 342) views compassion as "an integral and natural part of nursing care". From their side, McCaffrey and McConnell (2015) refer to compassion as being so important to nurses that it is considered as part of the essential identifying characteristics of nursing. In their research, they considered the theme compassion as an awareness of other individuals' distress/suffering, a longing to help relieve them of their ailments and taking action to help these individuals by caring for them (McCaffrey & McConnell, 2015). The sub-themes of the present study were in line with this view of compassion. *Empathy* refers to a mode of becoming aware of another's distress/suffering (Medical Dictionary for the Health Professions and

Nursing, 2018); *caring and helping others* implies the willingness to help as well as the actual act of helping (taking care of patients) and *holistic care* entails a specific approach towards caring, namely focusing on the patient as a whole, which includes the physical, psychological, emotional, and spiritual dimensions (Jasemi, Valizadeh, Zamanzadeh, & Keogh, 2017). Holistic care focuses on improving the quality of care that nurses deliver.

From the above, the conclusion might be that the compassion theme relates to the caring role that nurses should play when treating their patients. This can be viewed as the crux of a nurse's work and in line with the pledge they make towards the nursing profession. In terms of nursing passion, patient care, whether through direct patient care or indirectly via nursing education or nursing management, should be the universal element that all nurses should be passionate about.

Job investment

The theme *job investment* focused on the additional responsibilities, tasks or roles in which passionate nurses are involved, which reach beyond their primary responsibilities. The job investment sub-themes referred to nurses as: going the extra mile, role models, change agents, empowering others and life-long learners. *Going the extra mile* implies a willingness to do more for others at work than is expected (Merriam-Webster Dictionary, 2018b). As *role models*, individuals demonstrate acceptable nursing behaviours that other nurses will want to imitate (Merriam-Webster Dictionary, 2018c). Being *change agents* requires of them to examine their environment, recognise opportunities for change, find suitable approaches for change and put them into action (Lonadier, 2016). *Empowering others* entails that other nurses must be provided with the freedom and power to control their own work environments, while granting them power and authority to use their own initiative during problem-solving and decision-making processes (Business Dictionary, 2018; Gulzar et al., 2016). As *life-long learners*, nurses are regarded as active learners who constantly pursue learning opportunities about the latest developments, trends and ideas in the field of nursing (Meyer, 2016).

From the aforementioned, it is clear that the subthemes related to job investment are related to the improvement or enhancement of nursing, whether this is aimed at the practice environment itself or at the nursing profession as a whole. In terms of nursing passion, the enhancement of nursing is based on nurses liking or even loving what they do as well as the importance of nursing to them and the value they attach thereto.

Personal characteristics

The theme personal characteristics focused more on individual traits that participants attributed to passionate nurses. *Competence* refers to nurses as having the appropriate knowledge, skills and abilities or attitudes to function effectively (Meyer, 2016), while being *confident* means showing assurance and self-reliance (Merriam-Webster Dictionary, 2018a). *Commitment* among nurses is the result of a willing 'time-and-energy investment' into a matter in which they believe (i.e. finding something as important or of value); this includes what they promised (i.e. the nursing pledge) or decided to do (i.e. taking a specific action) (Cambridge Dictionary, 2018). Commitment is also seen as a consequence of passion where HP will lead to a willing commitment to work with positive outcomes, or OP resulting in a rigid commitment (over-commitment) to work with possible negative outcomes such as work-life imbalance (Trépanier et al., 2014). In this regard, participants referred to passionate nurses as those who are committed, and therefore showing HP rather than OP.

Resilience is viewed by McGowan and Murray (2016) as an important attribute in nursing that helps nurses cope with or succeed within challenging work environments. Jackson, Firtko, and Edenborough (2007) refer to resilience as the adjustment to adversity in the workplace to such an extent that it is possible to continue with one's work in a positive way. Nursing is known for being emotionally demanding work accompanied by high levels of work-related stress, anxiety, job dissatisfaction, depression, reduced job loyalty, increased intention to quit, and burnout experienced by nurses (Guo et al., 2017; Jackson et al., 2007). Therefore, it seems appropriate that resilience was identified as an important personal characteristic of passionate nurses.

Interpersonal skills refer to nurses' ability to communicate and interact effectively with others within their work environment (Oxford English Dictionary, 2018a). Interpersonal skills are deemed crucial to establish a therapeutic relationship with a patient (Bhana, 2014). Nevertheless, nurses also have to interact effectively with others they encounter within the context of their work (families of patients, other nursing staff, doctors, psychologists, social workers, etc.). The main interpersonal skills that participants ascribed to passionate nurses were focused on communication and listening. The nurse-patient relationship was considered as being fundamental to nursing care. This relationship could be distorted if the appropriate interpersonal skills were lacking (Bhana, 2014).

Frankel (2008) refers to effective leaders as being dynamic, passionate, motivational, solution-focused and inspiring. When participants attributed *leadership skills* to passionate nurses, they were focusing mainly on ways nurses motivate others within the work environment. This is in accordance with the definition of motivation by Robbins, Judge, Odendaal, and Roodt, (2016), namely that passionate nurses will inspire other nurses and members of staff to put more effort into their work (intensity) linked to organisational goals (direction) and to keep up this effort (persistence) to the benefit of patients and the practice environment.

As is seen above, certain personal characteristics are linked to being a passionate nurse. If the direct opposites of these characteristics (incompetence, uncommitted, non-resilient, poor communication and listening skills as well as an inability to motivate others) are considered, it is clear that it will have consequences for the well-being of nurses. These opposite characteristics may create a great deal of stress and even burnout (in the case of being non-resilient); this is especially true for the demanding environments in which most nurses operate. Therefore, in terms of nursing passion, the characteristics that were identified may be regarded as the maintainers of passion within nurses.

Overall, it can therefore be said that a conceptualisation of nursing passion will consist firstly of the PDC as proposed by Vallerand et al. (2003a). These include a love or liking of nursing, finding it meaningful, important and valuable, a willing investment of time and energy therein, as well as an internalisation of nursing into the identity of the nurse. Secondly, the passion of the nurses must be directed at patient care, which is regarded as the core element of nursing as promulgated in the compassion theme. Thirdly, the additional behaviours, as were mentioned in the job investment theme, which nurses tend to engage in when they are passionate about the core aspect of their work; and fourthly, the personal characteristics that will sustain their passion in the workplace.

Specific objective 4: *To conceptualise 'nursing passion' for the South African context.*

By integrating the results of the present study, 'nursing passion' within the South African context was therefore conceptualised as follows:

> ‘Nursing passion’ refers to compassionate nurses who are competent, confident and resilient in the execution of their duties, while demonstrating appropriate communication, listening and motivational skills; they show a strong preference for nursing based on their love for the profession, the enjoyment it brings and the inherent value or importance they attribute to it. Their commitment towards nursing is revealed by a willing investment of time and energy into the holistic care of their patients, the constant improvement and enhancement of the practice environments in which they operate, as well as the nursing profession as a whole. These nurses autonomously internalised nursing into their identities and therefore do not merely nurse for the sake of nursing; it rather becomes part of their true selves: being nurses.

Next, the practical implications, limitations and recommendations of the research are discussed in order to address specific objective 5 of the research.

Specific objective 5: *To make recommendations for organisations/practice and future research.*

Practical implications

Nurses who are passionate about nursing and show HP towards their profession can make a difference in their practice environments. Managers should be able to identify passionate nurses and manage their passion (HP or OP) to the benefit of the practice environment. Although further research is necessary on the use of the passion scale within the South African nursing context, Vallerand et al. (2010) have used the scale with success among nurses in France and Canada. The passion scale is useful in identifying passion and to ascertain whether it is harmonious (resulting from *autonomous* internalisation of an activity/work into the identity), or obsessive (due to a *controlled* internalisation into the identity) in nature.

Applying the passion scale in a new context, as was done in the present study, necessitated an understanding of the new context in which it was to be applied. The passion of nurses will most likely be directed at different contextual variables than that of i.e. an engineer or pilot. The type of passion (i.e. nursing passion, engineering passion or pilot passion) need to be contextualised

in order to understand what passion is directed towards in a specific profession. In order for the passion scale to be used to measure the passion in a profession the PDC (as discussed in the quantitative part of the study) need to be present. Therefore any conceptualisation of passion in a specific context should include the PDC. This was the case with the 'nursing passion' conceptualisation

In support of the passion scale, the conceptualisation of nursing passion will provide managers with additional contextual information about the portrayal of nursing passion. This may assist managers to be informed about aspects to look for when identifying nursing passion among their employees. Conceptualising nursing passion will also help managers to deal more effectively with the absence of passion as well as incidences of HP and OP.

Conceptualising nursing passion also created the opportunity to begin developing an instrument that measures those contextual variables that are not measured with the passion scale. Such an instrument will make it easier to keep track of nursing passion's different dimensions and may provide clues about where to focus intervention strategies.

Limitations and recommendations

Participants of both the quantitative and qualitative stages consisted mainly of white and African females. However, the sample was in line with the composition of the South African population. Since nursing typically is a female-oriented profession, males were underrepresented in the sample and should therefore be more representative in future studies. There were also very few Indian and Coloured participants included in the samples, which also needs to be addressed in future. In addition, only nurses were included as participants during the qualitative stage; the perceptions of patients may have provided additional information about nursing passion. Although it is difficult to gain access to patients while they are under treatment, their inputs may have been worth the effort.

Sample size were adequate for the purpose of the present study but a larger sample may have yielded better initial results, especially pertaining to the partial correlations.

Another limitation was that the passion scale was tested in its original format within the South African context. The initial scale was developed in French and later translated to English. It is possible that the language use in the scale may have had an influence on the results. This is especially true in the sense that South Africa has 11 official languages of which English is a

second or third language to most of the participants. In addition, there are also many different cultures in South Africa; cultural fairness was not assessed. Research by Smith et al. (2016) has shown that culture may affect the response styles on Likert-type scales. It was therefore recommended that the passion scale should be further assessed in this regard.

The test instruction of the passion scale is designed to be used within different contexts. However, scale items remain constant when used in different settings. The researcher was of the opinion that the scale will yield better results when all items were contextualised (adding a frame-of-reference such as nurse/nursing to the items) for use in a particular setting such as nursing.

The passion scale provides information about the presence of passion in nurses and whether this passion is harmonious or obsessive in nature. The scale does, however, not include contextual variables about the portrayal of nursing passion. It is recommended that the conceptualisation of 'nursing passion' be used to develop a scale that can measure these contextual variables of nursing passion, which are not covered by the passion scale. Such a scale must then be used in conjunction with the passion scale. Whereas the latter will indicate the presence of passion among nurses and whether this passion is harmonious or obsessive, the new scale will assist in focusing intervention strategies to the benefit of employees and their patients, their practice environments and the nursing profession as a whole.

CONCLUSION

From literature, it is clear that nursing in South Africa is facing serious challenges. One possible way of turning the tide is to start the search for passionate nurses and to manage the passion these nurses show to the benefit of their practice environments, their patients, the nursing profession and the South African population as a whole. Numerous researchers have proven the benefits of being harmoniously passionate about one's activities/work. The present study commenced the groundwork to study passion among South African nurses.

The use of the passion scale within this context was tested during an initial pilot study confirming the two-factor structure thereof. Although internal consistency proved to be adequate for use, convergent validity was not confirmed. While this was the case, the presence of the PDC was confirmed while exploring passion among a sample of nurses. It was concluded

that the passion scale, in its original format, warranted some further analysis before being used within the South African nursing context.

The conceptualisation of ‘nursing passion’ was important for the purpose of further studies on the phenomenon. Awareness of what nursing passion entails will have positive implications in terms of the management thereof in nursing practice environments. This, in turn, will benefit the nurses themselves, their patients, their practice environments and the nursing profession as a whole. Creating a passion for nursing may just be the answer for some of the challenges that the nursing profession experiences.

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CHAPTER 3

RESEARCH ARTICLE 2

The passion scale: Rasch analysis of its psychometric properties and the frame-of-reference effect

Abstract

Orientation: The dualistic model of passion suggests that passion for work may have positive and negative implications for employee wellbeing and performance. In order to measure passion among South African nurses, an investigation into the psychometric properties of a contextualised version of the passion scale was needed. This, as well as an analysis of the impact that the addition of a frame-of-reference may have on such a contextualised scale, was to be used as input towards the future validation thereof.

Research purpose: To compare the psychometric properties of the subscales of an original and contextualised version of the passion scale using Rasch analysis; and an investigation into the impact of adding a frame-of-reference to the contextualised scale.

Motivation for the study: The management and scientific measurement of passion within nursing contexts may be enhanced when a validated contextualised scale for the measurement thereof is available.

Research design\approach and method: A quantitative approach with a cross-sectional design was followed. Rasch analysis was used to test the fit of the data to the Rasch model.

Main findings: Item wording and/or structure had implications for fitting data with the Rasch model. The addition of a frame-of-reference to the subscales of the contextualised passion scale improved its criterion reliability above that of the original version.

Practical/managerial implication: Suggestions for scale improvement were made and should be addressed to prepare the contextualised passion scale for future validation.

Contribution/value-add: Rasch analysis revealed that both versions of the passion scale needed further improvement in order to be validated. It was shown that the addition of a frame-of-reference increases the reliability of the contextualised passion scale.

Keywords: Rasch analysis, frame-of-reference, dualistic model of passion, harmonious passion, obsessive passion, passion scale

INTRODUCTION

Orientation

The passion scale (Vallerand et al., 2003b) is an established measure to identify the presence and types of passion within a variety of contexts. Initially, the passion scale was mostly used in studies related to the passion for activities such as football (Vallerand et al., 2003a); cycling (Vallerand et al., 2003a); gambling (Castelda, Mattson, Mackillop, Anderson, & Donovick, 2007); gaming (Wang, Liu, Chye, & Chatzisarantis, 2011); and exercise (Parastatidou, Doganis, Theodorakis, & Vlachopoulos, 2012). Recently, more and more researchers have started using the passion scale in studies related to passion for work in environments such as teaching (Cheasakul & Varma, 2015), nursing (Donahue et al., 2012; Vallerand, Paquet, Philippe, & Charest, 2010), and employee-supervision (Burke, Astakova, & Hang, 2015).
The passion scale has mostly been used in westernised cultures (Burke et al., 2015). Using the scale in a diverse third-world country such as South Africa consisting of various cultures and languages is not advisable before an appropriate investigation into the scale's psychometric properties has been made. In order to test the passion scale within the South African nursing context, Rabie (2018; Chapter 1) conducted a pilot study with the original English version of the scale. The pilot study confirmed its dualistic nature and internal consistency, but recommended the contextualisation of the scale items towards nursing.

Contextualising the passion scale on item level might address what is called frame-of-reference effects. Bing, Davison, and Smothers (2014) refer to frame-of-reference effects as those cases where different participants think about different situations when the same non-contextualised item is answered. Adding a frame-of-reference or context to the passion scale may lead to higher content and criterion validity as well as higher item reliability (Bing et al., 2014). In the presence of substantial empirical evidence, the criterion-related validity of a contextualised instrument exceeds that of a non-contextualised instrument when a frame-of-reference is added (Lievens, De Corte, & Schollaert, 2008). In addition, it is also believed that measures contextualised at item level have a better ability to predict job performance (Bing et al., 2014).

Research purpose and objectives

Validating the passion scale within the South African nursing context may assist managers to deal with work passion in clinical practice environments. The present study intended to further contribute towards the validation of the passion scale within the South African nursing context. *The purpose (general objective) of this study was to investigate the psychometric properties of the passion scale using Rasch analyses; and to determine whether the addition of a frame-of-reference had any significant effects on the scale.*

In order then to analyse the psychometric properties of both the adapted (frame-of-reference added to items) and original versions of the passion scale within a sample of nurses, the objectives of the present research were:

- to conceptualise the dualistic model of passion, the passion scale, frame-of-reference effect and Rasch analysis from the literature.
- to analyse the subscales of an original and adapted passion scale in terms of their response categories operation,
- to analyse the subscales of an original and adapted passion scale in terms of their item locations and the fit of the items to the Rasch model,
- to analyse the subscales of an original and adapted passion scale in terms of their item/person threshold distribution (targeting),
- to analyse the subscales of an original and adapted passion scale in terms of the extent to which the items are dependent on one another (local independence),
- to analyse whether the items of the original and adapted passion scale subscales function the same across two ethnic groups (differential item functioning),
- to compare the subscales of the original and adapted passion scale in terms of their operating characteristics (unidimensionality) and,
- To make recommendations for organisations/practice and future research.

LITERATURE REVIEW

Employees who are seen as passionate about their work are often described as being lively, driven, persistent, enthusiastic, eager, optimistic, inspirational, creative, adaptable, dedicated, focused, disciplined and hard-working (Boverie & Kroth, 2001; Johri & Misra, 2014; Perrewé,

Hochwarter, Ferris, Mcallister, & Harris, 2014). The benefits of having employees showing these characteristics seem obvious. Private and public organisations cannot ignore the fact that their employees' passion for their work may have implications for service delivery and bottom-line results. This is also true for the nursing profession and the practice environments nurses find themselves in (Bushardt, Brent, Beal, Young, & Khosla, 2016).

Realising the importance of nursing passion justifies an investigation into how it is being measured. An ability to measure the presence of passion in nurses may assist in managing this passion to the benefit of nurses, their patients, the practice environment and the profession as a whole. Adding to the research of Rabie (2018; Chapter 1), the present research continued with the process of validating the passion scale of Vallerand et al. (2003b) within the South African context. This scale was developed to measure the dualistic nature of passion.

The dualistic model of passion refers to passion as either being harmonious or obsessive in nature (Vallerand et al., 2003a). The type of passion that employees show depends on the way in which their activities/work are internalised into their identities and the extent to which the identity is consumed by the activity/work. Harmonious passion goes along with an autonomous internalisation process of the activity/work into the identity of the individual without consuming the identity. This means that the activity/work does not interfere with other domains of life. Harmonious passion is therefore associated with positive outcomes. In contrast, obsessive passion (the dark side of passion) goes along with a controlled internalisation process of activities/work into the individual's identity. Initially, the identity of the individual is not consumed by the activity/work and this may result in short-term benefits. However, over time, the identity is consumed by the activity/work and starts to affect other domains of the individual's life in a negative way. Obsessive passion is therefore associated with less desirable or even maladaptive outcomes (Burke et al., 2015; Vallerand et al., 2010). A summary of the desirable effects of harmonious passion and less desirable effects of obsessive passion can be found in the meta-analysis of Curran, Hill, Appleton, Vallerand, and Standage (2015). Implications of harmonious passion and obsessive passion for the workplace are mentioned below.

In terms of well-being, harmonious passion is associated with higher positive affect, satisfaction, vitality and cognitive-emotional engagement; whereas, obsessive passion is associated with ill-being, such as negative affect and burnout. Pertaining to motivation, harmonious passion is associated with higher levels of 'adaptive' motivational regulations such as intrinsic motivation, identified regulation, mastery approach goals and psychological need

satisfaction than obsessive passion is. Obsessive passion is also associated with maladaptive forms of motivational regulation, including introjected regulation, external regulation, amotivation, and performance avoidance goals.

Positive cognitive outcomes such as concentration, flow and self-esteem were mainly attributed to harmonious passion, while negative cognitive outcomes such as anxiety, rumination and work-life imbalance were attributed to obsessive passion. When it comes to behavioural and performance outcomes (e.g. deliberate practice, hours per week of behavioural engagement, objective and subjective performance), both harmonious passion and obsessive passion are more or less equal in their associations and non-correlations with behavioural engagement and performance except for obsessive passion, which is more related to activity dependence than harmonious passion (Curran et al., 2015). This means that both harmonious passion and obsessive passion can initially contribute to higher engagement and performance up to the point where the obsessively passionate individual's identity is consumed by the activity or work causing conflict with other life activities, resulting in less adequate outcomes (Vallerand et al., 2003a). It is important to note that findings of the aforementioned studies were all based on the results obtained through the use of the passion scale (Vallerand et al., 2003b).

The development of the passion scale

Vallerand et al. (2003a) developed the passion scale to measure the dualistic nature of passion in various domains, including that of work. During the development of the scale, Vallerand et al. (2003a) conducted various studies. The initial exploratory and confirmatory factor analysis reduced the initial item pool of 34 to 14 (7 harmonious passion and 7 obsessive passion items) and confirmed the two-factor structure of the passion scale. Cronbach's alphas of .79 and .89 were obtained for harmonious passion and obsessive passion, respectively, while the sub-scale correlation was .46. In their following three studies, Cronbach alphas of between .71 and .84 were obtained for harmonious passion, while Cronbach alphas of between .85 and .92 for obsessive passion were obtained.

Since the development of the passion scale various other researchers have reported on its psychometric properties. The two-factor structure of the scale was confirmed (see: Parastatidou et al., 2012; Zhao, St-Louis, & Vallerand, 2015; Lajom, Amarnani, Restubog, Bordia, & Tang, 2017), while acceptable Cronbach alphas ranging between .76 and .88 for obsessive passion and .85 and .92 for harmonious passion were obtained (see: Junot, Paquet, & Martin-Krumm,

2017; Lalande et al., 2017; Zito & Colombo, 2017). The scale was also found to have a good factor structure internal consistency and construct validity (Marsh et al., 2013). Marsh et al. (2013) also indicated that the items of the passion scale were suitable for measuring passion within different contexts, such as leisure, sport, social, work and education, despite the gender or language (English or French) of participants. In addition to English and French, the passion scale has also been translated to a number of other languages, e.g. Chinese (Zhao et al., 2015), Spanish (Chamarro et al., 2015), and Italian (Zito & Colombo, 2017), and used with success. Burke et al. (2015) showed that the passion scale was adequate for use in cross-cultural studies.

Except for the pilot study of Rabie (2018; Chapter 1) referred to earlier, no other studies were found using the passion scale within the South African context. The aforementioned study confirmed the two-factor structure of the passion scale and obtained Cronbach alphas of .81 and .85 for harmonious passion and obsessive passion, respectively, while the correlation between harmonious passion and obsessive passion was found to be .53. It is important to note here that Rabie (2018) administered the passion scale using the original scale instructions and items. Although the instructions of the passion scale allow researchers to administer it within different contexts, the present study considered it important also to adjust the scale items in order to contextualise it in terms of nursing. This entailed adding a specific frame-of-reference (i.e. nursing or nurse) to each item. It was therefore warranted to investigate the impact of adding a frame-of-reference to the psychometric properties of a contextualised version of the passion scale. Excluding the frame-of-reference may have implications for internal consistency reliability and criterion validity of the passion scale sub-scales. The present study investigated the possible frame-of-reference effects of the passion scale based on an extensive body of literature on frame-of-reference effects in personality measures.

Frame-of-reference effect

One of the primary assumptions when using personality tests and other surveys within the organisational context is that respondents have a similar frame-of-reference (Comensoli, 2014). In the absence of a clear frame-of-reference, respondents will self-contextualise, leading to different frames-of-reference that are visible between and within respondents. Respondents will therefore either have totally different frames-of-reference or change their frame-of-reference for different items that measure the same construct (Bowling & Burns, 2010). These inconsistencies can influence the psychometric properties of a measuring instrument (Bowling

& Burns, 2010). Using a frame-of-reference in a measuring instrument may address these inconsistencies by increasing respondent consistency (Mlinarič & Podlesek, 2013). It may also increase the predicative validity of contextualised measuring instruments over non-contextualised instruments (Shaffer & Postlethwaite, 2012; Ovidiu, 2015).

Countering the frame-of-reference effect is regarded as a method of improving the measurement of constructs (Ovidiu, 2015). It involves the provision of context (such as: at work, at home, at school, etc.) to the measure to ensure that the answers of respondents are based on the same frame-of-reference. This may be achieved by adapting test instructions or test items (Mlinarič & Podlesek, 2013). Contextualisation provides different respondents with the same frame-of-reference that may clarify item meaning and assist in lowering measurement error (Pace & Brannick, 2010). The frame-of-reference allows respondents to answer items more specifically and to provide a more accurate picture of themselves. It also increases reliability and validity of contextualised instruments by reducing measurement error (Bing, Whanger, Davison, & VanHook, 2004).

The addition of a frame-of-reference to the items of the passion scale required further investigation into its psychometric properties. Analysis and development of standardised tests can be approached via two theories, i.e. the classical test theory (CTT) and the item response theory (IRT). Although item statistics such as item difficulty and item discrimination form part of CTT, its major focus is, however, on test-level information (Wiberg, 2004; Güler, Uyanik, & Teker, 2014). CTT assumes that respondents on a test have an observed and a true score. The strength of an attribute (ability) is defined by the observed score that is determined by adding or subtracting unobservable measurement error from the true score of a respondent (Wiberg, 2004; Hendriks, Fyfe, Styles, Skinner, & Merriman, 2012).

Criticism against CTT revealed that: (1) the true scores of respondents do not reflect their real characteristics, since it is dependent on test content; and (2) that the variability of item difficulty depends on the sample of respondents being tested (Wiberg, 2004). The respective implications of the above are that: (1) different results will be obtained on either challenging or non-challenging tests based on the ability levels of respondents; and (2) that comparisons of respondents' test results become more complicated between different tests (Wiberg, 2004). The criticism and limitations of CTT made way for IRT to come to the fore.

Noventa, Stefanutti, and Vidotto (2014) stipulate that IRT and Rasch models are the most important frameworks for modelling and for investigations into the process of measurement in

psychometric testing. In contrast to CTT, IRT focuses on the item-level information, where the ability of the respondent is not dependent on the content of the test and item statistics are not dependent on the group (sample) (Güler et al., 2014). When IRT is applied, trait levels (the probability that a respondent will provide a correct response on an item) are calculated by using different person and item parameters. The intention of IRT models is to fit the response model to the data, meaning that the model of the trait, attitude or ability must be changed in order to fit the data, which is based on the measuring instrument (Hendriks et al., 2012; Boone, Staver, & Yale, 2014).

The Rasch model (also classified under IRT) focuses on fitting the data to the model, meaning that it allows for items to be rescored or removed to improve the instrument to such an extent that the trait, attitude or ability under scrutiny is adequately measured (Hendriks et al., 2012; Boone et al., 2014). The Rasch model is a probabilistic one through which the relationships among the ability of the person and the difficulty of the items or separate confirmations on every one of the unidimensional items can be determined (De Klerk, Nel, Hill, & Koekemoer 2013). The Rasch analysis generates a great deal information that can be used to check the quality of item performance of an instrument, while also indicating whether an instrument should be modified to improve the measurements of the traits under scrutiny (Hendriks et al., 2012).

In addition, it can also be used to examine the functioning of the rating scale within a measuring instrument to ensure that respondents respond in a consistent manner to the different response options. Inconsistencies usually occur in the presence of too many response options or where confusion about labelling options exists. Inconsistencies can be addressed by collapsing problematic categories to improve model fit (Pallant & Tennant, 2007). The Rasch model is therefore considered adequate for use in this study.

Rasch analysis provides a great deal of information pertaining to the quality of items in an instrument. Given that changes were to be made to the items of the passion scale in order to include a frame-of-reference, this information was expected to be very useful to determine the operating characteristics of a contextualised passion scale. Additionally, it will also assist in comparing the operating characteristics of an adapted version of the passion scale with the original version.

RESEARCH DESIGN

Research approach

A quantitative approach was followed, while a cross-sectional design was used in the research. The design is well known for its use when surveys or questionnaires are used in research (Mathews & Ross, 2010). The design was also appropriate in the current study where a comparison was made between an original and adapted version of the passion scale and its appropriateness for the South African nursing context. Primary data was analysed by making use of various Rasch analyses procedures to compare the original and adapted versions of the passion scale.

RESEARCH METHOD

Research participants

Inclusion criteria required the participation of registered professional and student nurses who were either enrolled for or who have completed a four-year integrated nursing degree or diploma. All participants had to be registered with the South African Nursing Council (SANC) as either a professional or student nurse. Purposive non probability sampling was used to sample any nurses adhering to these inclusion criteria. Full-time nursing students on the first to fourth-year levels were approached at a tertiary education institution (TEI) in South Africa. Professional registered nurses included students who were enrolled for a post-basic qualification in nursing via a distance learning programme of the same university, as well as nursing educators. Post-basic students were employed across South Africa in different practice environments. Convenience sampling was used to collect all data from one specific TEI. Data was collected between over a period of three months. Table 1 reflects the biographic information of the participants.

Table 1

Characteristics of participants (n = 447)

Item	Category	Frequency	Percentage
Gender	Male	29	6.49%
	Female	416	93.5%
	Missing values	2	0.4%
Age	18-27	246	55.03%
	28-37	63	14.08%
	38-47	78	17.44%
	48-57	38	8.50%
	58-67	13	2.91%
	68-77	1	.22%
	Missing values	8	1.79%
Ethnicity	African	199	44.52%
	Coloured	22	4.92%
	Indian	6	1.34%
	White	217	48.55%
	Other	1	.22%
	Missing values	2	.45%
Language	English	25	5.59%
	Afrikaans	221	49.44%
	isiXhosa	25	5.59%
	isiNdebele	2	.45%
	isiZulu	25	5.59%
	Sepedi	17	3.80%
	Sesotho	27	6.04%
	Setswana	71	15.88%
	SiSwati	1	.22%
	Tshivenda	13	2.91%
	Xitsonga	7	1.57%
	Missing values	13	2.91%
Employment 2017	Employed registered nurse	179	40.04%
	Full-time student	250	55.93%
	Missing values	18	4.03%
Employed participants' province	Eastern Cape	24	13.41%
	Gauteng	32	17.88%
	Free State	3	1.68%
	KwaZulu-Natal	20	11.17%
	Limpopo	16	8.94%
	Mpumalanga	4	2.23%

Item	Category	Frequency	Percentage
	Northern Cape	1	0.56%
	North West	72	40.22%
	Western Cape	2	1.12%
	Missing values	*5*	2.79%
Nursing students 2017	1st year	77	30.80%
	2nd year	39	15.60%
	3rd year	66	26.40%
	4th year	50	20.00%
	Missing values	*18*	7.20%

*Employed registered nurses includes: Post-basic students and other nursing employees.

After cleaning the original dataset, a total sample (*n*=447) was included for statistical analysis. Since nursing is a female-dominated profession, it was not strange to see that 94% of the sample consisted of females and only 6% males. More full-time students (56%) were included in the study than employed registered nurses (40%); therefore, most participants (55%) were aged between 18 and 27. This was followed by the 38 to 47 year age bracket (17%) and the 28 to 37 year age bracket (14%). Most participants were either white (49%) or African (45%). Afrikaans (49%) was the language spoken by most participants, followed by Setswana (16%), and the nine remaining official South African languages. Most of the employed registered nurses were stationed in the North West (40%), followed by Gauteng (18%), KwaZulu-Natal (11%) and Limpopo (9%). Full-time nursing students included in the sample were mostly represented by first-year students (31%), followed by third-year (26%), fourth-year (20%), and second-year (16%) students. Since all these students were approached at a single university and practical work was mostly done within the same province as where the university is located, the provinces of students were not reported.

Measuring instruments

The passion scale, developed by Vallerand et al. (2003a, 2003b) and an adapted version of the same scale were used to collect the data. In the adapted version, 'this activity' was substituted with either 'nurse' or 'nursing'; the changes were made to add a frame-of-reference to the item and to contextualise the scale for the nursing profession. Both 17-item scales were administered in different sections of a test battery related to a broader study to profile the passionate South

African nurse. A seven-point Likert scale ranging between 1 (not agree at all) and 7 (very strongly agree) was used to assess the items. Both harmonious passion and obsessive passion were assessed with six items (e.g. *"My activity is well integrated in my life"; "I have almost an obsessive feeling for this activity." respectively*). Cronbach alphas ranging between .73 and .94 for harmonious passion and .85 and 94 for obsessive passion were obtained in studies by Vallerand et al. (2003a), Ho, Wong, and Lee (2011), Astakhova and Porter (2015), and Burke et al. (2015).

Research procedure and ethical considerations

Ethical clearance (ethical number: EMS15/04/21-01/04) was obtained to conduct the study and permission was obtained from the Research Data Gatekeeper Committee of the University to collect data from its personnel and students. Permission was then also obtained from the management of the relevant departments where data was collected. Regarding full-time students and personnel, arrangements were made to hand out the survey booklets and to collect it at a later stage. In the case of those students who were enrolled for a distance learning post-basic qualification, the survey booklets were couriered to the relevant study centres. Since classes only took place on Saturdays, arrangements were made with the study centre co-ordinators to distribute and collect the completed booklets over a period of three months. Students were reminded on a weekly basis to return the completed booklets to their study centres. The different study centre co-ordinators couriered the completed booklets back to the researcher. All the data was then combined and entered into an Excel spreadsheet by the University's Statistical Consultation Services for further data analysis.

In terms of ethical considerations, the survey booklets explained to potential participants what the research was all about, that their participation was voluntary and that no incentives were to be given in return for their participation. Although biographic information may sometimes identify some participants based on the type of information collected, we collected this information anonymously and assured participants of their confidentiality in terms of the information they provided.

Statistical analysis

The psychometric properties of both the original and adapted sub-scales of the passion scale were analysed using the Rasch Unidimensional Measurement Model software (RUMM2030) (Andrich & Sheridan, 2009). Since more than two response categories were present, a polytomous Rasch model was applied (Hecimovich & Marais, 2017). Items of the passion scale had the same thresholds and therefore a rating scale parameterisation of the Rasch model was used (Houhton et al., 2015). Statistical analysis was done in the following sequence:

Thresholds

Thresholds involve determining whether participants responded according to the intended ordering of the scale under investigation (Hendriks et al., 2012). Disordered thresholds, a common cause of misfit, were identified by studying the threshold maps and category probability curves. Thresholds refer to that point between two response categories of a scale where the participant is equally likely to score on either category (Pallant & Tennant, 2007). The number of thresholds is equal to the number of response categories minus one. The original and adapted passion scales both had seven response categories (with six thresholds): (1) not agree at all, (2) very slightly agree, (3) slightly agree, (4) moderately agree, (5) mostly agree, (6) strongly agree and, (7) very strongly agree. When a disordered threshold is present, the intended response category is not likely to capture all the most likely responses of whatever underlying level of a trait is being measured (Christensen, Oernboel, Zatzick, & Russo, 2017). Item misfit often occurs in the form of disordered thresholds when participants or raters are inconsistent in the use of response options (Elhan, Küçükdeveci, & Tennant, 2010). The response category probability curves were specifically used to determine whether participants responded as was intended (Hendriks et al., 2012). Based on the analysis, decisions were made whether response categories should be collapsed (grouped together) in order to improve model fit or not.

If changes to the thresholds were made, it was also necessary to examine the person separation index (PSI) (similar to the Cronbach's alpha coefficients) in order to determine the effect it had on the reliability of the scale (De Bruin, Hill, Henn, & Muller, 2013). This is a test to establish whether a scale could distinguish between persons with varying levels of an underlying trait (Christensen et al., 2017).

Model fit

A *chi-square item-trait interaction statistic* was used to test the fit of the sub-scales of both the original and adapted versions of the passion scale. Overall fit to the Rasch model was indicated with a non-significant chi-square probability value. When chi-square is significant, it reflects that the hierarchical ordering of items differs across the trait, thereby compromising invariance (Pallant & Tennant, 2007; Elhan et al., 2010). In order to compensate for multiple testing Bonferroni adjustments were made to the chi-square significance tests (Pallant & Tenant, 2007; Rutherford, Nixon, Brown, Lamping & Cano, 2014; Hendriks et al., 2012). Model fit was achieved when the *p*-value was higher than the Bonferroni adjustment. Bonferroni adjustments were made based on the number of items included in the two sub-scales of the passion scale (Hendriks et al., 2012).

Individual item and person fit to the Rasch model was indicated with item-person interaction statistics. The mean item log residual test of fit was used to assess overall fit of the original and adapted sub-scale items of the passion scale to the Rasch model. This test calculated the mean across all items; the closer the mean moved to 0 and a standard deviation (*SD*) of 1, the more the items fitted the model (Hendriks et al., 2012). The mean person log residual test of fit was used to determine the overall fit between persons and the model. A mean close to 0 and an *SD* closer to 1 were regarded as acceptable for fit to the model. The two tests only provide some idea of overall fit but are not indicative of specific misfit on item or person level (Christensen et al., 2017).

The *item characteristic curve (ICC)* indicated the probability of a response over a range of participant locations and whether the ordering was as intended (Hendriks et al., 2012). When the chi-square test is conducted, it is hypothesised that there is no difference between the actual and expected values on a specific item characteristic curve (ICC) (Hendriks et al., 2012). Fit between actual and expected values was indicated where participant locations were either on or very close to the expected locations.

Person-item targeting

Person-item targeting (or alignment) was investigated to determine whether the sub-scales of the original and adapted versions of the passion scale appropriately targeted the population that was assessed. The mean location score for persons was compared with a value of zero that was based on the mean difficulty of items contained in the sub-scales (Christensen et al., 2017). A

person-item threshold distribution map was used to assess both the ability of the participants and the difficulty level of the items. If the sub-scales of the original and adapted passion scale were well targeted, the person locations would also have been centred on zero (Tennant & Conaghan, 2007; Christensen et al., 2017). The PSI of the scale will be an indication of its internal consistency or reliability. The values of the PSI and Cronbach's alpha are close to one another when there is good alignment between persons and items and when complete data is available (RUMM Laboratory, n.d.). Both share similar cut-off values of .70 for group use and .85 for individual use (Di Pietro et al., 2014; Pontekotto & Ruckdeschel, 2007; Tennant & Conaghan, 2007).

Item dependency (local independence)

The Rasch model makes the assumption of local independence, which refers to the requirement that responses on items are independent of responses to other items. The local independence assumption can be violated by means of response dependence or multidimensionality (Andrich & Kreiner, 2010). In order to check for local independence, the patterns among the standardised item residuals were examined visually; high correlation among these item residuals indicated that the assumption of local independence was violated (Ayele, Zewotir, & Mwambi, 2014). In line with Hill (2015), an inter-item residual correlation larger than $r = 0.4$ was considered indicative of item dependency (local dependence). Another check for the violation of local independence in terms of multidimensionality involved a principal component analysis (PCA) of item residuals (Hill, 2015). This entails that there should be no meaningful or left-over patterns in the residuals after the main scale (Rasch factor) is extracted (Tennant & Conaghan, 2007). The scale under investigation was considered to be unidimensional when the PCA revealed no meaningful patterns in the residuals (Ayele et al., 2014)

Differential item functioning (DIF)

Another check for scale integrity was to test for the presence of item bias or DIF that may affect model fit (Tennant & Conaghan, 2007). The various scales were checked for DIF to determine whether different groups in the sample responded differently to a specific item of the scales, even though they had matching levels of the underlying trait (Christensen et al., 2017). Each item of the sub-scales was compared across ethnicity and class interval by means of analysis of variance together with a Benforoni-adjusted significance level. A consistent systematic

difference in responses to items was indicative of uniform DIF, while an inconsistent difference in responses was indicative of non-uniform DIF.

In order to address DIF, the procedure of Hagquist and Andrich (2017) was followed: (1) an analysis of variance (ANOVA) of residuals (of original item set) was performed, (2) F-values of the items were rank ordered; if the values were found to be statistically significant, the item with the highest F-value was seen as revealing real DIF, (3) the item with the highest F-value was resolved and ANOVA was repeated on all items, including the resolved item simultaneously, (4) the aforementioned steps were repeated on the revised item set, (5) steps one to three were repeated again until there was no further real DIF present, and (6) decisions were made about retaining or removal of items. Resolving non-uniform DIF usually involves the splitting of the item by group and separately calibrating the items for each group; should this not resolve the issue, removing the item should be considered (Ayele et al., 2014; Müller, 2012; Pallant & Tennant, 2007). ICC was also used to examine DIF. Uniform DIF was expected to appear on the ICC as parallel lines, while non-uniform DIF was expected to appear as non-parallel lines (Van der Wal, Tuinebreijer, Lundgren-Nilsson, Middelkoop, & Van Zuijlen, 2014). The PSI was used to determine whether changes that were made to the scale influenced the reliability thereof (De Bruin et al., 2013)

Multidimensionality and equating sub-scales

To determine whether the original and adapted versions of the passion scale are similar, Rasch analysis on the unidimensionality of the different versions of the passion sub-scales was done by using the PCA/*t*-test protocol. According to Hagell (2014, p.456), this test involves: (1) the identification of two item sets from the PCA of residuals, (2) an estimation of separate person measures based on these two item sets, (3) conducting *t*-tests to compare the two estimates on a person-by-person basis, and (4) identifying the number of cases with a significant difference at the 0.05 level. The *t*-test estimates outside the -1.96 to 1.96 range should not exceed 5% (Elhan et al., 2010). When both the original and the adapted sub-scales are combined, multidimensionality would be evident through inspecting the PCA's factor loading patterns were inspected on the first component; positive and negative loadings on the first component would be indicative of subsets of items (Lundström & Pesudovs, 2009). Furthermore, multidimensionality will be present when more than 5% of the *t*-tests are significant.

RESULTS

Participants with extreme scores were deleted before the analyses were done for the various sub-scales (original harmonious passion subscale: n = 423; adapted harmonious passion subscale: n = 422; original obsessive passion subscale: n = 423; adapted obsessive passion subscale: n = 439).

Within each of the following sections below the results of both the original harmonious passion subscale and adapted harmonious passion subscale are reported, followed by the results of the original obsessive passion subscale and adapted obsessive passion subscale. This format enables one to immediately observe the differences in results between the original and adapted versions of the harmonious passion subscale as well as between the original and adapted versions of the obsessive passion subscales.

Thresholds

Harmonious passion subscales

Item 4 showed disordered thresholds for both the original harmonious passion subscale and adapted harmonious passion subscale. Participants were not able to differentiate sufficiently between *Not agree at all* and *Very slightly agree;* therefore, the categories for all the items were collapsed and rescored as follows: *Not agree at all* and *Very slightly agree* both '0', *Slightly agree* '1', *Moderately agree* '2', *Mostly agree* '3', *Strongly agree* '4', and *Very strongly agree* '5'. Figure 1 represents the response category probability curve for Item 4 of the original harmonious passion subscale before and after changes were made to the response categories. After rescoring, no more disordered thresholds were found.

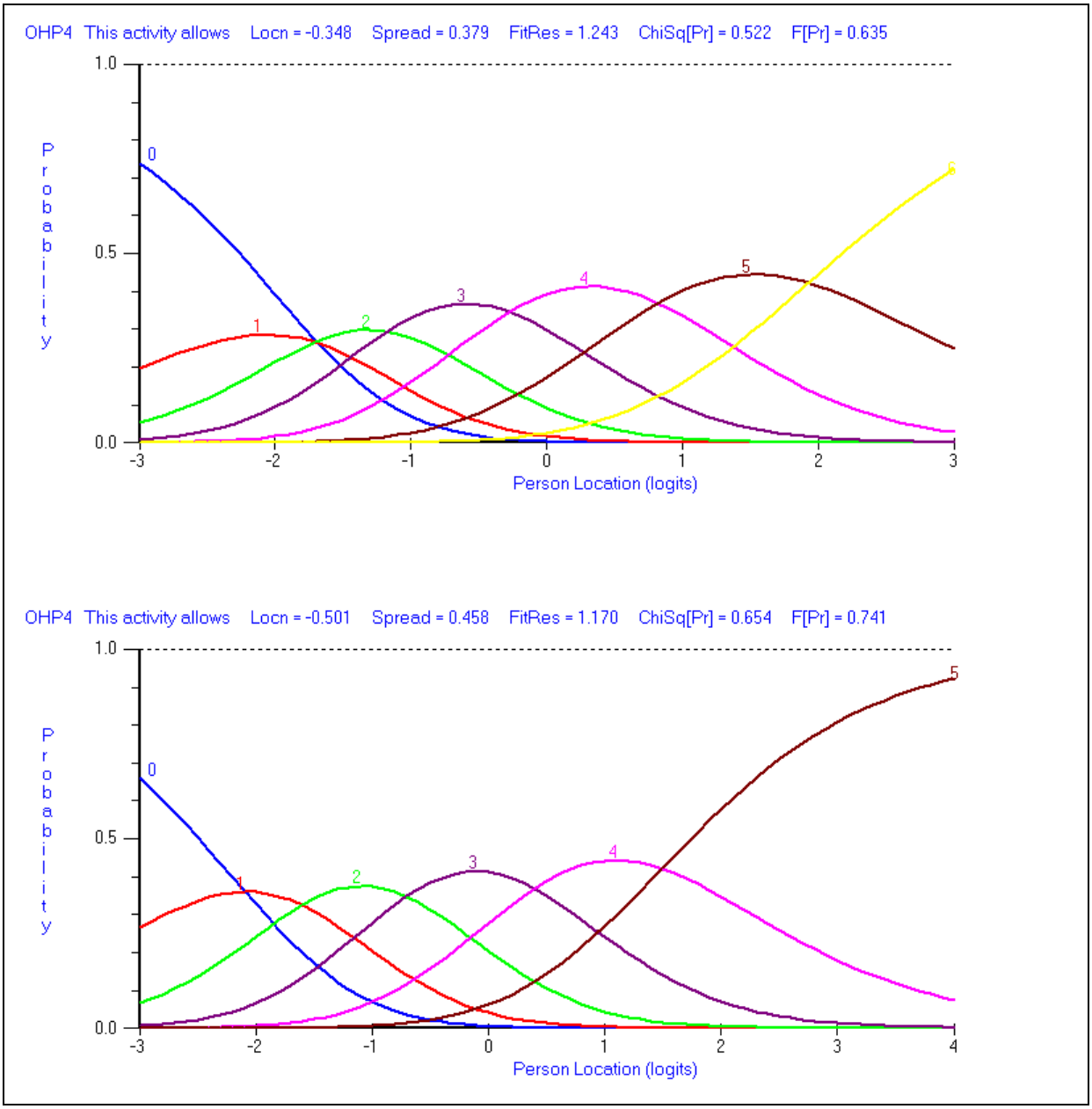

Figure 1: *Response category probability curves before the rescoring of Item 4 of the original harmonious passion subscale (top) and after rescoring (bottom)*

Obsessive passion subscales

The thresholds of Item 1 and 6 of the original obsessive passion subscale were found to be disordered; on the adapted obsessive passion subscale disordered thresholds were found for all items except that of Item 5. Participants were not able to differentiate sufficiently between *Very slightly agree* and *Slightly agree;* therefore, the categories for all the items were collapsed and rescored as follows: *Not agree at all* '0', *Very slightly agree* and *Slightly agree* both '1',

Moderately agree ‘2’, *Mostly agree* ‘3’, *Strongly agree* ‘4’, and *Very strongly agree* ‘5’. After rescoring, no more disordered thresholds were found.

Model fit

Table 2 indicates the fit statistics ordered by item location for the original and adapted harmonious passion subscales, the original and modified original obsessive passion subscales and the adapted and modified adapted obsessive passion subscales.

Table 2

Fit statistics ordered by item location

Statement	Location	SE	Fit residual	χ2	*p*
Original harmonious passion subscale (n = 423)					
1 This activity is in harmony with the other activities in my life	0.536	0.050	2.491	4.938	0.552
2 The new things that I discover with this activity allow me to appreciate it even more	-0.377	0.055	1.682	6.266	0.394
3 This activity reflects the qualities I like about myself	-0.498	0.055	-1.519	5.803	0.446
4 This activity allows me to live a variety of experiences	-0.501	0.055	1.170	4.170	0.654
5 My activity is well integrated in my life	0.291	0.054	-1.188	7.667	0.264
6 My activity is in harmony with other things that are part of me	0.549	0.053	-1.106	13.689	0.033
Adapted harmonious passion subscale (n = 422)					
1 Nursing is in harmony with the other activities in my life	0.619	0.050	1.977	9.014	0.173
2 The new things that I discover with nursing allow me to appreciate it even more	-0.636	0.056	1.447	6.765	0.343
3 Nursing reflects the qualities I like about myself	-0.383	0.054	-1.030	7.081	0.313
4 Nursing allows me to live a variety of experiences	-0.413	0.052	1.569	12.189	0.058
5 Nursing is well integrated in my life	0.218	0.054	-0.973	7.653	0.265
6 Nursing is in harmony with other things that are part of me	0.594	0.053	-1.626	6.646	0.355
Original obsessive passion subscale (n = 432)					
1 I have difficulties controlling my urge to do my activity	**0.451**	**0.050**	**5.616**	**47.872**	**0.000**
2 I have almost an obsessive feeling for this activity	-0.25	0.047	-1.3	12.94	0.044
3 This activity is the only thing that really turns me on	-0.257	0.046	-0.561	7.679	0.263
4 If I could, I would only do my activity	-0.234	0.045	-0.571	7.571	0.271
5 This activity is so exciting that I sometimes lose control over it	**0.078**	**0.048**	**-2.672**	**22.533**	**0.001**
6 I have the impression that my activity controls me	0.212	0.047	1.637	4.709	0.582
Modified original obsessive passion subscale (n = 432)					
2 I have almost an obsessive feeling for this activity	-0.176	0.051	-0.250	8.656	0.194
3 This activity is the only thing that really turns me on	-0.197	0.049	0.290	4.312	0.635
4 If I could, I would only do my activity	-0.167	0.048	0.870	5.968	0.427
5 This activity is so exciting that I sometimes lose control over it	0.197	0.052	-1.426	11.045	0.087
6 I have the impression that my activity controls me	0.344	0.050	**2.990**	6.715	0.348
Adapted obsessive passion subscale (n = 432)					
1 I have difficulties controlling my urge to nurse	**0.320**	**0.041**	**5.281**	**37.713**	**0.000**
2 I have almost an obsessive feeling to nurse	-0.253	0.043	-2.070	17.649	0.007
3 Nursing is the only career that really turns me on	-0.329	0.041	-0.540	15.237	0.018
4 If I could, I would only do nursing	-0.149	0.040	-2.770	18.106	0.006
5 Nursing is so exciting that I sometimes lose control over it	0.148	0.044	-0.936	11.664	0.070
6 I have the impression that nursing controls me	0.263	0.041	2.359	3.585	0.733
Modified adapted obsessive passion subscale (n = 432)					
2 I have almost an obsessive feeling to nurse	-0.197	0.045	-0.507	9.177	0.164
3 Nursing is the only career that really turns me on	-0.302	0.044	-0.283	9.411	0.152
4 If I could, I would only do nursing	-0.097	0.042	-2.231	16.035	0.014
5 Nursing is so exciting that I sometimes lose control over it	0.239	0.046	0.144	3.051	0.802
6 I have the impression that nursing controls me	0.357	0.044	3.461	6.964	0.324

Bonferroni adjusted significance level: 0.002

Harmonious passion subscales

For the original harmonious passion subscale, the fit between the model and the data after rescoring was good, given the non-significant item-trait interaction results (χ^2 = 42.533; *df* = 36; *p* = 0.210), as well as the item fit residual mean (0.255) and *SD* (1.730). Similarly, the fit between the model and the data after rescoring for the adapted harmonious passion subscale was also good, given the non-significant item-trait interaction results (χ2 = 49.347; df = 36; p = 0.068), as well as the item fit residual mean (0.227) and *SD* (1.601). The item that was seemingly the easiest to endorse for the original harmonious passion subscale, was Item 4 '*This activity allows me to live a variety of experiences*'; while participants found it most difficult to endorse Item 6 '*My activity is in harmony with other things that are part of me*'. For the adapted harmonious passion subscale participants found Item 2 '*The new things that I discover with nursing allow me to appreciate it even more*' the easiest to endorse; while Item 1 '*Nursing is in harmony with the other activities in my life*' was the most difficult to endorse. No items had significant chi-square values less than the Bonferroni-adjusted value of 0.002, and therefore no item misfit was present within the model.

Obsessive passion subscales

Table 2 also indicates the fit statistics ordered by item location for both the original obsessive passion subscale and adapted obsessive passion subscale. In terms of the model fit, the original obsessive passion subscale had an item fit residual mean of 0.358 and an *SD* of 2.930; the adapted obsessive passion subscale had an item fit residual mean of 0.221 and an *SD* of 3.043. Since the *SD* is expected to be much closer to 1, given the overall adequate fit of the model, the nonconformity was reinforced in both the original obsessive passion subscale and adapted obsessive passion subscale by the significant chi-squared interaction of 103.305 (*df* = 36) with *p* = .000. There is therefore lack of invariance in terms of item difficulty across the original obsessive passion subscale and adapted obsessive passion subscale.

In the case of the original obsessive passion subscale, this was most likely due to the significant misfit of both Item 1 (*I have difficulties controlling my urge to do my activity*) and Item 5 (*This activity is so exciting that I sometimes lose control over it*) to the model (using the Bonferroni-adjusted value of 0.002). In the adapted obsessive passion subscale, this was mostly ascribed to the significant misfit of Item 1. The misfitting items may imply that these items could be seen as noise within the sub-scales, since it does not measure the underlying construct. To improve the overall fit, the misfitting items were deleted from the original obsessive passion

subscale using an iterative process where the most misfitting item was deleted first. After deletion of Item 1, the remainder of the items did not display significant misfit and the overall item-trait fit statistics were non-significant ($\chi 2 = 36.697$; df = 30; p = 0. 186) and the item fit residual mean (0.495) and *SD* (1.632) improved. The same process was followed with the adapted obsessive passion subscale although only Item 1 was deleted. There was no significant misfit found among the rest of the items after deletion of Item 1, while the overall item-trait fit statistics were also found to be non-significant ($\chi 2 = 44.637$; df = 30; p = 0. 042). Both the item fit residual means and *SDs* improved to 0.117 and 2.076, respectively.

Person-item targeting

Harmonious passion subscales

For the original harmonious passion subscale (Figure 2), the person locations were fairly positively skewed with a mean of 0.480 (*SD* = 1.228), indicating the presence of higher levels of harmonious passion; while the person locations for the adapted harmonious passion subscale (Figure 3) were very much positively skewed with a mean of 0.737 (*SD* = 1.149), indicating the presence of high levels of harmonious passion. The PSI of reliability was .85 and Cronbach's alpha was .87, and .82 and .84, respectively, for the adapted harmonious passion subscale; therefore, the persons were sufficiently separated on the continuum during the analysis.

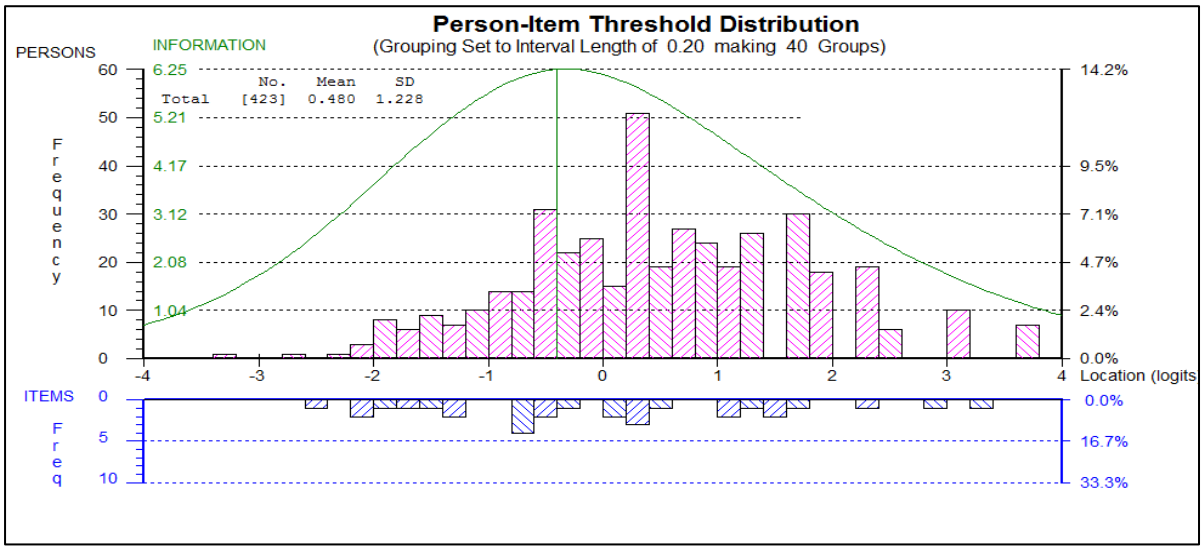

Figure 2: *Person-item threshold distribution – Original harmonious passion subscale*

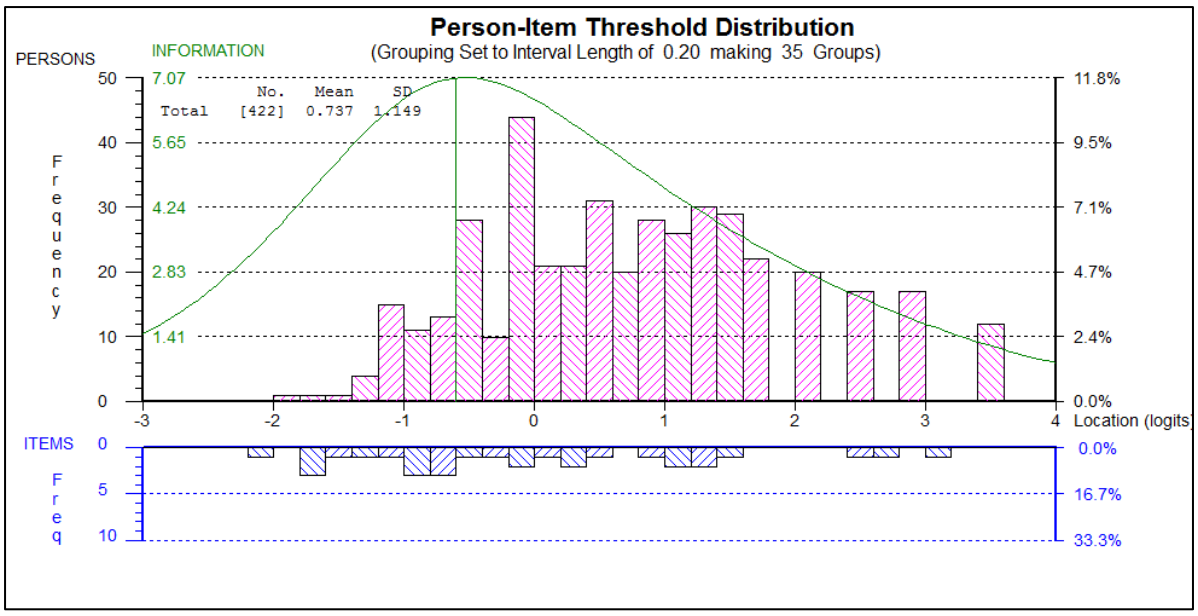

Figure 3: *Person-item threshold distribution – Adapted harmonious passion subscale*

Although item and person locations were well spread for both harmonious passion sub-scales, gaps can be identified in the item range.

Obsessive passion subscales

Person locations of the modified original obsessive passion subscale were fairly negatively skewed with a mean of -0.440 and *SD* of 1.311, indicating that lower levels of obsessive passion were present. In contrast, the modified adapted obsessive passion subscale was fairly normally distributed with a mean of -0.110 and *SD* of 1.028, indicating an average presence of obsessive passion. The PSI of reliability and Cronbach's alpha of the modified original obsessive passion subscale were .83 and .86, respectively, while those of the modified adapted obsessive passion subscale were .77 and .81, respectively. This indicated that persons were adequately separated on the continuum during the analysis.

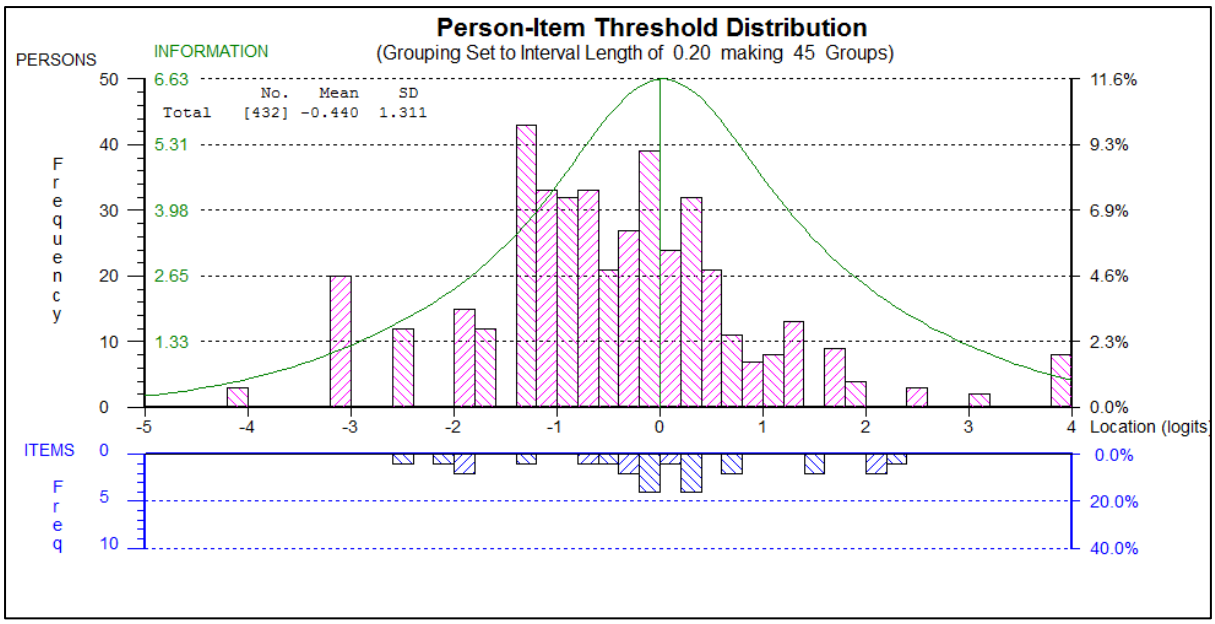

Figure 4: *Person-item threshold distribution – Modified original obsessive passion subscale*

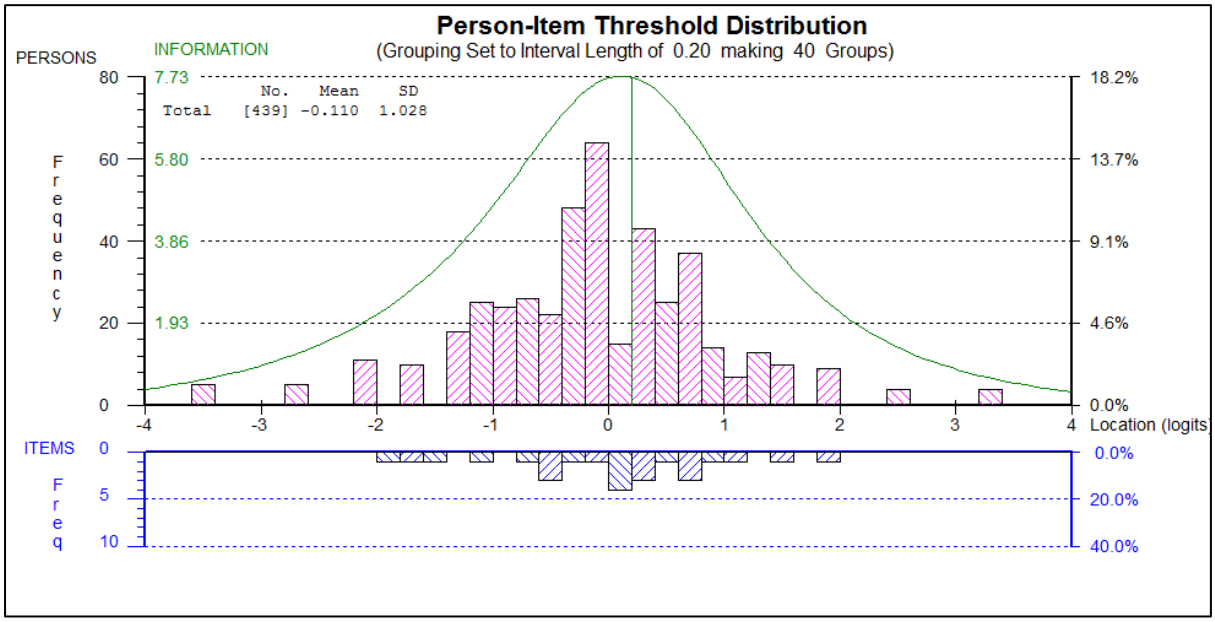

Figure 5: *Person-item threshold distribution – Modified adapted obsessive passion subscale*

The Person-item threshold distribution of both the modified original obsessive passion subscale (Figure 4) and modified adapted obsessive passion subscale (Figure 5) showed that item and person locations were well spread, but that gaps existed in the item range (more so in the modified original obsessive passion subscale than the modified adapted obsessive passion subscale). The modified adapted obsessive passion subscale items showed better fit than the

modified original obsessive passion subscale items in the sense that they were more centralised beneath the person locations.

Item dependency

Harmonious passion subscales

The person-item residual correlation matrix for the original harmonious passion subscale showed that two pairs of items surpassed the guideline of .40. Items 1 (*This activity is in harmony with the other activities in my life*) and 4 (*This activity allows me to live a variety of experiences*) had a correlation of -.441, and 4 (*This activity allows me to live a variety of experiences*) and 6 (*My activity is in harmony with other things that are part of me*) had a correlation of -.411. The results could therefore imply that Item 4, given that it correlated highly with two items, does not add any additional information to the scale and captures variation common to other items. It is noteworthy that Item 4 was also the item that initially displayed disordered thresholds, and which was the easiest to endorse within this subscale. The adapted harmonious passion subscale displayed no person-item residual correlations above .40.

Obsessive passion subscales

The modified original obsessive passion subscale displayed no person-item residual correlations above .40. Person-item residual correlations above .40 were, however, found for the modified adapted obsessive passion subscale among three pairs of items: Item 3 (*This activity is the only thing that really turns me on*) and Item 5 (*This activity is so exciting that I sometimes lose control over it*) had a correlation of -.413; Item 3 and Item 6 (*I have the impression that my activity controls me*) had a correlation of -.479, while Item 4 (*If I could, I would only do my activity*) and 6 had a correlation of -.492. Item 3 correlated highly with the two items (Item 5 and Item 6) that might be an indication that it did not add additional information to the subscale, but rather captured variation present in the other items; Item 3 was also the easiest item to endorse in the sub-scale. The same goes for Item 6 that correlated with the two items (Item 3 and Item 4), but in contrast was the most difficult item to endorse in the subscale.

DIF

The analyses of variance (ANOVA) based on the standardised residuals of the various sub-scales are presented in Table 3.

Table 3

ANOVA of residuals for test of DIF across ethnicity; number of class intervals = 7

	Statement	Probability values		
		Class interval	**Ethnicity**	**Ethnicity by class interval**
Original harmonious passion subscale (n = 393)				
1	This activity is in harmony with the other activities in my life	0.479	**0.000**	0.090
2	The new things that I discover with this activity allow me to appreciate it even more	0.512	0.030	0.311
3	This activity reflects the qualities I like about myself	0.361	0.376	0.710
4	This activity allows me to live a variety of experiences	0.718	**0.000**	0.475
5	My activity is well integrated in my life	0.109	0.069	0.300
6	My activity is in harmony with other things that are part of me	0.006	0.108	0.286
Adapted harmonious passion sub-scale (n = 392)				
1	Nursing is in harmony with the other activities in my life	0.078	0.012	0.379
2	The new things that I discover with nursing allow me to appreciate it even more	0.293	0.126	0.239
3	Nursing reflects the qualities I like about myself	0.071	0.091	0.200
4	Nursing allows me to live a variety of experiences	0.066	**0.000**	0.402
5	Nursing is well integrated in my life	0.200	0.530	0.064
6	Nursing is in harmony with other things that are part of me	0.044	0.395	0.078
Modified original obsessive passion sub-scale (n = 402)				
2	I have almost an obsessive feeling for this activity	0.077	0.059	0.757
3	This activity is the only thing that really turns me on	0.561	0.973	0.227
4	If I could, I would only do my activity	0.432	**0.002**	**0.000**
5	This activity is so exciting that I sometimes lose control over it	0.016	0.244	0.900
6	I have the impression that my activity controls me	0.418	0.313	0.014
Modified adapted obsessive passion sub-scale (n = 399)				
2	I have almost an obsessive feeling to nurse	0.119	0.012	0.966
3	Nursing is the only career that really turns me on	0.029	**0.000**	0.287
4	If I could, I would only do nursing	**0.001**	0.024	0.331
5	Nursing is so exciting that I sometimes lose control over it	0.788	0.013	0.362
6	I have the impression that nursing controls me	0.399	0.041	0.144

Bonferroni adjusted significance level: 0.003

Harmonious passion subscales

For both the original harmonious passion subscale and adapted harmonious passion subscale, at the Bonferroni-adjusted significance level (0.003), no significant main effects were identified in terms of the class intervals. Therefore, the six items of both scales function uniformly across the latent trait. Two items from the original harmonious passion subscale and one item of the adapted harmonious passion subscale did, however, show ethnicity-DIF. For example, a graphical comparison between the various ethnicity groups and the extent to which nursing as an activity is in harmony with the other activities in participants' lives is given in Figure 6. White participants' observed scores are located above the ICC and the African participants' observed scores are located below the curve, and, as such, signify uniform DIF.

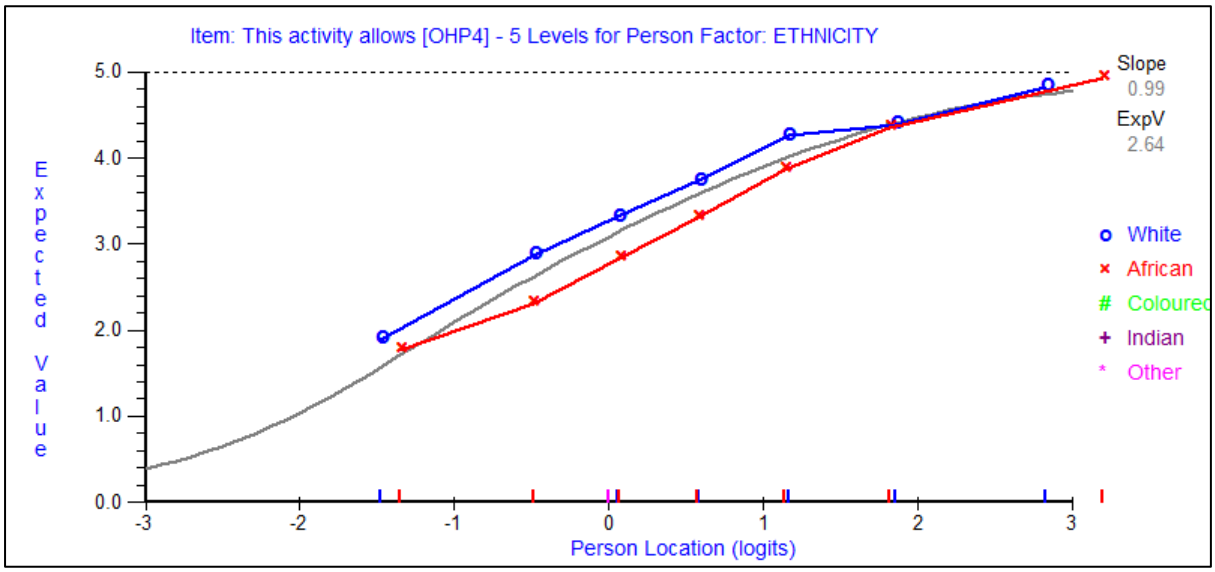

Figure 6: *ICC – Ethnicity, Item 4*

To address the ethnicity-DIF within the original harmonious passion subscale and the adapted harmonious passion subscale, the items that displayed the highest DIF was firstly resolved. In both instances, it was Item 4 that displayed the highest DIF. The re-calculated analyses of variance based on the standardised residuals for the seven-item set are displayed in Table 4 below.

Table 4

Analysis of variance of residuals for test of DIF across ethnicity, as well as tests of class interval fit; Item set resolved for DIF; number of class intervals = 7

	Probability values			
	Statement	**Class interval**	**Ethnicity**	**Ethnicity by class interval**
	Original harmonious passion subscale (n = 393). *Bonferroni-adjusted significance level: 0.003*			
1	This activity is in harmony with the other activities in my life	0.625	0.005	0.194
2	The new things that I discover with this activity allow me to appreciate it even more	0.205	0.005	0.673
3	This activity reflects the qualities I like about myself	0.541	0.105	0.503
4	**African:**	0.118	N/A	N/A
a	This activity allows me to live a variety of experiences			
4	**White:**	0.870	N/A	N/A
b	This activity allows me to live a variety of experiences			
5	My activity is well integrated in my life	0.131	0.292	0.189
6	My activity is in harmony with other things that are part of me	0.031	0.408	0.219
	Adapted harmonious passion sub-scale (n = 422). *Bonferroni-adjusted significance level: 0.002*			
1	This activity is in harmony with the other activities in my life	0.177	0.077	0.857
2	The new things that I discover with this activity allow me to appreciate it even more	0.295	0.397	0.646
3	This activity reflects the qualities I like about myself	0.204	0.381	0.760
4	**African:**	0.259	N/A	N/A
a	This activity allows me to live a variety of experiences			
4	**White:**	0.621	N/A	N/A
b	This activity allows me to live a variety of experiences			
5	My activity is well integrated in my life	0.318	0.161	0.043
6	My activity is in harmony with other things that are part of me	0.119	0.102	0.824
	Modified original obsessive passion sub-scale (n = 402). *Bonferroni-adjusted significance level: 0.004*			
2	I have almost an obsessive feeling for this activity	0.146	0.277	0.550
3	This activity is the only thing that really turns me on	0.412	0.432	0.089
4	**African**:	0.372	N/A	N/A
a	If I could, I would only do my activity			
4	**White**:	0.705	N/A	N/A
b	If I could, I would only do my activity			
5	This activity is so exciting that I sometimes lose control over it	0.063	0.722	0.971
6	I have the impression that my activity controls me	0.202	0.748	0.015
	Modified adapted obsessive passion sub-scale (n = 399). *Bonferroni-adjusted significance level: 0.004*			
2	I have almost an obsessive feeling to nurse	0.082	0.927	0.957
3	**African**:	0.232	N/A	N/A
a	Nursing is the only career that really turns me on			
3	**White**:	0.029	N/A	N/A
b	Nursing is the only career that really turns me on			
4	**African**:	0.169	N/A	N/A
a	If I could, I would only do nursing			
4	**White**:	0.011	N/A	N/A
b	If I could, I would only do nursing			
5	Nursing is so exciting that I sometimes lose control over it	0.803	0.756	0.273
6	I have the impression that nursing controls me	0.219	0.982	0.152

The PSI for the new set of items after DIF was resolved was 0.849 and 0.823 for the original harmonious passion subscale and adapted harmonious passion subscale, respectively. No items showed any DIF across either gender or ethnicity at the Bonferroni-adjusted significance levels and no further action was needed.

Obsessive passion subscales

Bonferroni-adjusted significance levels (0.003) in the ethnicity by class interval fit statistic revealed non-uniform DIF across the continuum for Item 4 of the modified original obsessive passion subscale. Differences with regard to the modified original obsessive passion subscale therefore vary across levels of the attribute in ethnicity. Item 4 was resolved by splitting the item between the two groups and the DIF analysis was rerun (see Table 4). After resolving Item 4, no further DIF was found to be present. The PSI for the new set of items after DIF was resolved was 0.83.

In the case of the modified adapted obsessive passion subscale, both uniform and non-uniform DIF was evident based on the Bonferroni-adjusted significance levels (0.003) in the ethnicity and class interval fit statistics for Item 3 and Item 4, respectively. Item 3 had a significant main effect for ethnicity and did not function invariantly across ethnicity (uniform DIF present), while Item 4 revealed a significant main effect for class interval meaning that the five items did not function uniformly across the latent trait (non-uniform DIF present). DIF was resolved by splitting the two items (see Table 4), where after no further DIF was present. The PSI for the new set of items increased to .78.

Testing for multidimensionality and equating the subscales

Harmonious passion subscales

Before testing for multidimensionality and equating the subscales, the thresholds were rescored on the entire item set (old and adapted versions), the extreme persons were deleted, and misfitting items (adapted version: item 4) were deleted. The results of the PCA indicated a possible multidimensional model, since some of the items loaded positively on PC1 and some of the items loaded negatively on PC1. The eigenvalues for the first two components (2.329 and 1.993 respectively) are considerably larger than the eigenvalues for the other components. Given the indication of multidimensionality, the two versions of the harmonious passion

subscale were compared using independent *t*-tests in which the location values of each person on each of the subscales were determined. According to the *t*-test results, 52 (11.98%) of the participants displayed significantly different estimates on the two versions of the harmonious passion subscales at the 5% level of significance, and 22 (5.07%) of the participants had significantly different estimates at the 1% level of significance. Multidimensionality can therefore be surmised given the fact that more than 5% (at the 5% significance level) and 1% (at the 1% significance level) of participants displayed person estimates that significantly varied between the two versions of the harmonious passion subscale.

Obsessive passion subscales

The thresholds of the obsessive passion subscales were rescored on the entire item set (old and adapted versions) before running the tests for multidimensionality and the equation of subscales. Extreme persons were deleted, and misfitting items (original version: items 1 and 5; adapted version: item 1) were deleted. Similar to the harmonious passion subscales, results of the PCA indicated possible multidimensionality, which was based on the positive and negative loadings of items on PC1. Eigenvalues of the first two components (2.332 and 1.658, respectively) were also found to be considerably larger than the eigenvalues for the other components. Due to the possibility of multidimensionality of the obsessive passion subscales, the two versions were compared using independent *t*-tests in which the location values of each person on each of the subscales were determined. The *t*-test results revealed that 39 (8.78%) of the participants displayed significantly different estimates on the two versions of the obsessive passion subscales at the 5% level of significance, and nine (2.03%) of the participants had significantly different estimates at the 1% level of significance. It was therefore possible to infer multidimensionality given that more than 5% (at the 5% significance level) and 1% (at the 1% significance level) of the participants displayed person estimates that varied significantly among the two versions of the obsessive passion subscale.

DISCUSSION

Outline of the results

Specific objective 1: *To conceptualise the dualistic model of passion, the passion scale, frame-of-reference effect and Rasch analysis from the literature.*

This article started off by providing a literature review on the concepts relevant to this study. The dualistic model of passion, on which this study is built, was shortly explained in terms of harmonious and obsessive passion. The development of the passion scale was explained to provide some indication of its structure, internal consistency and empirical use. Rasch analys was identified as an item response model and its usefulness in context of this study was indicated.

Next, a short overview is provided of the approach that was followed to reach the specific objectives and it is indicated how the remainder of the discussion will continue.

With the intention of contributing further towards the validation of the passion scale within the South African nursing context, the psychometric properties of the sub-scales of both the original and adapted versions of the passion scale were analysed. The operating characteristics of these scales were compared to determine whether the addition of a frame-of-reference (in the case of the adapted scale) will outperform the original version. Rasch measurement theory was used to compare the operating characteristics of the two versions of the scale. A sequential approach was followed to assess the fit of the data, obtained with the scales, to the Rasch model. The discussion below therefore followed the sequence in which the specific objectives of the study were addressed.

Specific objective 2: *To analyse the subscales of an original and adapted passion scale in terms of their response categories operation.*

Rasch analysis of the response categories revealed disordered thresholds for all the harmonious passion and obsessive passion subscales under investigation and therefore no fit with the Rasch model was achieved. Although the wording or structure of the items may have contributed the problem, an initial analysis of the items did not reveal an apparent reason for the disordered thresholds. In addition, the labelling of the response categories was also checked to determine whether it may have caused any confusion for the participants when answering the items

(Hendriks et al., 2012). Nothing was, however, found that suggested that this was the case. It did, however, seem as if there was an issue with the response categories where participants had to indicate whether they 'slightly agree', 'very slightly agree' and 'not agree at all' with the items.

This may have been caused by a social desirability issue. Participants may not have wanted to evaluate their work (nursing) in an extremely negative way because it is not socially desirable to do so (De Klerk et al., 2013), especially in a helping profession such as nursing.

The fact that the passion scale was developed and mostly used in first-world (or Westernised) countries such as Canada and France may also have contributed the disordered thresholds; no evidence was found of it being used within the South African context, which is considered to be a third-world country. South Africa is a highly diversified country in terms of culture and language (11 official languages). In Smith et al. (2016), it was shown how collectivist or monumentalist cultures affect the response styles on Likert-type scales. There is therefore the possibility, depending on the type of cultures that are displayed within South Africa, that culture might have had an effect on the response styles of respondents and that this might have been a cause of the disordered thresholds. By implication, some correction for response styles may be considered within the South African context should it be decided to keep the passion scale in its current format (7-point Likert-type scale).

An additional issue may have been the number of response categories of the scale. According to Vincent, MacDermid, King, and Grewal (2015), disordered thresholds can be the consequence of making too many response options available to respondents and thereby making it difficult for them to discriminate adequately between the different response categories. If the disordered thresholds were the consequence of too many response options, collapsing the response categories would have lessened the burden on respondents to make subtle distinctions between the response categories (Vincent et al., 2015). Respondents would therefore find it easier to choose among the different options of the two subscales of the passion scale.

Although it is suggested that the response categories of established questionnaires (i.e. the passion scale) should not be collapsed (De Klerk et al., 2013), it was decided to do so to determine whether it will improve the two versions of the passion scale. Collapsing response categories is an accepted solution to address disordered thresholds (Vincent et al., 2015).

Collapsing the response categories resulted in a six-point Likert-type scale for both the harmonious and obsessive passion subscales. As reflected in the results, the response categories, however, now differed between the harmonious passion subscales and the obsessive passion subscales. Since the response categories between these subscales were identical prior to the collapse thereof, it also had to look identical after the collapse thereof. This is in line with Hill (2015), who suggested that the same rating scale should be used where the differences between response categories are similar. By implication, this meant that the response categories on the six-point Likert-type scale should be the same for all the subscales.

As a result of collapsing the response categories, fit with the Rasch model was achieved, meaning that the problem with the disordered categories was addressed. However, measuring passion required a scale with a mid-point such as the original seven-point Likert-type scale or alternatively a five-point Likert-type scale as an alternative. In the present study, only the subscales of the passion scale were included. The full version of the passion scale also includes items that are used to determine the presence of passion within individuals (see Mageau et al., 2009; Bonneville-Roussy, Lavigne, & Vallerand, 2011; Rabie, 2018). These items are referred to as the PDC (Rabie, 2018). Passion may therefore be present in some individuals, but it may not have developed to the extent that it became either harmonious or obsessive in nature. Using a five-point Likert-type scale may bring the mid-point of the scale close to the two extremes thereof. Although this may be a good thing, as was seen in the discussion above, it may also provide less information on the movement of an individual to any one of the two extremes on the scale. It is therefore proposed that a seven-point Likert-type scale should still be considered for future use, while some correction for response styles should be considered. In addition, the items that caused the disordered thresholds should be further investigated.

Specific objective 3: *To analyse the subscales of an original and adapted passion scale in terms of their item locations and the fit of the items to the Rasch model.*

After rescoring the Likert scale of both the original and adapted harmonious passion subscales, the fit statistics were analysed to check the overall functioning of the items against the specifications of the Rasch model. The item-trait interactions were used to measure overall fit, which included the unidimensionality assumptions of the Rasch model (Ehrich & Henderson, 2018). Item-trait interactions were found to be statistically insignificant for the original harmonious passion subscale as well as for the adapted harmonious passion subscale. The

results implied that fit with the Rasch model was achieved. The insignificant chi-square value obtained revealed that the Rasch assumption of invariance was accomplished. DIF was therefore not present, meaning that participants had equal probabilities of success on the items.

The aforementioned also confirmed the unidimensionality of the items of the subscales. In addition to this, fit to the Rasch model was also visible in the overall item fit statistics. These were represented by the item fit residual means and *SDs*. The original harmonious passion subscale revealed an item fit residual mean of 0.255 and an *SD* 1.730. In contrast, the adapted harmonious passion subscale had a residual mean of 0.227 and an *SD* of 1.601. Although both subscales exhibited good fit towards the Rasch model, the adapted harmonious passion scale showed slightly better fit to the model than the original harmonious passion scale. This implied that the adapted harmonious passion subscale had a less significant chi-square value, an item-fit residual mean closer to 0, and an *SD* closer to one than the original harmonious passion scale. The addition of a frame-of-reference to the items of the adapted harmonious passion subscale may have contributed to this improvement.

Invariance of the items of the two harmonious passion subscales made it possible to determine those items that participants found to be the easiest and most difficult to endorse. Item 4 of the original harmonious passion subscale and item 2 of the adapted harmonious passion subscale were the easiest to endorse. Item 6 on the original harmonious passion subscale and item 1 on the adapted harmonious passion subscale were the most difficult to endorse.

A closer look at the items provided some clues as to why these items were either easy or difficult to endorse. Item 4 ("This activity allows me to live a variety of experiences") may be considered to be easy based on the wide range of experiences nurses are exposed to during their careers (from being a student up to retirement). The Nurse Journal (2018) touches on some of these, which include: working in different work settings, specialising in one's field of interest, witnessing the beginning of life, working in teams, educating others, building relationships etc. The list of examples can be exhaustive, but it is clear that nurses should not find it difficult to identify the variety of experiences that they are exposed to; item 4 should therefore be easy to endorse. In terms of item 2 ("The new things that I discover with this activity allow me to appreciate it even more"), when nurses are exposed to a variety of experiences (as was the case with item 4), they should also discover new things. These new discoveries might add meaning to their work to the extent that it makes them appreciate nursing even more. Exposure to nursing activities and the new things that are discovered should

quickly provide clarity to nurses whether they like or dislike the field of nursing, making it easy for them to endorse this item.

Item 6 ("My activity is in harmony with other things that are part of me") on the original harmonious passion subscale and item 1 ("Nursing is in harmony with the other activities in my life") on the adapted harmonious passion subscale measure the extent to which the identity of a nurse is consumed by their work (nursing). On the harmonious passion scale, a high score on these two items means that although the activity (nursing) is internalised, it does not consume the identity of the nurse. Within the context of harmonious passion, this means that the nurse knows, in line with Bouizegarene et al. (2018), when to 'let go' of their work to the extent that they experience less conflict between work and life activities. Nursing is, however, a caring profession and nurses often put their own needs (or that of their families) aside for others (Mullen, 2015). This might complicate the answering of these two items, since they will create uncertainty where the response should fall on the seven-point Likert-type scale. In addition to this, shift-work forms part of many nurses' daily work routine. Some nurses might have considered shift work as an interfering factor between work and life activities and answered the two items accordingly. If shift-work was part of their employment contract, it should not have been considered in this way.

According to Campo-Arias, Herazo, and Oviedo (2017), long measurement instruments might lead to fatigue or boredom that might impact on reliability and validity. Since the subscales of the passion scale were included in a larger questionnaire containing a high number of items, fatigue and boredom might have led to differences between the two subscales in terms of easiest and most difficult items endorsed. Alternatively, the addition of a frame-of-reference to the adapted harmonious passion subscale might also have contributed to differences in the way items were endorsed by the participants. Overall, the items of the harmonious passion subscales functioned satisfactory; however, item 6 of the original harmonious passion subscale may need some revision in terms of the last few words thereof: "other things that are part of me:" Participants might have required more clarity on what the other things are that this item refers to. Some revision of this item should be considered.

In contrast to the harmonious passion subscales, the rescoring of the Likert scale of the original and adapted obsessive passion subscales did not lead to model fit. A lack of invariance revealed the presence of DIF. This meant that participants had different probabilities of success on the items of the two subscales. In the original obsessive passion subscale, misfit was attributed to items 1 ("I have difficulties controlling my urge to do my activity") and 5 ("This activity is so

exciting that I sometimes lose control over it"), whereas in the adapted obsessive passion subscale, it was only ascribed to item 1 ("I have difficulties controlling my urge to nurse"). Closer inspection of item 1 on both the obsessive passion subscales revealed that the item wording might have been the cause. The use of the word 'urge' within the context of nursing seemed inappropriate and may stem from the initial studies on passion for activities (e.g. gambling, cycling), where the use of the word was more appropriate. It is therefore suggested that, within the work context, alternative wording such as 'drive' might be more appropriate. With regard to Item 5 on the adapted obsessive passion scale, the use of 'nursing' in the item may have been confusing in the sense of what it means to lose control over nursing. The wording of this item may also need some attention.

In line with Chen, Pan, Chung, & Chen, (2013), the items were omitted one by one (starting with the item showing the highest misfit) until the criteria of the Rasch model were met. After item 1 was deleted from the original and adapted versions of the obsessive passion subscales, the remainder of the items did not display significant misfit. It is important to note here that the names of the two obsessive passion subscales were changed after deletion and rescoring the items. The new names are reflected in the next paragraph.

Non-significant item-trait interaction results were now available for both the modified original obsessive passion subscale ($\chi 2$ = 36.697; df = 30; p = 0. 186) and the modified adapted obsessive passion subscale ($\chi 2$ = 44.637; df = 30; p = 0. 042). The item fit residual mean of the modified original obsessive passion subscale increased to 0.495, while its *SD* increased to 1.632. The item fit residual mean of the modified adapted obsessive passion subscale increased to 0.117 and the *SD* to 2.076. The insignificant chi-square value obtained showed that invariance was accomplished. DIF was removed and therefore participants had equal probabilities of success on the items. Fit to the Rasch model was therefore achieved. The modified adapted obsessive passion subscale, however, revealed slightly better fit with the Rasch model than the modified original obsessive passion subscale in terms of a less significant chi-square value and an item-fit residual mean closer to zero. The *SD* of the modified original obsessive passion subscale was, however, closer to 1 than that of the modified adapted obsessive passion subscale.

Achieving the Rasch assumption of invariance made it possible to determine those items that participants found to be the easiest and most difficult to endorse. In both the modified original and modified adapted obsessive passion subscales, item 6 ("I have the impression that my activity controls me" and "I have the impression that nursing controls me") was found to be

the most difficult. Item 3 (“This activity is the only thing that really turns me on” and “Nursing is the only career that really turns me on”) was the easiest to endorse. A closer look at the items provided additional information.

Item 6 on the two modified obsessive passion subscales refers to the extent to which the activity (nursing) consumed the nurses’ identity. Within the context of obsessive passion, nurses are unable to ‘let go’ of their work resulting in conflict between work and life activities (Bushardt et al., 2016). It might be that most respondents were moderately to highly harmoniously passionate towards nursing, leading to lower responses to this obsessive passion item and making it seem as if it was the most difficult item to endorse.

Item 3 (“This activity is the only thing that really turns me on” and “Nursing is the only career that really turns me on”) was a straightforward question whether the nurse really liked nursing or not. Responses to this question should have been easy. In light of anonymity, the possible influence of social desirability, a “tendency to reply in a manner that is expected to be viewed favorably by others” (He & van de Vijver, 2015, p. 268) was reduced; it must, however, be kept in mind when the scale is not administered anonymously.

The slight improvement of the adapted harmonious passion subscale over the original harmonious passion subscale and the slight improvement of the modified adapted obsessive passion subscale over the modified original obsessive passion subscale might be attributed to the contextualisation of the adapted subscales by adding a frame-of-reference. Adding nursing to all items of the adapted subscales contextualised the subscales to the extent where all participants answered the items of the subscales with the same frame-of-reference. Adding this frame-of-reference may clarify item meaning and assist in lowering measurement error (Pace & Brannick, 2010). The adapted subscales did not refer to nursing in the test instructions (only in the items), whereas the original subscales only referred to nursing in the test instructions. It therefore seems as if the contextualisation of all the items on the passion scale delivers better results than only contextualising test instructions. This might be attributed to the fact that every item reminds the participant to think about nursing when responding to the items. This is in line with the view of Bing et al. (2004) that the provision of a frame-of-reference allows respondents to be more specific when answering items and to provide a more accurate picture of themselves. Test instructions alone might result in a loss of focus as the respondent progresses through the scale.

Specific objective 4: *To analyse the subscales of an original and adapted passion scale in terms of their item/person threshold distribution (targeting).*

The person-item threshold distribution map of the harmonious passion subscales was used to analyse the range and spread of the item and person locations of both subscales. The item and person locations for both subscales were found to be well spread. Persons were therefore adequately separated by the items.

Since harmonious passion is related to the positive side of passion, it was understandable that the person locations had a positive mean value and tended to be positively skewed. The original harmonious passion subscale was better targeted (*Mean* = 0.480; *SD* = 1.228; PSI = .85; Cronbach's alpha = .87) than the adapted harmonious passion subscale (*Mean* = 0.737; *SD* = 1.149; PSI = .82; Cronbach's alpha = .84) based on the mean score for person locations being closer to the mean value of zero set for item difficulty and a higher reliability in terms of PSI and Cronbach's alpha. The *SD* was, however, higher than that of the adapted harmonious passion subscale. It was surmised that in the absence of a frame-of-reference that test scores will tend to be more spread out, creating a higher *SD*. A frame-of-reference effect will pull test scores closer to the mean, since respondents answer the items with a similar frame of mind. The small difference between the *SD* of the two subscales was attributed to the different ways in which they were contextualised. The original subscale only used test instructions, while the adapted subscale contextualised all the items to nursing. It therefore seems as if the contextualisation of the adapted subscale did contribute to some improvement thereof.

Despite the differences, the PSI values of both subscales were fairly high and indicated adequate model fit. Gaps were, however, observed in the item range of both subscales, indicating that there might be room for improvement of reliability; in line with Hill (2015), it is suggested that the development of additional items may improve reliability by targeting more of the person locations.

In terms of targeting, the person locations on the modified original obsessive passion subscale (*Mean* = -0.440; *SD* = 1.311; PSI = .83; Cronbach's alpha = .86) were fairly negatively skewed, while being almost normally distributed on the modified adapted obsessive passion subscale (*Mean* = -0.110; *SD* = 1.028; PSI = .77; Cronbach's alpha = .81). The modified adapted obsessive passion subscale was better targeted than the modified original obsessive passion subscale based on the mean person location scores being closer to the mean value of zero set for item difficulty and a smaller *SD* (closer to 1). Items were therefore more centralised under

the person locations. In light of obsessive passion reflecting the negative side of passion, it was understandable that the person locations had a negative mean value and tended to be more negatively skewed.

As was the case with the adapted harmonious passion subscale, improvement in the targeting of the modified adapted obsessive passion subscale was also attributed to the frame-of-reference effect as was discussed earlier. The modified original obsessive passion subscale showed slightly better reliability than the adapted obsessive passion subscale based on its PSI and Cronbach alpha values. In line with De Klerk et al. (2013), a reduction of items may have implications for reliability; therefore, the deletion of item 1 earlier in this analysis may have had an influence on the reliability. It might in future be worthwhile revisiting item 1 for re-inclusion in the subscale to increase the PSI. The gaps found in the item range of both obsessive passion subscales also indicated that there was some room for improvement in terms of reliability. The development of additional items, in line with Hill (2015), was suggested as a way to target more person locations in an effort to increase reliability. Overall, the data of both obsessive passion subscales fitted the Rasch model and was regarded as being adequate

Specific objective 5: *To analyse the subscales of an original and adapted passion scale in terms of the extent to which the items are dependent on one another (local independence).*

In terms of the Rasch assumption of local independence (Ayele et al., 2014), item 4 of the original harmonious passion subscale and items 3 and 6 of the modified adapted obsessive passion subscale revealed item dependencies (local dependence). The high correlations among these items and other items within the same subscales might have been the result of them capturing some variation of other items in those subscales without adding any additional information. Items sharing mutual information create dependence on local items (De Klerk et al., 2013). According to Hill (2015), this dependence between items may inflate the reliability of the questionnaire and subsequently have a negative effect on the precision and quality thereof. In order to address local dependence, Esakki et al.,(2018) suggest that items must either be combined to form super items or that dependent items should be deleted. Targeting of the subscales, however, already revealed that there was a need for more items in the subscales of the passion scale to increase reliability. Should any one of the aforementioned suggestions be followed, it will lead to a further reduction of items in both subscales that, in line with De Klerk et al. (2013), may have implications for reliability. It is therefore suggested

that the items should rather be checked and rephrased to address item dependence before further use.

Specific objective 6: *To analyse whether the items of the original and adapted passion scale subscales function the same across two ethnic groups (DIF).*

DIF was used to explore possible item bias in terms of ethnicity. Participants were classified into a number of class intervals and the group variable (in this study ethnicity) being measured (Teresi, Ramirez, Lai, & Silver 2008). In line with Schaap (2011), DIF on an item was present when participants belonging to different ethnic groups did not have the same probability of endorsing an item about passion, despite them having the same underlying level and type of passion. In both the original and adapted versions of the harmonious passion subscales as well as both the modified original and modified adapted versions of the obsessive passion subscales, it was found that white participants scored higher on some items than African participants did, thereby indicating the presence of uniform DIF for ethnicity.

In addition to showing uniform DIF, the modified adapted obsessive passion subscale was the only subscale that also had a significant class-interval effect indicating the presence of non-uniform DIF. The five items of this subscale therefore did not function uniformly across the latent trait (obsessive passion). What is interesting here is that initial analysis on the adapted obsessive passion subscale revealed that all items, except item 5, showed disordered thresholds. Uniform DIF was now also found to be present only in the modified adapted obsessive passion subscale. A possible explanation, in line with Teresi et al. (2008), may be that guessing or a tendency of certain cultures to endorse extreme scores on a response category continuum may have biased item responses.

It was possible to remove all non-uniform and uniform DIF from all the subscales by using the procedure of Hagquist and Andrich (2017, p.5) without removing any items. Removing items may have had implications for overall fit to the model and reliability of the subscales (De Klerk et al., 2013). After the DIF was resolved for the affected items, the PSI, an indicator of reliability (Hendriks et al., 2012), remained constant except for the modified adapted obsessive passion subscale, where it increased from .77 to .78. Again, the addition of a frame of reference to this subscale may have contributed to the slight improvement in reliability.

Specific objective 7: *To compare the subscales of the original and adapted passion scale in terms of their operating characteristics (unidimensionality).*

A final test of model fit was to test the Rasch assumption of unidimensionality (Esakki et al., 2018). A violation of this assumption was also regarded as a violation of the local independence assumption (Andrich & Kreiner, 2010). The PCA revealed a possible multidimensional model. In light of a possible multidimensional model, t-tests were performed to equate the two versions of the harmonious passion subscales as well as the two versions of the modified obsessive passion subscales. In both cases, multidimensionality was inferred; the subscales therefore violated the Rasch assumption of local independence based on the multidimensionality found between the respective subscales. In light hereof, it was surmised that the adapted harmonious passion subscale measured something slightly different than the original harmonious passion subscale and that the modified adapted obsessive passion subscale measured something slightly different than the modified original obsessive passion subscale. It was concluded that the addition of a frame-of-reference to the two adapted subscales led to this multidimensionality. The multidimensionality of the subscales was attributed to the frame-of-reference effect caused by adding context to both the adapted harmonious and adapted obsessive passion subscales.

In conclusion, the objectives of this study were all addressed in the discussion above. Suggestions for future improvement of the passion scale were made by analysing its psychometric properties. Most importantly, it was clear that some of the items of both versions of the scale had to be addressed or redesigned to increase the reliability and validity of the scale. It was also clear that the addition of a frame-of-reference played a role towards the improvement of the passion scale. Addressing the item issues and adding a frame-of-reference will contribute to the validation of the instrument within the South African nursing context. Addressing the different objectives contributed towards reaching the main purpose of the study.

Next, the practical implications, limitations and recommendations of the research are discussed in order to address specific objective 8 of the research.

Specific objective 8: *To make recommendations for organisations/practice and future research.*

Practical implications

Rasch analysis proved to be a useful technique for analysing the psychometric properties of the subscales of both the original and adapted versions of the passion scale. The findings of the present study will contribute to the validation of passion scale within the South African nursing context. It was found that a contextualised version of the passion scale slightly outperforms an original version thereof. This was based on the addition of a frame-of-reference (nurse/nursing) to the passion scale items. Although this was the case, our results have also shown that both the original and adapted versions of the passion scale need some further improvement before it is being used within the South African context. The improvements referred to are mentioned in the recommendation section below.

Recommendations and limitations

Based on the results obtained with the Rasch analysis, the following recommendations were made about the future use of both the original and adapted subscales of the passion scale within the South African nursing context.

Firstly, the subscales of the passion scale used in this study consisted of six items each. Reducing these items may affect reliability and therefore it is recommended that those items that resulted in misfit or bias be revisited instead of eliminating them. Should the items be adapted, new data will have to be collected and the process of fitting the data to the Rasch model will have to be repeated.

Secondly, collapsing the categories of both the original and adapted passion scales should be carefully considered in light of the scale being an internationally established measure. It is recommended that aspects such as South African response styles be further investigated in light of cultural dynamics that play a role in how different people answer items on a questionnaire. It is also recommended that a Likert-type scale containing a midpoint be used to make provision for the dualistic nature of passion. People may be passionate about their work, but this does not mean that they are either harmoniously or obsessively passionate towards it. Our analysis brought forth a six-point Likert-type scale without a midpoint and

different labels for the harmonious and obsessive passion subscales. It is recommended that the continued use of the seven-point Likert type scale versus the use of a five-point Likert-type scale be further investigated and that the two subscales be equally labelled.

Thirdly, it is recommended that the possibility of including more items to target more of the person locations should be investigated as a way to improve the reliability of the subscales. This will, however, also require new data and analysis.

Fourthly, in terms of frame-of-reference effects, it was found that adding context to the items of the adapted passion scale had subtle improvements with regard to model fit than the original passion scale. It is therefore recommended that when the subscales of the Passion scale are used within a specific context (such as nursing) that not only the test instructions, but also the items be contextualised to counter the frame-of-reference effect. Countering the frame-of-reference effect may contribute to the improvement of the reliability and criterion validity of the scale by eliminating between-person variability (traditional view of reliability and validity of contextualised tests) (Lievens et al., 2008).

Fifthly, the theoretical framework of the passion scale is based on the dualistic model of passion, and therefore the analysis of the passion scale was only based on the two subscales, harmonious and obsessive passion. It is recommended that the five additional items included in the passion scale, to measure the passion-definition criteria (PDC), should be investigated in terms of their relationship with harmonious and obsessive passion. Findings by Mageau et al. (2009), Marsh et al. (2013) and Vallerand et al. (2003a) showed positive correlations between these PDC and both harmonious and obsessive passion with some distinctions between the two. A pilot study by Rabie (2018) within the South African context did find positive correlations between the harmonious passion subscale and the PDC, but not for the obsessive passion subscale. It should be determined whether similar findings are possible within the South African context in a larger sample. The PDC are important in the sense that they indicate whether passion is present in an individual.

Lastly, it is also important to further investigate the structure of those items that caused DIF in the subscales to ensure that the instrument is culturally fair towards all participants.

As is the case with most studies, this study also had some limitations. Firstly, there was the issue of gender. Nursing is a female-dominated profession and therefore only a few males were included in the study. It was therefore not possible to analyse DIF in terms of gender. Future studies could include larger samples of males. As was the case with males, very few Coloured

and Indian participants were also taken up in the sample that may have impact on the future use of the passion scale on these participants.

Secondly, the use of first- to fourth-year students in the study may have had an effect on the results that we obtained. Although these student nurses were exposed to the clinical nursing environment, they may feel different about their future careers than those who have been employed for some time. We did not test for the effect of age in terms of DIF. A comparison of results between the two groups will be interesting.

Lastly, South Africa is a diverse country and although we have tried to include all ethnic groups, some, such as the Indian and Coloured ethnic groups, were under-represented. Future studies should also try to obtain larger samples of these groups.

CONCLUSION

In conclusion, analysing the psychometric properties of the original and adapted versions of the passion scale by means of Rasch analysis revealed that both passion scales fitted the Rasch model when some adjustments were made. The adapted version, however, showed better fit towards the Rasch model than the original version. Better fit was achieved by adding a frame-of-reference (nursing) to all items of the scale instead of only using the test instructions to contextualise it. In order to improve both versions of the Passion scale, it was suggested that those items that resulted in misfit or bias should, as a point of departure, be revisited. Further investigation into the response categories and the development of additional items to better target the person locations was suggested as a way to improve the reliability of the scales.

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CHAPTER 4

RESEARCH ARTICLE 3

The nursing passion indicator scale: Development and initial psychometric evaluation

Abstract

Orientation: Passion for work has been linked to both positive and negative outcomes for employees and the organisations they function in. However, measuring the passion that employees show towards their work is an important first step before it is possible to manage it. The absence of validated instruments to do so necessitated further investigation into instruments that can be used for this purpose within the South African nursing context.

Research purpose: The research purpose was to report on the development and psychometric properties of the nursing passion indicator scale.

Motivation for the study: Due to the absence of contextualised information provided by the passion scale (Vallerand et al., 2003), the nursing passion indicator scale was developed to capture this contextualised information.

Research design, approach and method: A quantitative approach was followed using a cross-sectional research design. Exploratory factor analysis was used to analyse the data

Main findings: The nursing passion indicator scale consisted of three different scales: job investment ($\alpha = .91$), compassion ($\alpha = .88$), and personal characteristics ($\alpha = .89$). Cronbach alphas of .70 and higher were found for all factors loading onto the respective scales, indicating high reliability except for professional self-concept that revealed a moderate Cronbach alpha of .64. This was not considered as problematic in light of this being an exploratory study.

Practical/managerial implication: The use of the nursing passion indicator scale together with a contextualised nursing passion scale may assist in identifying nursing passion and managing this passion to the benefit of nurses and their practice environments.

Contribution/value-add: This study developed the nursing passion indicator scale that provides contextualised information about the portrayal of nursing passion in clinical practice environments. In terms of compassion, nursing passion can be portrayed by showing a real caring attitude. Job investment may be portrayed as a willingness to go the extra mile for patients, and personal characteristics can be portrayed as being attentive towards the needs of patients.

Keywords: Dualistic model of passion, passion, passion scale, nursing passion

INTRODUCTION

Orientation

Employees with a passion for their work can take organisational performance to the next level. The positive psychological, attitudinal and behavioural outcomes that result from having passionate employees have sparked renewed interest among researchers and managers about the concept of work passion (Ho, Kong, Lee, Dubreuil, & Forest, 2018). However, despite the positive aspects ascribed to work passion, there is also a darker side to passion. Various negative outcomes, such as burnout, work-life imbalance and a higher intention from employees to quit (Bushart, Brent, Beal, Young, & Khosla, 2016) are also associated with work passion. In their earliest studies, Vallerand et al. (2003) therefore suggested that the work passion of employees should be managed appropriately as a way to maintain it to the benefit of organisations. Nursing is one of the professions that are often associated with work passion (Bushart et al., 2016), and it is therefore important to manage the passion of nurses towards the main priorities or objectives of clinical practice environments.

From the perspective of the dualistic model of passion (Vallerand et al., 2003a), a nurse who is passionate about nursing can be described as showing a heightened tendency to invest more time and energy into it. They do this because they like or even love what they are doing and because they find nursing to be important and meaningful. They feel that nursing forms part of who they really are (their identity), and therefore they do not only nurse for the sake of nursing, they actually *become* nurses (Vallerand, 2017).

Nurses play an important role in the delivery of essential health services and the strength of any country's health system (World Health Organisation, 2016). Nursing (nationally and internationally) is regarded as forming the backbone of the healthcare system (Rabie, Klopper, & Coetzee, 2017; South African Medical Association, 2017). As a third-world country, the circumstances under which South African nurses must work are, however, quite demanding and challenging. This is especially true for those working in the public healthcare sector, which serves 83% of the population (Council for Medical Schemes, 2014). Prevailing nursing shortages, a quadruple burden of disease, high prevalence of HIV, poor health outcomes and challenges posed by the environments in which nurses operate are just some of the issues that place even higher demands on South African nurses (South Africa: Department of Health, 2013). It is therefore clear that the nursing profession faces unique challenges and that

something needs to be done to ensure that nurses as a strategic resource in healthcare delivery remain sustainable.

Fortunately, the South African Department of Health realised this and developed the National Strategic Plan for Nurse Education, Training and Practice 2012/13-2016/17 as a first step to revitalise and reconstruct the nursing profession (South Africa: Department of Health, 2013). However, this plan makes no mention of the importance to search for nurses who have a passion for the nursing profession and the management of passion in clinical practice environments. The present study therefore suggests that the management of nursing passion in the clinical practice environment should be considered as one of those key elements that will strengthen and support the nursing workforce.

In order to manage nursing passion in clinical practice environments, it needs to be scientifically measured. Vallerand et al. (2003a) developed the passion scale, a generic instrument that can be used to measure passion within a variety of contexts, including nursing. However, this scale is limited in the amount of contextual information it provides when applied. This contextual information refers to how passion is portrayed within different work contexts. A study by Ho et al. (2018) has, for instance, found that different organisational cultures may affect how passion is portrayed in different organisations. Therefore, although effective for the measurement of passion, the passion scale lacks the contextual information that may contribute to the management of passion within specific contexts. It therefore became inevitable to develop an instrument that can be used in conjunction with the passion scale in order to capture this contextual information.

As part of a larger project, the present study reports on the development and psychometric properties of the nursing passion indicator scale (NPIS). This scale is to be used in conjunction with the nursing passion scale (see Rabie, 2018; Chapter 3), which is an adapted (contextualised) version of the passion scale developed by Vallerand et al. (2003a). The nursing passion scale is used to identify the presence of nursing passion together with the type of passion that nurses experience. It also provides information about the portrayal of passion in terms of the passion definition mentioned earlier. The NPIS does not measure the passion construct itself, but provides more detail with regard to the portrayal of nursing passion in clinical practice environments. The scale may assist managers of these environments to manage nursing passion towards the benefit of the nurses themselves, their patients, the practice environment, the profession and ultimately the health system as a whole.

Research purpose and objectives

The purpose (general objective) of this study was to report on the development and psychometric properties of the NPIS.

To achieve the mentioned purpose, the following objectives were formulated:

- To conceptualise the dualistic model of passion, the passion scale and nursing passion from a literature review.
- To report on the development of the NPIS.
- To determine the factor structure of the NPIS.
- To determine the internal consistency of the different scales within the NPIS.
- To make recommendations for organisations/practice and future research.

Next, a literature review will clarify the dualistic model of passion (see Vallerand et al., 2003a) that provides the platform for this study. This will be followed by a brief explanation of the passion scale (Vallerand et al., 2003a). The development of the NPIS will then be explained, which will also include an explanation of what nursing passion entails.

LITERATURE REVIEW

Managers are realising the value of attracting and employing passionate employees, fostering passion among existing employees and nurturing passion in the workplace as a way to improve the performance of organisations (Johri, Misra, & Bhattacharjee, 2016; Love, 2012; Yahui, & Jian, 2015). However, there is also a darker side to passion that leads to less desired outcomes, such as burnout and work-life imbalance, which may impact negatively on organisations (Bushardt et al., 2016). An empirical explanation for this is provided by the dualistic model of passion (DMP) (Vallerand et al., 2003a).

From the DMP perspective, passion is referred to as a strong inclination towards a self-defining activity/work. The passion for the activity/work is fuelled by an individual's liking or even love thereof. It involves a willing engagement and investment of time and energy into the activity/work, because it is meaningful and valued by the individual. Over time, this activity/work is assimilated into the identity of the individual. Activity/work engagement now

moves from only doing the activity/work for the sake of doing it towards doing it because it is a reflection of who the individual really is (Lajom, Amarnani, Restubog, Bordia, & Tang, 2018).

The DMP identifies two different types of passion, depending on how activities/work are internalised into the identity. When the internalisation is autonomous, individuals will engage willingly in nursing activities and approve of their own engagement therein; this results in harmonious passion (HP) (Mageau et al., 2009; Vallerand, 2017). A controlled internalisation refers to cases where there is some or other contingency attached towards the engagement in the activity/work (i.e. rewards, punishment, social acceptance or self-esteem) resulting in obsessive passion (OP) (Vallerand, 2017).

Individuals experiencing HP are regarded as being flexible when it comes to the engagement in their activities/work. They show awareness of the time that they spend on it and their autonomous participation in it leads to positive experiences (Mageau et al., 2009). The opposite is true for individuals who experience OP. In this case, engagement in activities/work gets out of hand and consumes the identity to the extent that conflict arises between the activity/work and other domains of life, leading to non-optimal functioning (Vallerand et al., 2003a ; Vallerand & Houlfort, 2003).

It is therefore clear that passion has two distinct processes and that these may either result in optimal or non-optimal functioning that impacts on the organisations in which individuals such as nurses operate. In order to determine the *type* of passion present in individuals, Vallerand et al. (2003a) developed the passion scale. The scale consisted of two sub-scales measuring HP and OP. In addition, a few additional items were included to measure the *presence* of passion in individuals. These items are commonly referred to as the passion criteria or PDC and include: a liking or even love for an activity/work; an investment of time and energy into the activity/work; viewing the activity as important, meaningful and valuable; and an internalisation of the activity/work into the identity (Vallerand et al., 2003a)

The scale has been used with success in various research settings (see Curran, Hill, Appleton, Vallerand, & Standage, 2015), including the domain of work. The benefits of HP and the less desired or maladaptive outcomes of OP in terms of well-being, motivation, cognition, behaviour and performance were recently reaffirmed in a meta-analysis that covered more than a decade's research on passion (using the Passion Scale) (Curran et al., 2015).

One drawback of the passion scale is that the results obtained with it only provide information about the presence of passion and the extent to which it is either harmonious or obsessive in nature. The portrayal of passion for activities/work is based on the passion-definition criteria (PDC) (see Vallerand et al., 2003a), which are generic to passion across all activities/work. It does not provide additional contextualised information about the portrayal of passion within specific contexts such as nursing. Within different organisational contexts (i.e. manufacturing, sales and customer services), the way in which passion towards work is portrayed may differ. As such, the way in which nurses show passion towards their profession (a helping profession) will differ from employees who show passion towards a profession such as marketing (a profession focused on sales). In this regard, Ho et al. (2018) have shown that contextual factors may in different ways contribute towards harmonious passion.

The development of the NPIS will address this research issue within the South African nursing context by providing an indication of how nursing passion is portrayed. This information may assist the management of clinical practice environments to harness passion within such environments, to manage both HP and OP towards the benefit of clinical practice environments and to develop intervention strategies where needed to address nursing passion issues in the workplace. Since this scale is not measuring the passion construct itself, it is important to administer it in conjunction with the nursing passion scale (see Rabie, 2018; Chapter 3), which is an adapted (contextualised) version of the passion scale developed by Vallerand et al. (2003a).

The remainder of the literature review is focused on the development of the NPIS within the South African nursing context.

The development of the NPIS

The guidelines for scale development of DeVellis (2012) were followed for the development of the NPIS:

Step 1: Clarity on what is being measured. As a point of departure, it was important to conceptualise nursing passion within the South African context. Since the present research formed part of a larger project, ‘nursing passion’ was contextualised during a previous phase of the larger project (see Rabie, 2018; Chapter 2):

'*Nursing passion' refers to compassionate nurses who are competent, confident and resilient in the execution of their duties while demonstrating appropriate communication, listening and motivational skills; they show a strong preference for nursing based on their love for the profession, the enjoyment it brings and the inherent value or importance they attribute to it. Their commitment towards nursing is revealed by a willing investment of time and energy into the holistic care of their patients, the constant improvement and enhancement of the practice environments in which they operate as well as the nursing profession as a whole. These nurses autonomously internalised nursing into their identities and therefore do not merely nurse for the sake of nursing, it rather becomes part of their true selves: being* ***nurses.***

The conceptualisation of nursing passion was based on four main themes and their accompanying subthemes extracted from the qualitative data obtained in Phase 1 of the larger project (see Rabie, 2018; Chapter 1). The first theme related to the PDC, which included subthemes such as (1) love or like nursing, (2) valuing nursing, (3) time/energy investment, and (4) autonomous internalisation. These sub-themes correspond to the PDC mentioned by Vallerand et al. (2003a), and can be measured with the passion scale (Vallerand et al., 2003b). The remaining three themes that were considered to represent the indicators of nursing passion in South Africa and were clustered as compassion, job investment and personal characteristics. A summary of the initial main themes and sub-themes mentioned above is provided in Figure 1 below.

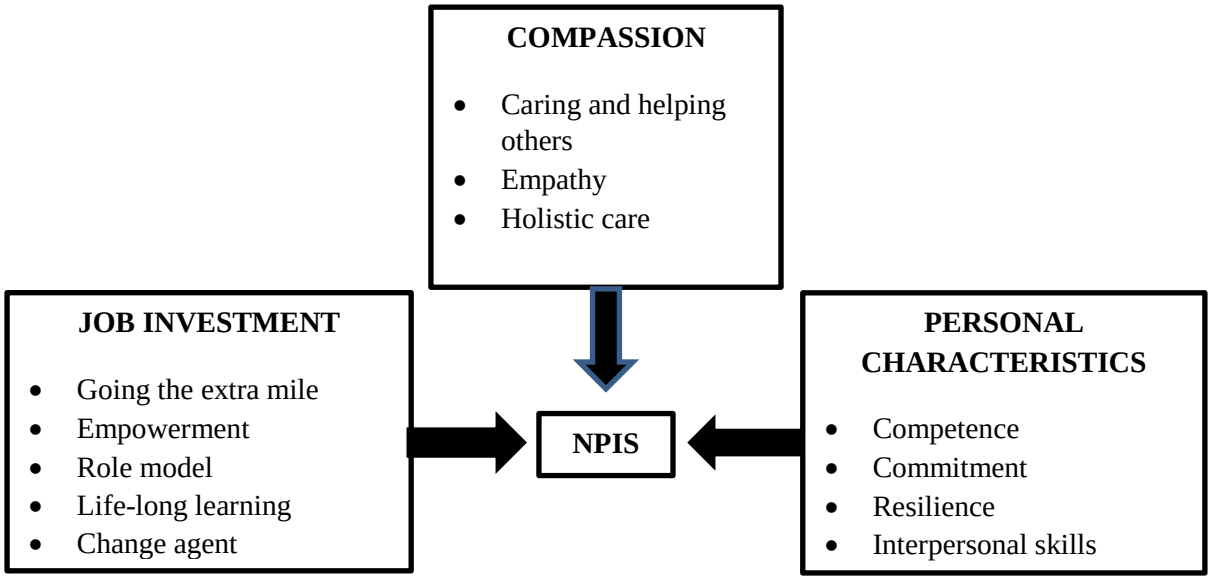

Figure 1: *Initial main themes and sub-themes of the NPIS*

Compassion was conceptualised as the empathy that nurses show towards patients, their caring or helping nature and the extent to which they provide holistic care to their patients. This was in line with the most widely used definition of compassion that refers to it as an awareness of another individual's distress/suffering, a longing to help relieve the individual of the distress/suffering and turning this longing into action to help the individual by taking care of him/her (McCaffrey & McConnell, 2015).

Job investment was related to those additional things (not directly linked to patient care) that nurses do within their work environments that tend to improve the working environment and, in turn, enhance the nursing profession. Job investment was defined as the extent to which nurses are role models towards others at work; acting as change agents in their work environments; empowering those around them at work; going the extra mile for others at work; and having an attitude of life-long learning.

Personal characteristics focused more on the personal characteristics of nurses, which were regarded as contributing factors of the individual for showing passion towards nursing. Therefore, personal characteristics were defined in terms of competence, confidence, commitment, resilience, interpersonal abilities in terms of listening and communication skills, as well as leadership abilities in terms of motivational skills.

Since no instrument was available to measure the indicators of nursing passion, the development of the NPIS had to address this research issue. The remainder of the steps followed in the development of the NPIS as well as the investigation into its psychometric properties follow in the research design and methodology sections below.

RESEARCH DESIGN

Research approach

A quantitative approach was followed using a cross-sectional design that entailed the collection of quantitative and quantifiable data at a certain point in time via a newly developed questionnaire. The variables measured with the questionnaire were then examined for patterns of association (Bryman, 2012).

Scale construction

Step 2: Item development. Item development was based on the qualitative data obtained during phase 1 of the larger research project (see Rabie, 2018; Chapter 1) and focused on the main themes: compassion, job investment and personal characteristics together with its respective subthemes. Items were aimed at measuring elements of the nursing passion conceptualisation as mentioned earlier in this paper. In order to guard against poor internal consistency reliability, a large item pool of 133 items was generated. *It is important to note here that 25 additional items were included for future purposes outside the scope of the present study and the larger project. In total then, 108 items were specifically developed for the NPIS and reported on in the remainder of this study.* Internal consistency reliability is dependent on the strength of correlation among items and the latent variable versus the number of items in the scale (DeVellis, 2012). A large item pool makes provision for the elimination of non-correlating items during statistical analysis while still having an adequate number of items available to measure the intended facet.

In order to ensure that participants clearly understand the items of the NPIS, the items were developed according to the suggestions made by DeVellis (2012). Items were therefore checked for issues such as ambiguity, items being too long, reading difficulty level, semantics, multiple negatives and double-barrelled items. Both positively and negatively worded items were included to avoid acquiescence (agreement bias).

Step 3: Format for measuring. The choice of a seven-point Likert-type scale was based on the fact that the NPIS was to be used in conjunction with the seven-point Likert-type nursing passion scale. Scoring of the NPIS was anticipated to be slightly different from that of the nursing passion scale.

Step 4: Item pool review. After the development of the items they were evaluated by a panel of five experienced researchers in accordance with the recommendations made by DeVellis (2012), as well as their own professional experience. The panel was provided with a description of what the intention of the scale was, what it was intended to measure, a description of the different subscales and the items themselves. The items' relevance toward the intention of the scale was evaluated. Items were also checked for clarity and conciseness that may have had implications for item reliability. The panel was also requested to provide inputs with regard to different ways to capture the constructs under investigation in order to increase the content validity of the NPIS. Content validity (sampling adequacy) refers to the extent to which the

different sets of items in the NPIS reflected on its respective constructs and subsequent facets. One week later, the researcher had a meeting with the panel to discuss their concerns, findings and suggestions. Based on the feedback received and the discretion of the researcher, improvements were made to the NPIS.

Step 5: Inclusion of validated items. The NPIS tapped an area where little research has been done before. There were, therefore, no alternative scales available to compare the functioning of the NPIS with as a way to determine its construct validity.

Step 6: Administer items. The items were administered to a sample of registered and student nurses over a period of three months. Specifics related to the research participants, the instrument itself (NPIS), research procedure and data analysis follow in the methodology section below.

RESEARCH METHOD

Research participants

Certain inclusion criteria had to be met in order to participate in the study. Potential participants were required to have completed a four-year integrated nursing diploma/degree or they had to be enrolled for such diploma/degree. In addition, they also had to be registered as professional or student nurse at the South African Nursing Council (SANC). Participants also had to be able to read and understand the English language in order to complete the NPIS. Purposive non-probability sampling was used to obtain nursing participants adhering to the inclusion criteria. Permission was obtained from a tertiary education institution within South Africa to collect data from their full-time undergraduate nursing students (first- to fourth-year), post-basic nursing students (enrolled for a nursing qualification via a distance education programme) and nursing educators. Most post-basic students were employed in different nursing practice environments across South Africa. Convenient sampling made it possible to gain access to both student and employed nurses across South Africa instead of approaching different nursing practice environments.

Sample size was determined by combining the guidelines of Tabachnick and Fidell (2007) and the guidelines mentioned in Yong and Pearce (2013). The former proposes a minimum of 300 participants when the intention is to conduct an exploratory factor analysis (EFA). Yong and

Pearce (2013) suggest using the ratio between participants and items. In terms of the NPIS, it was calculated that a sample size of between 540 and 1080 was needed. If this sample was unobtainable, the bare minimum that was considered for conducting a factor analysis was 300. Since it was intended to conduct an EFA in the study a sample of at least 300 participants were needed. A sample between 540 and 1080 participants would have been preferred.

Data collection was completed over a period of three months; a number of 519 (55%) participants returned the questionnaires of which only 447 (47%) were usable. A description of the sample follows in Table 1 below:

Table 1

Characteristics of participants (n = 447)

Item	**Category**	**Frequency**	**Percentage**
Gender	Male	29	6.49%
	Female	416	93.5%
	Missing values	2	0.4%
Age	18-27	246	55.03%
	28-37	63	14.08%
	38-47	78	17.44%
	48-57	38	8.50%
	58-67	13	2.91%
	68-77	1	.22%
	Missing values	8	1.79%
Ethnicity	African	199	44.52%
	Coloured	22	4.92%
	Indian	6	1.34%
	White	217	48.55%
	Other	1	.22%
	Missing values	2	.45%
Language	English	25	5.59%
	Afrikaans	221	49.44%
	isiXhosa	25	5.59%
	isiNdebele	2	.45%
	isiZulu	25	5.59%
	Sepedi	17	3.80%
	Sesotho	27	6.04%
	Setswana	71	15.88%
	SiSwati	1	.22%

Item	Category	Frequency	Percentage
	Tshivenda	13	2.91%
	Xitsonga	7	1.57%
	Missing values	13	2.91%
Employment 2017	Employed Registered Nurse	179	40.04%
	Full-time student	250	55.93%
	Missing values	18	4.03%
Employed Participants' Province	Eastern Cape	24	13.41%
	Gauteng	32	17.88%
	Free State	3	1.68%
	KwaZulu-Natal	20	11.17%
	Limpopo	16	8.94%
	Mpumalanga	4	2.23%
	Northern Cape	1	0.56%
	North West	72	40.22%
	Western Cape	2	1.12%
	Missing values	*5*	2.79%
Nursing students 2017	1st year	77	30.80%
	2nd year	39	15.60%
	3rd year	66	26.40%
	4th year	50	20.00%
	Missing values	*18*	7.20%

*Employed registered nurses includes: Post-basic students and other practicing professional nurses

The sample used in the present study was similar to that used in phase 2 of the larger project (see Rabie, 2018; Chapter 3). Data were cleaned and a total sample of N=447 was included for further analysis. Since nursing is regarded as a female-dominated profession, it was not strange that only 6% males were included in the sample compared to 94% females. Employed registered nurses made up 40% of the sample. Full-time nursing students made up the largest part (56%) of the sample and therefore most (55%) participants in the study were aged between 18 and 27. The 38 to 47 year age bracket was the second largest, representing 17% of the sample, followed by the 28 to 37 year age bracket that represented 14% of the sample.

Due to the demographics of the South African population and also the province in which data were collected, very few coloureds or Indian participants were included in the sample. White (49%) and African (45%) participants made up the largest part of the sample. Most participants spoke Afrikaans (49%) and Setswana (16%) as home language, followed by the rest of the nine

official South African languages. The registered professional nurses (40%) were mainly employed in the North West Province of South Africa. This was followed by Gauteng (18%), Kwazulu-Natal (11%) and Limpopo (9%). Full-time nursing students were mostly represented by first-year students (31%), followed by third-year (26%), fourth-year (20%) and second-year (16%) students. Since all these students were approached at a single university and practical work was mostly done within the same province as where the university is located, the provinces of students were not reported.

Measuring instruments

The newly developed NPIS (as described earlier in this paper) consisted of 108 items and was used to measure the nursing passion indicators within the South African nursing context. The three factors that were developed for the NPIS were (1) compassion, (2) job investment, and (3) personal characteristics.

Compassion was measured in terms of empathy (7 items; i.e. *I truly show an understanding for what my patients are going through*); caring/helping people (9 items; i.e. *I help and care for my patients with all my heart*) and holistic care (8 items; i.e. *I pray for my patients*). The ***job investment*** factor measured nurses in terms of them being role models (7 items; i.e. *Other nurses tend to imitate the way I nurse*), change agents (9 items; i.e. *I embrace change in the field of nursing*), life-long learners (8 items; i.e. *I consider myself to be a life-long learner*), whether they empower others (7 items; i.e. *I help other nurses to become better at what they do*) and, going the extra mile for others (8 items; i.e. *I go beyond what's expected of me for those under my care*). ***Personal characteristics*** were measured with items related to competence/confidence (9 items; i.e. *I think my colleagues perceive me as being able, knowledgeable and skilful*; *I am certain that I will handle most nursing related challenges successfully*), commitment (10 items; i.e. *I tell my friends and family that nursing is a great career to follow*), resilience (7 items; i.e. *I quickly recover after experiencing negative incidents at work*), interpersonal skills namely communication (7 items; i.e. *I find it easy to start a conversation with most patients and members of staff*) and listening (6 items; i.e. *People who know me would say that I am a good listener*) and leadership in terms of the motivation of others (6 items; i.e. *I have an ability to inspire people at work*). A seven-point Likert scale ranging between 1 (not agree at all) and 7 (very strongly agree) was used.

Research procedure and ethical considerations

While an ethics clearance number (EMS15/04/21-01/04) was obtained to continue with the study, the Research Data Gatekeeper Committee of the University also provided permission to collect data from students and personnel. Permission was also obtained from the management of the two departments where entry was needed to collect the data. Arrangements were made with relevant lecturers to hand out the survey booklets to full-time nursing students during class time and to collect it again at a later stage. A similar arrangement was made with educational personnel; the booklets were handed out to them and collected at a later stage. Regarding the distance education students, arrangements were made with their study centre co-ordinators located across South Africa. The survey booklets were couriered to the relevant study centres where the centre co-ordinators distributed and collected the completed booklets over a period of three months. The universities' computerised communication platform was used to remind the students on a weekly basis to return the completed booklets to their study centres. The completed booklets were then couriered back to the researcher. All the data were then combined and captured on an Excel spreadsheet by the University's Statistical Consultation Services for further data analysis.

Participants were properly informed about the purpose of the study in order for them to make an informed decision whether to take part in the study or not. Participation was voluntary; completing and returning the scale to the researcher served as proof that the participant gave consent towards the use of their feedback for the purpose of the study. Withdrawal from the study was possible up to the point where the information was submitted to the researcher; thereafter, it would have been very difficult to find, because it was completed anonymously. No incentives were offered to any participant in order to convince them to take part in the study. As far as possible, anonymity and confidentiality of participants were ensured. The biographic information required of participants did not require of them to provide information that may identify them. In terms of confidentiality, participants were informed of the people who were expected to have access to the interpreted data.

Statistical analysis

In order to determine the appropriateness of the items and internal structure of the constructs measured by the NPIS, an exploratory factor analysis (EFA) was conducted. The steps that were followed for data/statistical analysis are set out below.

The process started off with a pre-analysis consisting of data screening before the EFA was conducted. This entailed checking the accuracy of the data by examining missing values, outliers and the distribution assumptions of skewness and kurtosis (Zygmont & Smith, 2014).

The linear trend at point procedure was used to replace missing values. This procedure establishes a trend and determines a replacement value consistent with this trend (Mertler & Reinhart, 2017). The Mahalanobis distance statistical procedure was used to identify multivariate outliers. A chi-square (χ^2) statistic of 209.265 was used to evaluate the Mahalanobis distance together with 150 degrees of freedom and $p < 0.001$. Deleting cases where participants displayed an extreme amount of missing values or extreme outliers, the dataset was reduced from the initial 519 to 447.

Multivariate normality is an important distribution assumption that affects factor analysis in the sense that it is at the core of the correlational statistics on which factor analysis rests (Mertler & Reinhart, 2017). In order to test the assumption of multivariate normality, the univariate normality was tested first by means of skewness and kurtosis. Since the maximum likelihood method was to be used in the EFA, cut-off values of 2 and 7 were set for skewness and kurtosis, respectively, as was the case in Zygmont and Smith (2014); these cut-offs were not violated.

After the initial data screening, the EFA process was started to examine the construct validity of the NPIS. Three factors, namely job investment, compassion and personal characteristics were developed and each contained a number of facets. The three factors were analysed separately to determine the loadings of the items on the representative facets. The following steps were followed for each of the three factors.

Step 1. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for the correlation matrix and Bartlett's test of sphericity were used to test the appropriateness for conducting a factor analysis. The KMO statistic served as an indicator that a common factor was measured and that there was an adequate number of items to do so (Cornish, 2007; Zygmont & Smith, 2014). KMO values ranging between 0.5 and 1 were considered to be adequate (Zygmont & Smith, 2014; Williams, Brown, & Onsman, 2010). Bartlett's test of sphericity was used to test the adequacy of the correlations between the items. Some degree of correlation was needed to conduct a meaningful EFA. A significant chi-square (χ^2) statistic indicated by a p-value ($p<0.05$) was therefore required (Cornish, 2007; Williams et al. 2010; Zygmont & Smith, 2014).

Step 2. A principal component analysis (PCA) was performed to reduce the data and to obtain an indication of the number of factors to be extracted (Yong & Pearce, 2013). Communality values served as confirmation of commonly shared variance between items (Neill, 2008). The communalities were checked to determine which proportion of the variance was explained by the extracted principle components; values less than .40 were considered for removal. Eigenvalues larger than 1, scree plots (looking at the point of inflexion) and parallel analysis were used to determine the number of factors to extract. In the parallel analysis, eigenvalues from the actual dataset were compared with simulated eigenvalues that take into account the sampling error of the actual dataset (Zygmont & Smith, 2014; Çokluk & Koçak, 2016). The number of factor components (extracted from the actual data) with eigenvalues greater than that obtained from the simulated data was seen as indicative of the number of factor components to extract (Çokluk & Koçak, 2016).

Step 3. Based on the relative normality of the data and the expectation that some degree of correlation exists among the factors, the maximum likelihood (ML) factor extraction method with direct oblimin rotation and Kaiser normalisation were applied. The resulting pattern matrix was analysed to check for potential factor solutions. Decisions about the retention of factors were based on the criteria mentioned in Asiwe, Hill, and Jorgensen (2015): (1) cut-off values for item loadings were set at .30 (Beavers et al., 2013); (2) items were only allowed to load onto one factor; (3) at least three items had to load highly onto each factor and; (4) the factors had to be interpretable within the context of the study (Asiwe et al., 2015; Beavers et al., 2013). The factors were then renamed based on the items that represented them.

Correlations between the identified factors were analysed by means of the factor correlation matrix. If factors were found to be highly correlated (.70 or higher), it was possible that they were too similar, the possibility of merging these factors was then considered. Item analysis was conducted in order to determine the reliability of each factor in the nursing passion indicator scale (NPIS). Cronbach's alpha was used as indicator of internal consistency, values of .90 and higher were interpreted as excellent, .70 to .90 as high, .50 to .70 moderate and, .50 to .70 as low (see Taherdoost, 2016).

RESULTS

Job investment scale

Sampling adequacy was confirmed with a KMO value (.948) that was high above the cut-off value of .50. Bartlett's test of sphericity revealed a significant chi-square statistic (χ^2 = 9333.293 (*df* = 741); $p<0.05$) confirming the presence of some degree of correlation. Based on these results, it was concluded that a meaningful EFA was possible. A principal component analysis was performed and the communalities in Table 2 were checked for the portion of variance explained by each of the components.

Table 2

Communalities of the job investment scale (n = 447)

	Communalities	
Items	**Initial**	**Extraction**
I set a good example for other nurses to follow (24)	1.00	0.56
Other nurses want to be mentored by me (63)	1.00	0.70
I am a role model for other nurses I work with (78r)	1.00	0.52
Other nurses tend to imitate the way I nurse (79)	1.00	0.60
Other nurses associates with the nursing values, attitudes and behaviours I portray (108)	*1.00*	*0.38*
The way I nurse don't really inspire other nurses to copy what I do (119r)	1.00	0.68
I can see that other members of staff have a high regard for the way I nurse (128)	1.00	0.66
I embrace change in the field of nursing (30)	1.00	0.54
I promote the implementation of change in the field of nursing (46)	1.00	0.66
I get excited to hear about new things that will change the way I nurse (47)	1.00	0.60
Change within the field of nursing complicate the way I nurse (62r)	1.00	0.66
I challenge the way things are in my specific field of nursing (93)	1.00	0.42
I get frustrated when I have to change the way I have successfully nurses in the past (107r)	1.00	0.65
I am involved in activities that seek to bring about change in the nursing profession (121)	1.00	0.60
I am not eager to implement new nursing trends and/or developments at work (132r)	1.00	0.51
I am constantly on the lookout for new or improved ways to nurse (142)	1.00	0.73
I help other nurses to become better at what they do (45)	1.00	0.69
I enable other nurses to competently perform their nursing related tasks (61)	1.00	0.62
I want to help those nurses around me to be the best they can be (77)	1.00	0.64
I empower patients to take responsibility for their own health (94)	1.00	0.62
I encourage those I work with to take responsibility for difficult nursing procedures (130)	1.00	0.54
I believe that it is not my responsibility to improve the nursing skills of other nurses (135r)	1.00	0.50
I don't want to share my nursing knowledge and skills with others at work (140r)	1.00	0.57
I consider myself to be a lifelong learner (28)	*1.00*	*0.39*
I find no use in attending nursing related seminars (44r)	1.00	0.44
I prepare myself to handle unforeseen nursing eventualities in the future (60)	1.00	0.64
I attend nursing related learning events (76)	1.00	0.48
Continuous learning benefits the patients I care for (95)	1.00	0.67
Nursing related books and/or journals don't interest me much (110r)	1.00	0.50
I seek opportunities to learn about new nursing ideas, trends and developments (125)	1.00	0.68
I have adopted a culture of learning that benefits the nursing profession as a whole (143)	1.00	0.69
I don't volunteer to assist with tasks over and above my daily nursing responsibilities (27r)	*1.00*	*0.25*
I don't expect something in return when I offer my help to someone at work (59)	1.00	0.59
I go beyond what's expected of me for those under my care (75)	1.00	0.61
I do more for my patients than is expected of me (96)	1.00	0.75
I put in extra time and effort when it comes to the wellbeing of a patient (111)	1.00	0.71
I just do what is expected of me as a nurse, nothing more and nothing less (123r)	1.00	0.55
I go out of my way to assist those I work with when they need my help at work (129)	1.00	0.52
I get involved in additional nursing activities that benefit the nursing profession (147)	1.00	0.61

Extraction method: Principal component analysis.
Communalities less than .40 indicated in italic

Three items (27, 28 and 108) with communalities less than .40 were found. Based on the close proximity of Item 28 and 108 to the .40 cut-off value, it was decided to retain both together with Item 27 to see how they performed during the ML factor analysis.

Next, the number of factors to extract was determined by examining the eigenvalues, scree plot and parallel analysis. Table 3 indicates the total variance explained by each extracted component in terms of eigenvalues. Eigenvalues equal to 1 or higher showed that it was possible to extract six components.

Table 3

Total variance explained for the job investment scale

Total variance explained						
	Initial eigenvalues			Extraction sums of squared loadings		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	12.971	33.259	33.259	12.971	33.259	33.259
2	4.846	12.426	45.685	4.846	12.426	45.685
3	1.522	3.902	49.587	1.522	3.902	49.587
4	1.211	3.105	52.691	1.211	3.105	52.691
5	1.142	2.929	55.621	1.142	2.929	55.621
6	1.028	2.636	58.257	1.028	2.636	58.257
7	.995	2.550	60.807			
8	.890	2.281	63.088			
…	…	…	…			
…	…	…	…			
39	.184	.471	100.000			

Six factors displayed eigenvalues ≥ 1; however, both the scree plot and parallel analysis suggested the extraction of only three factors each (Figure 2).

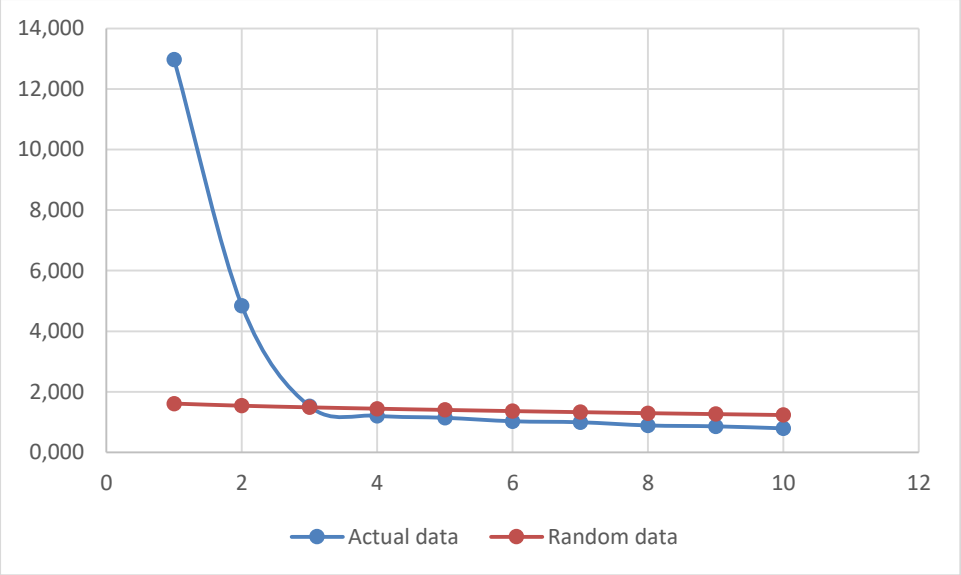

Figure 2: *Parallel analysis and scree plot for the job investment scale*

The ML factor analysis with direct oblimin rotation was conducted. Results showed that the least amount of items was lost due to low loadings or double loadings when five factors were extracted. The five-factor solution was regarded as the most viable option; the factors were extracted and resulted in a pattern matrix indicating the five extracted factors (see Table 4).

Table 4

Pattern matrix for the job investment scale (α = .91)

Factor name and item wording	M	SD	Factor 1	2	3	4	5
*Factor 1: Going the extra mile (**α** =* 0.883)							
I do more for my patients than is expected of me (96)	5.834	1.1844	**.749**	.000	-.024	-.132	-.017
Continuous learning benefits the patients I care for (95)	6.081	0.9967	**.630**	.090	-.036	-.151	-.093
I put in extra time and effort when it comes to the wellbeing of a patient (111)	5.798	1.1362	**.611**	.106	.096	-.178	-.057
I empower patients to take responsibility for their own health (94)	5.787	1.1470	**.549**	.031	.089	-.183	-.031
I go beyond what's expected of me for those under my care (75)	5.820	1.1281	**.514**	.033	.101	-.189	-.110
I don't expect something in return when I offer my help to someone at work (59)	6.049	1.3147	**.378**	.079	-.008	.130	-.291
I go out of my way to assist those I work with when they need my help at work (129)	5.661	1.2739	**.343**	.089	.256	-.144	-.111
I encourage those I work with to take responsibility for difficult nursing procedures (130)	5.442	1.3071	**.310**	-.054	.289	-.207	-.076
I consider myself to be a lifelong learner (28)	*6.094*	*1.1885*	*.294*	*.056*	*-.018*	*-.241*	*-.123*
Other nurses associates with the nursing values. attitudes and behaviours I portray (108)	*4.974*	*1.3524*	*.273*	*-.167*	*.210*	*-.093*	*-.099*
*Factor 2: Organisational citizenship (**α** =* 0.856)							
The way I nurse don't really inspire other nurses to copy what I do (119r)	5.641	1.6775	.023	**.823**	.228	.021	.071
I don't want to share my nursing knowledge and skills with others at work (140r)	6.011	1.6841	.046	**.700**	-.021	.086	-.055
I just do what is expected of me as a nurse. nothing more and nothing less (123r)	5.294	1.9171	.116	**.665**	.041	.107	.010
Nursing related books and/or journals don't interest me much (110r)	5.179	1.8895	-.052	**.634**	-.042	-.095	-.084
I am not eager to implement new nursing trends and/or developments at work (132r)	5.142	1.9803	-.029	**.633**	-.145	-.062	-.021
I believe that it is not my responsibility to improve the nursing skills of other nurses (135r)	5.255	2.0216	.102	**.587**	-.154	.029	-.044
I am not a role model for other nurses I work with (78r)	5.556	1.8683	.025	**.568**	.143	.003	.054
I find no use in attending nursing related seminars (44r)	5.725	1.7775	.178	**.537**	-.087	-.025	.106
Change within the field of nursing complicate the way I nurse (62r)	4.756	1.8842	-.018	**.506**	-.136	.021	-.062
I get frustrated when I have to change the way I have successfully nurses in the past (107r)	4.205	1.8088	-.146	**.435**	-.068	-.060	-.060
I don't volunteer to assist with tasks over and above my daily nursing responsibilities (27r)	4.888	1.9846	-.025	**.411**	.099	-.008	.017

Factor name and item wording	M	SD	Factor 1	2	3	4	5
*Factor 3: Mentoring (**α** =* 0.800)							
Other nurses want to be mentored by me (63)	4.580	1.8298	-.095	.007	**.703**	-.169	-.070
I can see that other members of staff have a high regard for the way I nurse (128)	5.016	1.4134	.172	-.006	**.599**	-.203	.035
Other nurses tend to imitate the way I nurse (79)	4.334	1.8345	.073	-.102	**.429**	.002	-.138
I set a good example for other nurses to follow (24)	5.841	1.0816	.296	.036	**.365**	-.095	-.185
I enable other nurses to competently perform their nursing related tasks (61)	5.500	1.2772	.253	.038	**.311**	-.117	-.276
*Factor 4: Life-long learning (**α** =* 0.872)							
I am constantly on the lookout for new or improved ways to nurse (142)	5.479	1.3618	.050	.053	-.086	**-.857**	-.028
I have adopted a culture of learning that benefits the nursing profession as a whole (143)	5.524	1.3131	.127	.079	-.005	**-.767**	.021
I seek opportunities to learn about new nursing ideas. trends and developments (125)	5.570	1.3473	.092	.005	-.013	**-.671**	-.108
I am involved in activities that seek to bring about change in the nursing profession (121)	5.010	1.5534	-.060	-.112	.155	**-.590**	-.070
I get involved in additional nursing activities that benefit the nursing profession (147)	5.221	1.4557	.111	-.021	.198	**-.525**	-.031
I challenge the way things are in my specific field of nursing (93)	4.912	1.4421	.128	-.153	.120	**-.368**	-.065
I attend nursing related learning events (76)	5.269	1.6415	-.021	.153	.194	**-.333**	-.204
*Factor 5: Change agent (**α** =* 0.802)							
I promote the implementation of change in the field of nursing (46)	5.502	1.2842	-.064	.062	.172	-.136	**-.745**
I get excited to hear about new things that will change the way I nurse (47)	5.821	1.1692	.140	.053	-.040	-.247	**-.520**
I help other nurses to become better at what they do (45)	*5.384*	*1.3456*	*.002*	*.028*	***.404***	*-.134*	***-.498***
I prepare myself to handle unforeseen nursing eventualities in the future (60)	5.499	1.2575	.237	-.102	-.057	-.124	**-.396**
I embrace change in the field of nursing (30)	5.928	1.0414	.262	.029	.045	-.069	**-.383**
I want to help those nurses around me to be the best they can be (77)	*5.846*	*1.1717*	*.280*	*.102*	*.196*	*-.217*	*-.289*

action method: Maximum likelihood.
Rotation method: Oblimin with Kaiser normalisation.
a. Rotation converged in 22 iterations.
Deleted items indicated in italic

Three items (Items 28, 77 and 108) were discarded due to item loadings less than .30. Items 28 and 108 were also the items that previously did not make the cut-off value of .40 in Table 2 (communalities). Item 45 was deleted due to a double loading onto Factor 3. The items that were grouped together to represent the different factors were analysed and renamed as follows: Factor 1: Going the extra mile (8 items); Factor 2: Organisational citizen behaviour (11 items); Factor 3: Mentoring (5 items); Factor 4: Life-long learning (7 items); and Factor 5: Change agent (5 items). Cronbach's alphas for the different factors of the scale ranged between .80 and .88; the factors were therefore considered as showing high reliability.

The factor correlations in Table 5 were examined to determine whether it was necessary to merge any of the factors. None of the correlations were, however, found to be too highly correlated (.70 or higher) and therefore no merging of factors was considered.

Table 5

Factor correlation matrix of the job investment scale

Factor	1	2	3	4	5
1	1.000				
2	.157	1.000			
3	.339	-.116	1.000		
4	-.540	-.063	-.509	1.000	
5	-.548	-.130	-.368	.582	1.000

The compassion factor

Sampling adequacy was confirmed with a KMO value (.936) that was high above the cut-off value of .50. Bartlett's test of sphericity revealed a significant chi-square statistic (χ^2 = 4579.642 (*df* =253); $p<0.05$) confirming the presence of some degree of correlation. Based on these results, it was concluded that a meaningful EFA was possible. A principal component analysis was performed and the communalities in Table 6 were checked for the portion of variance explained by each of the components.

Table 6

Communalities of the compassion scale (n=447)

	Communalities	
Items	**Initial**	**Extraction**
I use the time I have with patients to understand what they are going through (41)	1.000	.715
I don't physically feel what my patients feel but I truly understand what they feel(50)	1.000	.362
Understanding a patient's suffering comes naturally to me (57)	1.000	.594
I keep my distance when a patient becomes emotional (73r)	1.000	.423
I truly show an understanding for what my patients are going through (98)	1.000	.644
I can quickly pick up when a patient is in distress or suffering (113)	1.000	.580
I have not mastered the skill of being empathetic towards a patient (144r)	1.000	.541
When arriving at work I am eager to hear how my patients are doing (40)	1.000	.690
I help and care for my patients with all my heart (56)	1.000	.605
I am sensitive towards the needs of patients (83)	1.000	.405
I wish that I can get a job where I don't have to help and care for people all day long (92r)	1.000	.565
I treat all patients with respect and dignity (99)	1.000	.638
Relieving patients of their distress and/or suffering appeals to me (116)	1.000	.450
I portray a willing, helpful and caring attitude at work (134)	1.000	.570
I put the needs of my patients before my own (146)	*1.000*	*.390*
I don't show much patience with my patients(149r)	1.000	.670
I assist patients to integrate back into society after an illness or injury (23)	*1.000*	*.361*
I pray for my patients (49)	1.000	.541
I don't follow a holistic approach towards the treatment of my patients (55r)	1.000	.402
I try to determine how an illness or injury changes the needs of the patient (71)	1.000	.567
I believe that the negative thoughts of patients prevent them from getting better (72)	*1.000*	*.355*
I try to understand how an illness or injury affect a patients' life (84)	1.000	.624
I only focus on physical wellness when I treat my patients (118r)	1.000	.504

Extraction method: Principal component analysis.
Communalities less than .40 indicated in italic

Three items (23, 72 and 146) with communalities less than .40 were found. Based on the close proximity of all these items to the cut-off value, it was decided to retain all of them to see how they performed during the ML factor analysis.

Next, the number of factors to extract was determined by examining the eigenvalues, scree plot and parallel analysis. Table 7 indicates the total variance explained by each extracted component in terms of eigenvalues. Eigenvalues equal to 1 or higher showed that it was possible to extract three components

Table 7

Total variance explained for the compassion scale

Total variance explained						
	Initial eigenvalues			Extraction sums of squared loadings		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	8.161	35.484	35.484	8.161	35.484	35.484
2	2.878	12.511	47.995	2.878	12.511	47.995
3	1.160	5.043	53.038	1.160	5.043	53.038
4	.921	4.003	57.041			
5	.809	3.518	60.559			
…	…	…	…			
…	…	…	…			
23	.228	.991	100.000			

Three factors displayed eigenvalues ≥ 1; similarly, the scree plot suggested the extraction of three factors, while the parallel analysis suggested the extraction of only two factors (Figure 3).

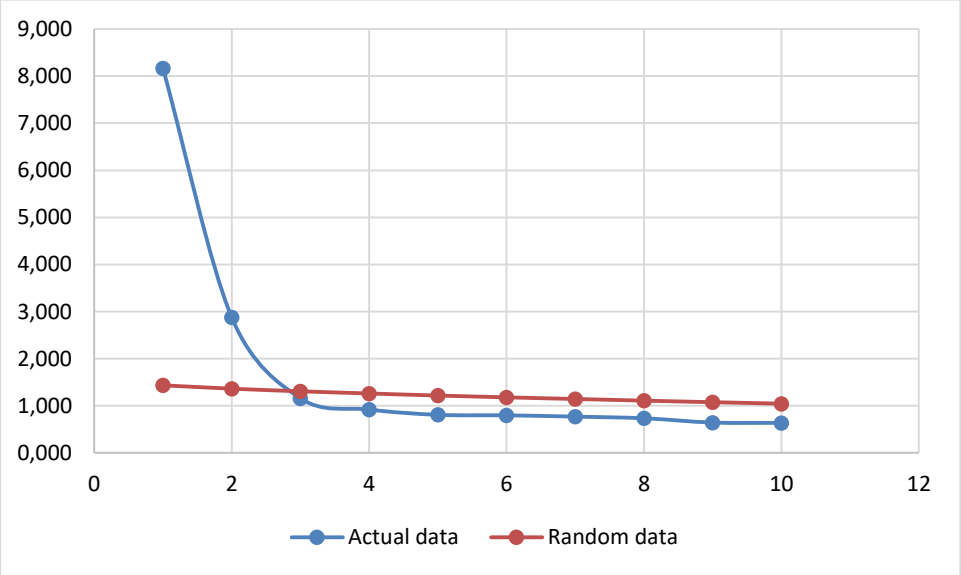

Figure 3: *Parallel analysis and scree plot for the compassion scale*

The ML factor analysis with direct oblimin rotation was conducted. Results showed that the least amount of items was lost due to low loadings or double loadings when three factors were extracted. The three-factor solution was regarded as the most viable option; the factors were extracted and resulted in a pattern matrix indicating the three extracted factors (see Table 8).

Table 8

Pattern matrix for the compassion scale (α = .88)

Factor name and Item wording	M	SD	Factor 1	Factor 2	Factor 3
Factor 1: Patient Care (**α** = 0.879)					
I try to understand how an illness or injury affect a patients' life (84)	6.144	1.0554	**.839**	.058	.127
I treat all patients with respect and dignity (99)	6.362	0.9019	**.798**	.138	.080
I can quickly pick up when a patient is in distress or suffering (113)	5.789	1.0964	**.643**	-.007	-.133
I portray a willing. helpful and caring attitude at work (134)	5.915	1.0847	**.611**	.064	-.146
I truly show an understanding for what my patients are going through (98)	5.749	1.1064	**.581**	.068	-.251
I try to determine how an illness or injury changes the needs of the patient (71)	5.693	1.0577	**.563**	.075	-.188
I believe that the negative thoughts of patients prevent them from getting better (72)	5.711	1.3206	**.530**	-.010	.037
Relieving patients of their distress and/or suffering appeals to me (116)	5.675	1.2047	**.523**	-.003	-.153
I put the needs of my patients before my own (146)	5.580	1.3141	**.511**	-.007	-.100
I help and care for my patients with all my heart (56)	*6.106*	*1.1305*	***.508***	*.034*	***-.302***
I am sensitive towards the needs of patients (83)	5.577	1.3544	**.481**	-.029	.060
Understanding a patient's suffering comes naturally to me (57)	*5.817*	*1.2044*	***.476***	*.009*	***-.339***
Factor 2: Compassion Satisfaction (**α** = 0.800)					
I don't show much patience with my patients(149r)	5.990	1.6396	.034	**.788**	.044
I wish that I can get a job where I don't have to help and care for people all day long (92r)	5.845	1.7628	.056	**.681**	.016
I have not mastered the skill of being empathetic towards a patient (144r)	5.409	1.9212	.049	**.657**	.067
I only focus on physical wellness when I treat my patients (118r)	5.523	1.8102	-.083	**.639**	-.049
I keep my distance when a patient becomes emotional (73r)	5.065	1.8573	-.063	**.522**	-.148
I don't follow a holistic approach towards the treatment of my patients (55r)	5.707	1.8646	.109	**.518**	.071

Factor name and Item wording	M	SD	Factor 1	2	3
Factor 3: Empathetic Patient Engagement (**α** = 0.788)					
I use the time I have with patients to understand what they are going through (41)	5.569	1.2821	.043	.097	**-.825**
When arriving at work I am eager to hear how my patients are doing (40)	5.575	1.3487	.065	.052	**-.778**
I pray for my patients (49)	5.540	1.6544	.117	-.006	**-.528**
I assist patients to integrate back into society after an illness or injury (23)	5.281	1.4236	.286	-.107	**-.315**
I don't physically feel what my patients feel but I truly understand what they feel(50)	5.487	1.4728	.293	-.078	**-.302**

Extraction method: Maximum likelihood.
Rotation method: Oblimin with Kaiser normalisation.[a]
a. Rotation converged in 12 iterations.
Deleted items indicated in italic

Four items (Items 56 and 57) were deleted due to double loadings on Factor 1. The items that were grouped together to represent the different factors were analysed and renamed as follows: Factor 1: Patient care (10 items); Factor 2: Compassion satisfaction (6 items); and Factor 3: Empathetic patient engagement (5 items). Cronbach's alphas for the different factors of the scale ranged between .79 and .88; the factors were therefore considered as showing high reliability.

The factor, correlations, in Table 9, was examined to determine whether it was necessary to merge any of the factors. None of the correlations were, however, found to be too highly correlated (.70 or higher) and therefore no merging of factors was considered.

Table 9

Factor correlation matrix of the compassion scale

Factor	1	2	3
1	1.000		
2	.248	1.000	
3	-.659	-.091	1.000

Personal characteristics

Sampling adequacy was confirmed with a KMO value of .941 that was high above the cut-off value of .50. Bartlett's test of sphericity revealed a significant chi-square statistic (χ^2 = 8836.645 (*df* = 990); p <0.05) confirming the presence of some degree of correlation. Based on these results, it was concluded that a meaningful EFA was possible. A principal component analysis was performed and the communalities in Table 10 were checked for the portion of variance explained by each of the components.

Table 10

Communalities of the personal characteristics scale (n=447)

	Communalities	
Items	**Initial**	**Extraction**
I don't believe that I am competent enough to perform all my nursing duties (22r)	1.000	.444
It is for me to apply my theoretical nursing knowledge to practice (29)	1.000	.564
I think my colleagues perceive me as being able, knowledgeable and skilful (38)	1.000	.626
I don't have the confidence to take the lead during a medical emergency (54r)	1.000	.546
I am certain that I will handle most nursing related challenges successfully (70)	1.000	.616
I believe in myself when handling medical emergencies (85)	1.000	.563
I can demonstrate all the basic generic nursing competencies (101)	1.000	.464
I believe that I am seen as a nursing expert in my field of specialisation (114)	1.000	.664
I am self-assured when I perform nursing related tasks (145)	1.000	.469
I am committed towards my patients, employer, and the nursing profession (21)	1.000	.655
I stay true to the nursing pledge I made (25)	1.000	.635
I tell my friends and family that nursing is a great career to follow (37)	1.000	.453
I want my behaviours as a nurse to reflect positively on the nursing profession (53)	1.000	.581
My attitude, behaviour and conduct reflect positively on my employer (69)	1.000	.538
I am dedicated towards the treatment of my patients (86)	1.000	.722
It does not really bother me when I am a few minutes late for work (102r)	1.000	.501
I have realised that I am not that committed towards nursing anymore (115r)	1.000	.520
I wish that I can be there for my patients all the time (122)	1.000	.493
I am full of energy and enthusiasm when I nurse my patients (136)	1.000	.591
I cope well with the difficulties I experience at work (20)	1.000	.509
I quickly recover after experiencing negative incidents at work (36)	1.000	.542
I stay enthusiastic at work despite difficult working conditions (52)	1.000	.543
I find it hard to recover from a stressful event at work (68r)	1.000	.553
It gets me down when negative things happen at work (87r)	1.000	.552
I can continue to nurse in a positive way despite my patient's suffering or death (103)	1.000	.429
Difficult patients affects me negatively (117r)	*1.000*	*.386*
I respond to 'what' people say instead of reacting to their tone of voice (31)	1.000	.481
I find it easy to start a conversation with most patients and members of staff (43)	1.000	.402
I am honest in my communication with patients (88)	1.000	.593
I tend to speak before I think (104r)	1.000	.462
I interrupt people to let them know what I think before I forget (127r)	1.000	.527
When I speak to people it is easy for me to bring my point across (138)	1.000	.507
I stand up for what I believe in without violating the rights and beliefs of others (150)	*1.000*	*.395*
I am a good sounding board for the ideas and concerns of the people I work with (19)	1.000	.483
I think of other things when someone is speaking to me (35r)	1.000	.487
People who know me would say that I am a good listener (51)	1.000	.524
I catch myself trying to listen to more than one conversation at a time (67r)	1.000	.680
After someone spoke to me I can repeat back to him exactly what he meant (133)	1.000	.520
When people talk to me I tend to finish their sentences for them (139r)	1.000	.531
I wish someone can help me to develop motivational skills (18r)	1.000	.400

Items	Communalities	
	Initial	**Extraction**
People I know at work told me that I am a real inspiration to them (34)	1.000	.555
I am a persuasive person (66)	1.000	.482
I find it difficult to convince patients or staff to do things (82r)	1.000	.512
I influence people at work in such a way that they are motivated to get things done (89)	1.000	.647
I have an ability to inspire people at work (105)	1.000	.724

Extraction method: Principal component analysis.
Communalities less than .40 indicated in italic

Two items (117 and 150) with communalities less than .40 were found. Based on the close proximity of Item 117 and 150 to the .40 cut-off value, it was decided to retain both to see how they performed during the ML factor analysis.

Next, the number of factors to extract was determined by examining the eigenvalues, scree plot and parallel analysis. Table 11 indicates the total variance explained by each extracted component in terms of eigenvalues. Eigenvalues equal to 1 or higher showed that it was possible to extract seven components.

Table 11

Total variance explained for the personal characteristics scale

Total variance explained						
	Initial eigenvalues			Extraction sums of squared loadings		
Component	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	12.991	28.870	28.870	12.991	28.870	28.870
2	4.243	9.430	38.300	4.243	9.430	38.300
3	1.635	3.634	41.934	1.635	3.634	41.934
4	1.610	3.579	45.512	1.610	3.579	45.512
5	1.351	3.002	48.514	1.351	3.002	48.514
6	1.158	2.573	51.087	1.158	2.573	51.087
7	1.084	2.408	53.495	1.084	2.408	53.495
8	.994	2.209	55.704			
9	.982	2.183	57.887			
…	…	…	…			
…	…	…	…			
45	.204	.454	100.000			

Seven factors displayed Eigen values ≥ 1; however, the scree plot suggested the extraction of five factors, while the parallel analysis suggested the extraction of only four factors (Figure 4).

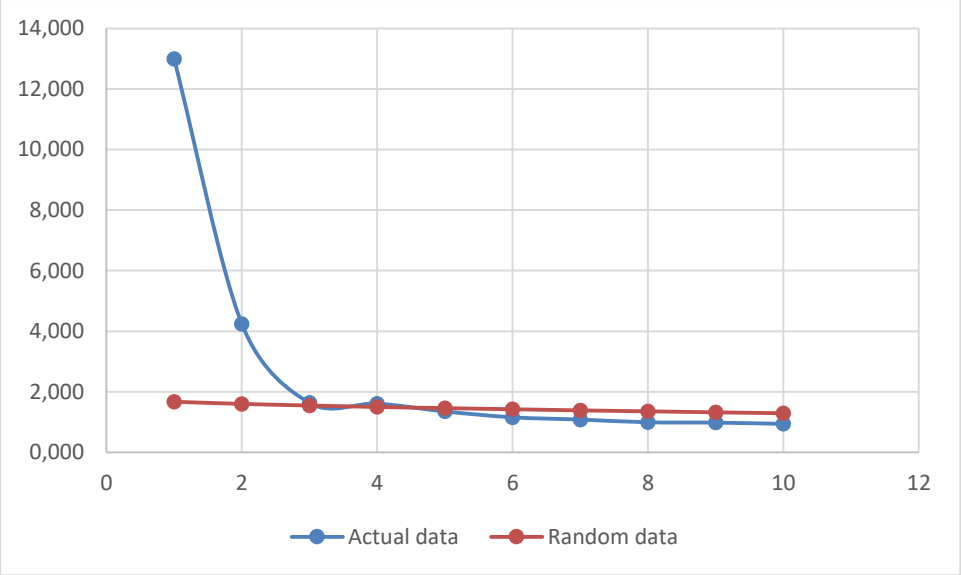

Figure 4: *Parallel analysis and scree plot for the personal characteristics scale*

The ML factor analysis with direct oblimin rotation was conducted. Results showed that the least amount of items was lost due to low loadings or double loadings when five factors were extracted. The five-factor solution was regarded as the most viable option; the factors were extracted and resulted in a pattern matrix indicating the five extracted factors (see Table 12).

Table 12

Pattern matrix for the personal characteristics scale (α = .89)

Factor name and item wording	M	SD	Factor 1	2	3	4	5
Factor 1:Professional Commitment (**α** = 0.892)							
I am dedicated towards the treatment of my patients (86)	6.040	0.9947	**.693**	.210	.142	.056	.017
I am honest in my communication with patients (88)	6.029	0.9826	**.643**	.223	.139	-.061	.093
I want my behaviours as a nurse to reflect positively on the nursing profession (53)	6.187	0.9836	**.619**	.192	-.049	.177	.045
I stay true to the nursing pledge I made (25)	6.195	0.9865	**.537**	-.059	-.036	.295	-.118
I am certain that I will handle most nursing related challenges successfully (70)	5.749	1.0692	**.527**	.057	.184	.183	-.117
My attitude. behaviour and conduct reflect positively on my employer (69)	5.708	1.2054	**.513**	.081	.161	.138	-.038
I am committed towards my patients, employer and the nursing profession (21)	*6.079*	*0.9591*	***.463***	*.094*	*.069*	***.386***	*-.001*
People who know me would say that I am a good listener (51)	5.799	1.1343	**.429**	.198	.159	.135	.133
After someone spoke to me I can repeat back to him exactly what he meant (133)	4.984	1.3877	**.422**	-.153	-.004	-.005	.004
I stand up for what I believe in without violating the rights and beliefs of others (150)	5.689	1.3803	**.389**	.033	.197	.011	.040
I find it easy to start a conversation with most patients and members of staff (43)	5.667	1.4216	**.374**	.005	.237	.112	-.043
It is for me to apply my theoretical nursing knowledge to practice (29)	5.796	1.1660	**.355**	-.099	.285	.249	-.124
I am self-assured when I perform nursing related tasks (145)	*5.463*	*1.2832*	***.351***	*.032*	***.324***	*.069*	*.077*
When I speak to people it is easy for me to bring my point across (138)	5.425	1.2748	**.330**	-.005	.271	.096	.043
I am a persuasive person (66)	4.960	1.6160	**.323**	-.126	.298	.057	.093
I can demonstrate all the basic generic nursing competencies (101)	*5.767*	*1.1062*	***.309***	*-.085*	***.307***	*.111*	*-.197*
I can continue to nurse in a positive way despite my patient's suffering or death (103)	*5.290*	*1.4835*	*.282*	*.035*	*.069*	*.226*	*.112*

Factor name and item wording	M	SD	Factor 1	2	3	4	5
Factor 2: Attentiveness (**α** = 0.764)							
I tend to speak before I think (104r)	4.819	1.9720	.083	**.574**	-.107	-.062	.006
I think of other things when someone is speaking to me (35r)	5.060	1.7523	-.070	**.572**	.088	-.021	.077
When people talk to me I tend to finish their sentences for them (139r)	4.993	1.8357	.013	**.571**	-.038	-.010	-.078
I interrupt people to let them know what I think before I forget (127r)	4.944	1.8506	.145	**.554**	-.173	-.118	-.134
I have realised that I am not that committed towards nursing anymore (115r)	5.398	1.8152	.168	**.511**	-.023	.111	-.202
It does not really bother me when I am a few minutes late for work (102r)	5.629	1.8083	.095	**.489**	.091	-.063	-.223
I catch myself trying to listen to more than one conversation at a time (67r)	*3.801*	*1.7865*	***-.304***	***.433***	*-.028*	*.097*	*-.066*
Factor 3: Inspirational (**α** = 0.876)							
I believe that I am seen as a nursing expert in my field of specialisation (114)	4.994	1.6328	-.133	-.079	**.851**	.041	-.021
I have an ability to inspire people at work (105)	5.386	1.3032	.170	-.052	**.734**	.005	-.031
I influence people at work in such a way that they are motivated to get things done (89)	5.453	1.3228	.091	-.020	**.723**	.026	.036
People I know at work told me that I am a real inspiration to them (34)	5.519	1.3898	.144	-.069	**.506**	.205	-.019
I believe in myself when handling medical emergencies (85)	5.490	1.3689	.270	.017	**.481**	.052	-.076
I don't have the confidence to take the lead during a medical emergency (54r)	*4.872*	*1.9010*	*-.036*	*.194*	***.376***	*-.057*	***-.366***
I think my colleagues perceive me as being able. knowledgeable and skilful (38)	*5.625*	*1.1755*	***.350***	*-.090*	***.358***	*.207*	*-.260*
I am full of energy and enthusiasm when I nurse my patients (136)	5.696	1.2497	.283	.113	**.340**	.266	.074
Factor 4: Resilience (**α** = 0.720)							
I cope well with the difficulties I experience at work (20)	5.336	1.2290	.114	-.069	.115	**.537**	-.080
I quickly recover after experiencing negative incidents at work (36)	4.691	1.5147	.073	-.090	-.012	**.517**	-.064
I tell my friends and family that nursing is a great career to follow (37)	5.061	1.7394	.147	.054	.091	**.466**	.020
I am a good sounding board for the ideas and concerns of the people I work with (19)	5.295	1.1807	.065	.037	.290	**.353**	.193
I stay enthusiastic at work despite difficult working conditions (52)	5.478	1.2735	.198	.267	.240	**.350**	.233
I respond to 'what' people say instead of reacting to their tone of voice (31)	4.917	1.5917	.011	-.036	.103	**.317**	.170

Factor name and item wording	M	SD	Factor 1	2	3	4	5
Factor 5: Professional Self-concept (**α** = 0.639)							
It gets me down when negative things happen at work (87r)	3.452	1.7721	-.173	.028	-.148	.287	**-.427**
I don't believe that I am competent enough to perform all my nursing duties (22r)	5.013	2.0345	.149	.118	.062	-.125	**-.408**
I wish someone can help me to develop motivational skills (18r)	3.367	1.8923	-.036	.003	.030	-.036	**-.394**
I find it hard to recover from a stressful event at work (68r)	4.685	1.8203	-.097	.286	-.059	.189	**-.353**
Difficult patients affects me negatively (117r)	4.589	1.7193	.041	.210	.004	.105	**-.352**
I find it difficult to convince patients or staff to do things (82r)	4.936	1.8032	.083	.254	.130	-.146	**-.319**
I wish that I can be there for my patients all the time (122)	*5.047*	*1.6498*	*.152*	*.153*	*.251*	*.240*	*.265*

Extraction method: Maximum likelihood.
Rotation method: Oblimin with Kaiser normalisation.
a. Rotation converged in 36 iterations.
Deleted items indicated in italic

Two items (Items 103 and 122) were discarded due to item loading less than .30. Five items (21, 67, 38, 101, 145) were deleted due to double loadings. The items that were grouped together to represent the different factors were analysed and renamed as follow: Factor 1: Professional Commitment (13 items); Factor 2: Attentiveness (6 items); Factor 3: Inspirational (6 items); Factor 4 Resilience (6 items) and; Factor 5: Professional Self-concept (6 items). Except for factor Factor 5, all the other factors revealed high Cronbach alphas of between .72 and .89 indicating high reliability. Factor 5 revealed adequate reliability of .64.

The factor correlations in Table 6 were examined to determine whether it was necessary to merge any of the factors. None of the correlations were, however, found to be too highly correlated (.70 or higher) and therefore no merging of factors was considered.

Table 13: *Factor correlation matrix of the personal characteristics scale*

Factor correlation matrix					
Factor	1	2	3	4	5
1	1.000				
2	.111	1.000			
3	.622	.065	1.000		
4	.417	.045	.407	1.000	
5	.051	-.391	.031	.013	1.000

Extraction method: Maximum likelihood.
Rotation method: Oblimin with Kaiser normalisation.

DISCUSSION

Outline of the results

The purpose of the present study was to investigate the psychometric properties of the newly developed NPIS. The scale is to be used in conjunction with the nursing passion scale (see Rabie, 2018; Chapter 3), which is an adapted version of the passion scale developed by Vallerand et al. (2003). The nursing passion scale measures the presence and type of passion present within nurses. The aim of the NPIS is to provide contextualised information about the portrayal of passion within clinical practice environments. The information can assist management to harness passion within these environments and to manage this passion to the extent that it becomes harmonious in nature. In addition, the NPIS may also assist in the

management of obsessive passion and the development of contextualised intervention strategies that address both obsessive and harmonious passion among nurses. The specific objectives that were set to achieve the purpose of the present study are set out below.

Specific objective 1*:* *To conceptualise the dualistic model of passion, the passion scale and nursing passion from the literature.*

This objective was achieved as part of the literature review. The underlying theory on which this study was based, the dualistic model of passion, was explained; the passion scale (with whom the NPIS must be used) was described; and the nursing passion conceptualisation (see Rabie, 2018; Chapter1) on which the development of the NPIS was based was provided in order to create context for the present study.

Specific objective 2: *To report on the development of the NPIS.*

This objective was achieved as part of the literature review and the methodology section of this article. It was explained that the NPIS was the outcome of a larger project in which the measurement of passion in South African nurses was explored. During the qualitative phase of the larger project, nursing passion was conceptualised within the South African context and three main themes were identified, namely: (1) job investment; (2) compassion and; (3) personal characteristics. Job investment consisted of five sub-themes: going the extra mile, empowerment, role modelling, life-long learning and change agent. Compassion consisted of three sub-themes: caring and helping others, empathy and holistic care. Personal characteristics consisted of five sub-themes: competence, commitment, resilience, interpersonal skills and leadership skills.

Items were developed to measure each of the aforementioned sub-themes resulting in the preliminary version of the NPIS. The NPIS was then administered to a new sample of participants as was described in the present study. Next, the factor structure of the NPIS had to be determined; this was achieved in Specific objective 3 below.

Specific objective 3: *To determine the factor structure of the NPIS.*

Data obtained with the NPIS were screened and the factorability of the data was confirmed before carrying out the EFA. A separate EFA was conducted for each one of the three main themes (from here on referred to as scales). This resulted in a five-factor structure for the job investment scale, a three-factor structure for the compassion scale and a five-factor structure for the personal characteristics scale. Next, the initial facets (from here on referred to as factors) that loaded onto the different scales are described and discussed in terms of how they relate to nursing passion. (Alpha values will be indicated in brackets but a full description of the internal consistency of scales will be discussed under specific objective 4).

Job investment scale (α = .91)

Job investment describes those additional activities (not necessarily directly linked to patient care) that nurses do within their work environments that tend to improve the working environment and, which, in turn, enhance the nursing profession. These activities are regarded as indicators of nursing passion. The five factors loading onto the job investment scale included: (1) going the extra mile; (2) organisational citizen behaviour; (3) mentoring; (4) life-long learning; and (5) change agent.

Except for organisational citizenship that results in certain voluntary behaviours, the rest of the job investment behaviours below may either result from nurses' formal duties and role expectations (which may not necessarily be voluntary in nature) or they may engage in them voluntarily.

'Going the extra mile' refers to a willingness of an individual to exert additional effort to do or achieve something (Collins Dictionary, 2018). Employee engagement has been linked to a greater tendency of employees to go the extra mile for others (Gatenby, Rees, Soane, & Bailey, 2008). However, harmonious passion is pivotal towards the generation of work engagement (Quadeer, Ahmad, Hameed, & Mahood, 2016). By implication, fostering harmonious passion may indirectly increase the probability of nurses going the extra mile. As part of the nursing passion conceptualisation, 'going the extra mile' in the present study entails a willingness of nurses to do more for their patients, co-workers or the clinical practice environments they work in. It involves not only an investment of time an effort into the wellbeing of nurses' own patients, but also a broader investment of time and effort to assist other healthcare personnel to do the same.

‘Going the extra mile’ may be regarded as organisational citizenship behaviour (Harvey, Bolino & Kelemen, (2018). However, within the context of nursing being a helping profession, the present study considers ‘going the extra mile’ as being particularly important towards the expression of nursing passion. It may therefore be inferred that exerting extra effort, engaging in activities beyond job descriptions, as well as doing more than is required for patients and colleagues all form part of nurses’ expression of nursing passion. It is therefore separated from organisational citizenship behaviour, which is discussed below.

Organisational citizenship behaviour refers to the engagement of employees in other activities above and beyond their formal duties. It is characterised by behaviour that is voluntary, spontaneous, contributes to organisational effectiveness and which is not necessarily noticed or rewarded (Bagraim, 2016). Specific behaviours such as helping behaviours (similar to ‘going the extra mile’), conscientiousness, courtesy, loyalty, defending the organisation and cooperation with others, and staying in good spirit despite adversity are generally linked to OCB (Bagraim, 2016; Harvey et al., 2018). Quadeer et al. (2016) found that harmoniously passionate people tend to demonstrate behaviours associated with OCB at work. In terms of nursing passion, this implies that the experience of harmonious passion among nurses may also lead to OCB and its associated behaviours in clinical practice environments that will contribute towards its effectiveness. By implication, such behaviours among nurse will also benefit the image of the nursing profession as a whole.

Mentoring refers to the process where experienced practitioners provide novice practitioners with opportunities for personal development, career development and growth, while offering their support (American Nurses Association, n.d.). A mentoring relationship may either be established formally via organisational processes or informally without the involvement of the organisation (Liebenberg, 2018). Mentoring, within the context of the NPIS, refers to the informal mentoring process within which role modelling plays an important part. Role modelling is considered to be a function of mentoring (Hale, 2018; Gruber-Page, 2016). The conclusion can be drawn that the behaviours, actions and attitudes of informal mentors will impact the behaviours, actions and attitudes of mentees. It is possible that the positive behaviours associated with harmoniously passionate nurses may indirectly influence other members of staff to exert similar behaviours to the benefit of the nursing practice environment. On the flipside, it is important to note that management must guard against obsessively

passionate nurses who may role model less desired behaviours, actions, or attitudes at work that may impact negatively on mentees and the workplace.

Life-long learning refers to individuals who are considered to be active learners and who pursue new learning opportunities in order to stay up to date with new developments, trends and ideas (Meyer, 2016). Within the context of nursing, life-long learning is regarded as being a central component of professional nursing practice (Davis, Taylor, & Reyes, 2014). Due to the enthusiasm that passionate nurses show towards their work, it is expected that they will engage in life-long learning activities related to nursing. This implies that the passionate nurses will not be satisfied with their current level of knowledge, but that they will engage in activities to ensure their continuous professional development. It is therefore hypothesised that life-long learning will provide these nurses with knowledge, skills and attitudes that will improve their performance.

Change agents are referred to in Stefancyk, Hancock, and Meadows, (2013) as individuals whose "presence or thought processes" (p.14) make other people think differently about the way they handle or think about problems. They strive towards greater performance of the workplace by altering organisational systems or the capabilities of people. According to Lonadier (2016), change agents are in touch with their environments and identify opportunities for progressive and sustainable change within them; they find suitable approaches to initiate these changes and to put them into action. The conclusion can be drawn that, within the context of this study, nursing passion will result in change agent behaviours among nurses. These behaviours are in line with the descriptions provided above. A possible prediction is that passionate nurses will embrace change and they will be excited about new trends and developments. This will possibly improve their nursing practice and will promote change in the clinical practice environment.

Next, the factors that loaded onto the compassion subscale of the NPIS will be discussed.

Compassion scale (α = .88)

Compassion refers to the empathy that nurses show towards patients, their caring or helping nature and the extent to which they provide holistic care to their patients. Within the context of this study, the compassion scale addresses the core elements of what nursing is about. The three

factors loading onto the compassion scale included: (1) patient care; (2) compassion satisfaction; and (3) empathetic patient engagement.

Patient care refers to the act of caring for someone (the patient). When one takes care of someone, it involves doing the things necessary to help that person (Macmillan Dictionary, 2018a). According to Yorke (2016), patient care involves the anticipation of the needs of patients, to address these needs and to help them to attain individual health goals depending on each patient's individual health condition. Patient care therefore entails helping the patient, which requires willingness to help and the actual act of helping.

Patient care, within the context of this study, is seen as being a core element of nurses' daily work. This implies that an expectation may exist that they should at least show some degree of passion towards taking care of patients. However, it is hypothesised that it may be possible to take care of patients without really caring for them. Therefore, within the context of nursing passion, patient care goes deeper than just plain physical patient care. It reveals a real caring attitude, which goes hand in hand with being affectionate, helpful and sympathetic.

Since patient care is regarded as the core function of nurses, scores on the NPIS are considered an important indicator of nursing passion. Low scores relating to patient care may be interpreted in different ways. These include that there may be a possibility that the nurse is in the profession for the wrong reasons; that the nurse may prefer to be involved in a different field of nursing (i.e. nursing education or theatre); or that issues in the practice environment are preventing them from portraying their real passion towards the core element of their work. The conclusion can be drawn that management must therefore ensure that nurses with a passion for nursing are selected, they must assist (i.e. educational opportunities) nurses to end up in the specialisation field of choice and address issues in the clinical practice environment that may prevent nurses from showing their real passion for nursing.

Compassion satisfaction. The EFA clustered all the reversed scored items together as a factor. A method effect was considered as a possible explanation as to why all the reversed scored items grouped together. However, after careful analysis of the items within the context of the 'compassion subscale' and a further analysis of the literature, it seemed that compassion satisfaction adequately described these items. The items were all stated in the negative, but when reverse scored, it referred to the positive construct of compassion satisfaction. Sacco and Copel (2018, p.78) define compassion satisfaction as: *"the pleasure, purpose, and gratification*

received by professional caregivers through their contributions to the wellbeing of patients and their families."

Compassion satisfaction comes to the fore when those in the helping professions (nurses in context of this study) show empathy towards their patients; empathy sets in motion those selfless behaviours that lessen the suffering of patients. The pleasure, purpose and gratification received by nurses when caring for their patients help them to cope with other negative work-life issues. The hope and optimism derived from such experiences motivate them to persevere in their roles as nurses (Sacco & Copel, 2018). The hypothesis can therefore be formulated that, within the context of nursing passion, compassion satisfaction may therefore be an indicator of job satisfaction, which can possibly lead to employee performance.

However, despite these positive feelings experienced by nurses, the stress involved when exposed to or, caring for traumatised and suffering patients may lead to the development of compassion fatigue. People in the helping professions are particularly susceptible to compassion fatigue due to the expression of feelings and empathy towards those they care for (Hunsaker, Chen, Maughan, & Heaston, 2015). Behaviourally, those exhibiting compassion fatigue avoid the development or sustainment of caring relationships with those they care for (Kelly, Runge, & Spencer, 2015). According to Jenkins and Warren (2012), compassion fatigue may result in nurses showing poor judgement and less empathy; additionally, they are also prone to showing higher levels of absenteeism, proneness to accidents and emotional breakdowns. Compassion fatigue may also eventually result in nurses leaving their jobs or profession as a whole (Kelly et al., 2015). Compassion satisfaction is believed to counter the negative effects of compassion fatigue and eventual burnout (Conrad & Kellar-Guenther, 2006; Sacco & Copel, 2018).

By implication, when a low score for compassion satisfaction is obtained on the NPIS, the possibility of compassion fatigue and burnout should be further investigated and addressed if present. Nurses scoring low on compassion satisfaction will most probably also do so on the 'empathetic patient engagement' factor due to the important role that empathy plays in both these factors. A plausible further hypothesis might be that a high score on the compassion satisfaction factor will therefore also be associated with a higher score on empathetic patient engagement.

'Empathetic patient engagement' refers to a patient-centred approach where empathy is integral to nurse-patient interaction and where this empathetic interaction leads to

individualised holistic care. 'Empathetic patient engagement' therefore suggests that when nurses engage with patients, this engagement is empathetic in nature, that patients are seen as individuals, each with their own specific treatment needs and, that there is a concern for the total wellbeing (physiologically, psychologically, spiritually, socially and emotionally (Kinchen, 2015) of the patient, including the reintegration into society. According to LaVela et al. (2017) and holistic care are hampered when healthcare providers only focus on disease and the management thereof rather than on the specific healthcare needs of individual patients and the impact of their health problems on their future lives; in the present study, the same applies to empathetic patient engagement.

The conclusion that can be formulated is that the caring and helping nature of nurses' work infer that they will engage empathetically with patients in order to render holistic care. However, demands such as high numbers of patients and nursing shortages may reduce the time that nurses spend with patients and therefore impact on their ability to engage empathetically with patients and to deliver holistic care.

Because of the love that passionate nurses have for their work, they will invest time and energy into the treatment of their patients and even go the extra mile for them under difficult circumstances. However, in the presence of prolonged unresolved work demands, passionate nurses may also start to neglect holistic care, focusing only on the physical wellness of patients. The latter hypothesis necessitates management interventions that address workplace demands that have implications for empathetic patient engagement.

Next, the personal characteristics subscale and its related factors are discussed.

Personal characteristics scale (α = .89)

Personal characteristics refer to those personal characteristics of nurses that are associated with nursing passion. The five factors loading onto the job investment scale included: (1) professional commitment; (2) attentiveness; (3) inspirational; (4) resilience; and (5) professional self-concept.

Professional commitment refers to professionals whose personal beliefs are in line with the goals of their profession (Chang et al., 2015). Professionals are regarded as those people who have achieved a high level of proficiency in a certain calling (e.g. nursing) (Business Dictionary, 2018). They are certified by a professional body (e.g. SANC) based on the completion of their studies (or courses) and conform to the technical and ethical standards of

their profession. They exhibit courteous, conscientious and business-like manners at their places of work (Merriam-Webster Dictionary, 2018.). Nurses showing professional commitment tend to exert greater effort to the benefit of the profession by willingly investing time and energy into the things they believe in, the promises they make and the decisions they take (Cambridge Dictionary, 2018).

The conclusion can be drawn that the willingness to invest more time and effort into meaningful activities/work as stated above links professional commitment to passion via the PDC. The hypotheses can be formulated that nursing passion can therefore be portrayed in terms of professional commitment. Professional commitment in nursing can therefore refer to professional nurses who are committed towards nursing (in particular towards quality patient care) and the advancement of the profession as a whole.

In terms of the dualistic model of passion, both harmonious and obsessive passion can lead to commitment or professional commitment as referred to in the NPIS. Harmonious passion will infuse professional commitment of the nurses towards task engagement. In this case, task engagement is flexible and nurses can end their engagement therein before neglecting other domains of their lives such as their families, friends, health, hobbies or other important tasks. They also tend not to ponder on things that happened at work once they get home.

However, nurses who experience obsessive passion may tend to over-commit. They might be less flexible with regard to task engagement and will just keep going at the cost of other domains in their lives. They can possibly experience work-life imbalance and struggle to complete certain tasks due to over commitment on other tasks. They might also experience wellness issues such as burnout. Once they are at home, they cannot let go and ruminate about things that happened at work.

It is anticipated that both harmonious and obsessive passionate nurses will initially score higher on the professional commitment factor of the NPIS. Although the obsessively passionate nurse may initially score high on this factor, the negative outcomes of obsessive passion may reveal themselves in the longer run. It is therefore advisable to monitor nurses with obsessive passion and a high score on professional commitment in order to intervene if necessary. When the obsessively passionate nurse has a low score on the professional commitment factor, it might indicate that the negative outcomes of obsessive passion are already at play.

Another possible tendency might be that when harmoniously passionate nurses score low on professional commitment, it can be an indication of issues in the work environment that impact negatively on them. The conclusion can be drawn that these issues need to be identified and addressed in order for nurses to regain their passion and, in turn, their professional commitment towards nursing.

Attentiveness. The EFA clustered all the reverse scored items together to form this factor. The possibility of another method effect of the data was considered, but a careful analysis of the literature and a great deal of deliberation resulted in the attentiveness factor. The items associated with this factor were all stated in the negative (referring to inattentiveness), but when reverse scored the attentiveness factor was revealed.

Attentiveness within the nursing context refers to a nursing quality to pay careful attention to a stimulus and to be considerate and thoughtful towards patients and colleagues (Nugent, 2013; Dictionary.com, 2018). Klaver and Baart (2011) refer to attentiveness from an altruistic point of view. According to these authors, attentiveness creates the space where a caring relationship between the caregiver (nurse) and patient may begin. This is quite relevant within the context of the compassion scale in the sense that without being attentive it will be difficult to create a caring relationship with patients and it will also be difficult to engage with patients in an empathetic way. The hypothesis that can be formulated is that being attentive will be one of the predictors of the formulation of a caring relationship.

Within the context of nursing passion, being attentive is therefore considered to be an essential characteristic of nurses closely linked to patient care, the core element of nursing. Passionate nurses may therefore portray attentiveness in the clinical practice environment by showing a real interest in their patients as well as a willingness to spend time with them during which effort is invested into being attentive towards their needs

Inspirational refers to nurses who have the capacity to inspire others around them by creating an interest and enthusiasm towards doing something or to create something new (Macmillan Dictionary 2018b). It refers to the effectiveness of nurses in motivating those around them to let go of their own self-interests for the sake of achieving the goals of their practice environments and that of the nursing profession as a whole. Being inspirational is a personal characteristic often linked to a variety of leadership styles such as transformational leadership and charismatic leadership (Searle & Hanrahan, 2011). Within the context of the measurement

of nursing passion in the present study, being inspirational was considered to be a leadership quality, but not linked to a particular leadership style. Due to the enthusiasm that goes along with being passionate, it is expected that nurses will portray nursing passion in the form of being an inspiration to others at work.

Results confirmed that a connection between leaders and inspirees is paramount to the inspirational process.

Resilience. Although resilience has been defined in a number of ways as "a trait, a process, a quality, a cycle, an attribute and a psychological category" (Cope, Jones, & Hendricks, 2016, p. 213), the present study referred to it as being a personal characteristic (trait or quality) of a nurse (see Rabie, 2018; Chapter 1). Resilience is an important quality or trait of nurses to cope with their challenging nursing environments and stress. Nurses who possess this quality are better equipped to handle workplace stress and even to thrive under it (Cope et al., 2016). Resilient nurses tend to be more engaged, attentive, and empathetic towards their clients; they work better in teams and tend to suffer less from emotional exhaustion, despair and burnout (Cope et al., 2016; García & Calvo, 2012). By implication, the importance of resilience among nurses cannot be ignored. The nature of their work requires of them to deal with issues such as death and dying, observing trauma, dealing with pain and sadness of patients and their loved ones (Rabie, Wehner, & Koen, 2018). In addition, they have to deal with many challenges such as nursing shortages, high patient loads, violence in the workplace, shortages of resources and other issues that contribute to the demanding nature of their work (South Africa: Department of Health, 2013)

The hypothesis can be made that in order for nurses to remain passionate about nursing they need to be resilient. If this characteristic is not present among nurses, the consequences as mentioned above are inevitable. By implication, resilience has been identified as one of the personal characteristics of nursing passion. Research on the passion that entrepreneurs show towards their profession has revealed a strong positive statistical relationship between resilience, harmonious passion and the success of entrepreneurs (Fisher, Maritz, & Lobo 2014). It is expected that the same relationship may exist between resilience, harmonious nursing passion and the success of nurses in the clinical practice environment.

Professional self-concept. Another clustering of the reversed scored items in the EFA yielded an investigation of a possible method effect. However, after an analysis of the items and the literature, professional self-concept provided an adequate explanation for the items that clustered together.

Professional self-concept is viewed as an important factor for the delivery of professional practices and successive behaviours (Kantek & Şimşek, 2017). Cao, Chen, Tian, and Diao (2016) define the professional self-concept of nurses as a self-assessment of particular nursing roles and the resulting perception that they develop about themselves within their practice environments. An explanation might be that this self-assessment may either result in a positive or negative professional self-concept. A negative professional self-concept may lead nurses to think of themselves as being incompetent or they may view the nursing profession as unsatisfactory. The latter explanation is in accordance with the work of Cao et al. (2016). The hypothesis might be that a positive professional self-concept may lead to job satisfaction, lower levels of burnout and a diminished intention to quit the profession (Abanciogullari & Dogan, 2017).

Next, as part of the EFA, it was also necessary to determine the internal consistency of the different scales of the NPIS. This formed part of Objective 4 of the present study and is addressed below.

Specific objective 4: *To determine the internal consistency of the different scales within the NPIS.*

Determining the internal consistency of the NPIS was important for the purpose of administering it on a new sample of nurses and to conduct a confirmatory factor analysis in the future (outside the scope of the larger project and this study). This objective was achieved by investigating the Cronbach alpha coefficients obtained for the different factors on each scale of the NPIS. Cronbach's alpha is an indicator of the extent to which the different items on a scale measure the same concept or construct (Tavakol & Dennick, 2011). According to the aforementioned authors, values between .70 and .95 are generally considered to be acceptable; however, in the present study, Cronbach alpha values were interpreted as follows (see Hinton, 2004), as cited in Taherdoost (2016, p.33): excellent reliability (.90 and higher), high reliability (.70 to .90), moderate reliability (.50 to .70) and low reliability (.50 and lower). Next, an interpretation of the internal consistency of each scale of the NPIS is discussed.

Cronbach alphas of the factors loading on the job investment scale ranged between .80 and .88, and were considered as showing high reliability. Reliability of the compassion scale was also considered as showing high reliability with Cronbach alphas ranging between .79 and .88. In general, the reliability of the factors loading on the personal characteristic scale was also high, ranging between .72 and .89, with the exception of the professional self-concept factor that revealed a moderate reliability of .64. Although .64 was considered moderate, it was still considered adequate within the context of the exploratory nature of this study (Taherdoost, 2016).

Overall, the factors loading on the job investment scale, compassion scale and personal characteristics scale revealed high reliability. The reliability of the overall job investment scale was .91, for the compassion scale .88 and for the personal characteristics scale .89. The high reliabilities achieved with the different scales revealed that the NPIS was fit for use in a new sample of nurses for the purpose of conducting a future confirmatory factor analysis (outside the scope of the larger project and the present study).

Next, the practical implications, limitations and recommendations of the research are discussed in order to address specific objective 5 of the research.

Specific objective 5: To make recommendations for organisations/practice and future research.

Practical implications

The NPIS was developed to be used in conjunction with the nursing passion scale. Combining the two scales provides information about the dualistic nature of passion and the portrayal of passion within the nursing context. The additional information that the NPIS provides is intended to assist the management of clinical practice environments to identify the indicators of nursing passion. This information should be interpreted together with the information provided by the nursing passion scale. Low scores on the NPIS on any one of these indicators should be further investigated to determine the cause thereof and to identify possible strategies to assist the nurse to portray such indicators. However, a low score on the total scale may be indicative of a total loss of nursing passion and can be confirmed by means of the nursing

passion scale. Management should investigate and intervene to address the issues that cause nurses to lose their passion for nursing.

It is important to note that both harmonious and obsessive passion may initially lead to high scores on all of the NPIS factors. It is, however, expected that obsessively passionate nurses will over the longer term start to reveal lower scores on the NPIS, while harmoniously passionate nurses will continue to have higher scores.

In order to reach the last objective of this study, the limitations and recommendations of the present research were discussed.

Limitations and recommendations

As in most studies, the present study also had its own limitations. Firstly, the conceptualisation of nursing passion that was used for the development of the NPIS was only based on the perceptions of the participants in this study. Including participants such as patients and other non-nursing medical personnel may also have contributed additional information towards the nursing passion conceptualisation. It is recommended that future studies should also include these types of participants in the conceptualisation of nursing passion in order to validate the present conceptualisation that may lead to the improvement of the NPIS.

Secondly, the participants in the present study consisted mainly of white and African female participants. Future studies should also include those racial groups who were underrepresented (Indian and Coloured) in the present study. Although nursing is seen as a female-dominated profession, some effort should be invested in future studies to include more males in the sample.

Thirdly, since the NPIS on its own does not measure the actual presence of passion and the type of passion present within nurses, it is important to use it in conjunction with the nursing passion scale. Although Rabie (2018; Chapter 2) investigated the psychometric properties of the nursing passion scale for use within the South African context, the scale is still in the process of development. It is therefore recommended that the recommendations made in Rabie (2018; Chapter 2) be addressed in order for it to be used in conjunction with the NPIS as was recommended in this study.

Fourthly, since the NPIS is a newly developed instrument, it was important to conduct an initial EFA in an attempt to uncover patterns in the dataset and to test predictions (Yong & Pearce, 2013). It is therefore recommended that the NPIS should be administered to a new sample of nurses for the sake of investigating its psychometric properties via a confirmatory factor analysis. In addition, it is recommended that the nursing passion scale be administered at the same time in order to test how the two scales function together.

CONCLUSION

The NPIS is considered to be a useful instrument to manage nursing passion within clinical practice environments when used in conjunction with the nursing passion scale (an adapted version of the passion scale developed by Vallerand et al., 2003a). The main purpose of the present study was to report on the development of the NPIS and its psychometric properties.

In order to achieve this, it was important in terms of objective 1 to conceptualise the dualistic model of passion, which was the underlying theory on which the present study was based. In addition, the passion scale (Vallerend et al., 2003a) was described to provide some indication of where the development of the NPIS was supposed to fit in. A conceptualisation of nursing passion was provided on which the development of the NPIS was based. Objective 2 involved a discussion of the development of the NPIS, where an explanation was provided on how the NPIS came to be.

Addressing objective 3 of the study involved conducting a separate exploratory factor analysis on each one of the three subscales (job investment, compassion and personal characteristics) of the NPIS. The EFA resulted in a meaningful five-factor structure for the job investment subscale, a three-factor structure for compassion subscale and a five-factor structure for personal characteristics subscale.

Objective 4 involved reporting on the internal consistency of the NPIS. Overall, the factors of the different subscales of the NPIS revealed high reliability, except for the professional self-concept factor that showed moderate reliability. However, for the sake of an exploratory study, this was deemed acceptable

Objective 5 was achieved by making recommendations about the future use of the NPIS. It was recommended that the NPIS should be administered on a new sample of nurses and that a confirmatory factor analysis should be done to further investigate its psychometric properties of the scale. It was also recommended that the nursing passion scale should be administered together with the NPIS in order to see how these two scales perform together.

Overall, the NPIS was considered to be a useful scale in the management of nursing passion in clinical practice environments.

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CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

CHAPTER 5

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter provides the conclusions that were drawn from Article 1 (Chapter 2), Article 2 (Chapter 3) and Article 3 (Chapter 4). The conclusions to this research are discussed in accordance with the general and specific objectives of each article. Following the conclusions, this chapter also refers to the limitations of all three research articles and makes recommendations towards practice and future research in the field of industrial psychology. Finally, it will also highlight the contribution of this thesis to the theory and practice of industrial psychology.

Next, the conclusions made in the three research articles will be presented. The conclusions section below will start off by providing a summary of the general orientation about the research presented in this thesis. Thereafter, the conclusions of Article 1, 2 and 3 will follow.

5.1 Conclusions

5.1.1 General orientation summary

The passion that nurses show towards their work can impact both positively and negatively on the clinical practice environments they operate in. Empirical research has shown the benefits of having passionate employees. This sparked a new interest in managers to search for and to manage passionate employees to the benefit of their organisations. The aforementioned is particularly important within the context of nursing. Since nurses are seen as forming the backbone of the South African healthcare system, they can be considered as an important strategic resource to achieve the government's drive towards the creation of "a long and healthy life for all South Africans" (South Africa: Department of Health, 2013, p. 4). Neglecting this resource may have dire consequences for healthcare in South Africa.

The Department of Health recognised that nursing in South Africa faces many challenges and even put a strategy in place to reconstruct and revitalise the nursing profession. However, the researcher found no mention in this strategy of the search for, or the management of nurses who are passionate about nursing. A possible explanation for this was the novelty of work

passion research (Ho, Kong, Lee, Dubreuil, & Forest, 2018) and the fact that this type of research has mainly been conducted in westernised countries (Burke, Astakhova & Hang, 2015). A literature search on work passion (nursing passion) research in South Africa at the start of this research project yielded no results.

In light of the above, the research reported on in this thesis intended to investigate the passion that South African nurses' show towards nursing by determining what nursing passion entails, how it is portrayed and, how it can be scientifically measured. Together, the three research studies reported on in Articles 1, 2 and 3 therefore conducted elements of the groundwork for the future management of nursing passion within this context by conceptualising the nursing passion construct, analysing a measure of passion and developing a new scientific measure that can be used to assist in the management of nursing passion within clinical practice environments. The effective management of nursing passion will in future benefit nurses themselves, their patients, the clinical practice environments they operate in, the nursing profession, and the healthcare system as a whole.

The research on nursing passion that was conducted in this research project was based on the dualistic model of passion (DMP) (Vallerand et al, 2003). The DMP is grounded in self-determination theory, which is regarded as a macro-theory of human motivation (Deci, Olafsen, & Ryan, 2017).

Next, the conclusions that were made about the objectives of Article 1 are presented. The general objective (or purpose) of the article is presented first, followed by the conclusions made on the specific objectives.

5.1.2 Article 1

General objective

General objective 1 of the overall research project: *To explore 'nursing passion' within the South African context and to test an instrument for the measurement thereof.*

This first study consisted of a convergent parallel mixed-method design. It was expected that this type of design would have provided a clearer understanding of the passion construct and the measurement of passion within the nursing context.

A cross-sectional design was used to reach the specific objectives of the quantitative part of the study. The passion scale was used to collect the quantitative data. The qualitative part of the study followed a constructivist approach. The researcher therefore held the view that participants had different experiences and that their reflections on these experiences resulted in them making sense of the world around them (Adom & Ankrah, 2016). Ontologically, a single reality did not exist and therefore participants were viewed as creating their own realities (Patel, 2015). Epistemologically, the researcher viewed the use of interpretation as the only way to find the truth (Patel, 2015), and therefore the data that were obtained from participants had to be interpreted. In order to interpret nurses' lived experiences, a phenomenological research strategy was used (Simon & Goes, 2011). The general objective of this study was achieved by reaching all the related specific objectives.

Next, the conclusions drawn from the specific objectives of Article 1 are provided. Specific objective 1 covered both the quantitative and qualitative parts of the study.

Specific objectives: Article 1

Specific objective 1: *To conceptualise the dualistic model of passion, self-determination theory, passion scale and passion-definition criteria (PDC) from the literature.*

Specific objective 1 was achieved by conceptualising the dualistic model of passion, self-determination theory, passion scale and PDC from the literature. Within the context of the DMP, people who are passionate about an activity/work have a strong liking or love for it, they find it important or of value to them, and they invest a great deal of time and effort into it. The activity also becomes part of the person's identity via an autonomous or controlled process of internalisation. The elements that form part of the conceptualisation of passion above were referred to as the PDC (Vallerand et al., 2003).

The DMP also posits the existence of two types of passion, namely harmonious passion (HP) and obsessive passion (OP). HP is considered to be the bright side of passion, leading to positive outcomes for individuals as well as the organisations they function in. OP is considered to be the dark side of passion, leading to less desired outcomes for individuals and their organisations over the long run. The presence of HP or OP depends on the extent to which the identity of an individual is absorbed by the activity/work, together with the form of internalisation (autonomous or controlled in nature). Both HP and OP can be identified by

examining how the activities/work impact on other domains of their lives such as their families, hobbies or other important work tasks.

The passion scale used within the context of the DMP to measure the presence of passion (in terms of the PDC) and the types of passion (HP and OP) were described and empirical research in which it was successfully used was indicated. A specific description of the scale itself was provided in the methodology section of the quantitative part of the study.

Next, the conclusions specifically related to the objectives of the quantitative part of Article 1 are presented. The quantitative specific objectives are presented as Part 1 of the mixed-method study, while the qualitative specific objectives will be presented as Part 2.

Specific objectives: Part 1

Specific objective 2: *To test the psychometric properties of the passion scale by accepting or rejecting hypotheses related to its factor structure, internal consistency and convergent validity.*

In order to reach specific objective 2, certain hypotheses were stated to confirm whether the passion scale operated similarly within the South African context when compared to other contexts in which it was used before. In order to achieve this, exploratory factor analysis and partial correlations were conducted. The conclusions related to these hypotheses are mentioned below.

Hypothesis 1*: Scores on the passion scale will fit a correlated two-factor model.*

In line with the DMP, the results of the exploratory factor analysis confirmed the presence of a correlated two-factor structure and were therefore in line with hypothesis 1. None of the six items of the HP scale were omitted during the Exploratory Factor Analysis (EFA). One item of the OP scale was, however, omitted and therefore left the scale with five remaining items. The possibility existed that participants did not understand the particular item. Confirmation of hypothesis 1 meant that the use of the passion scale within the South African context revealed a similar factor structure than that when used in other countries.

Hypothesis 2: *Internal consistency (Cronbach alphas > .70) will be achieved for both harmonious passion (HP) and obsessive passion (OP).*

Empirical research with the passion scale has confirmed its internal consistency in numerous studies. Cronbach alphas higher than .70 were generally reported. It was important to determine whether the same internal consistency was obtainable when using the scale within the South African context. Hypothesis 1 was achieved when Cronbach alphas of .85 and .81 were achieved for both HP and OP, respectively. The passion scale therefore revealed high internal consistency within the South African context and was therefore in line with internal consistencies obtained when the scale was used in other countries.

Hypothesis 3: *There will be correlation between harmonious passion and the passion definition criteria when controlling for obsessive passion.*

According to the DMP, HP is considered to be a type of passion and should therefore correlate with the PDC measured with the passion scale (items A13 to A17). Partial correlations were conducted on HP, while OP was controlled for. HP was found to correlate significantly with all PDCs except for item A13. It was possible that the small sample size, as well as item bias in terms of language and culture contributed to HP not correlating with item A13. Hypothesis 3 was therefore partially confirmed. The partial confirmation had implications for convergent validity of the HP subscale. A larger sample and further investigation into its items were recommended.

Hypothesis 4: *There will be correlation between obsessive passion and the passion definition criteria when controlling for harmonious passion.*

Similar to Hypothesis 3 above, the DMP considers OP to be a type of passion and that it should therefore correlate with the PDC measured with the passion scale (items A13 to A17). Partial correlations were conducted on OP, while HP was controlled for. In this case, no correlations were found between OP and the PDCs. Again, the correlations may have been affected by the small sample size and item bias in terms of language and culture. Hypothesis 4 was therefore rejected. The partial confirmation had implications for convergent validity of the HP subscale. A larger sample and further investigation into its items were recommended.

Hypothesis 5: Convergent validity will be present when both harmonious passion and obsessive passion correlate with the passion definintion criteria.

Convergent validity is an indication that two constructs are related. In the present study, both HP and OP were considered as being types of passion and should therefore have correlated with the PDCs. Since Hypothesis 3 was partially accepted and Hypothesis 4 rejected, it was indicative of the absence of convergent validity of the scale. This was in contrast with studies done by Vallerand et al. (2003), Mageau et al. (2009) and Marsh et al. (2013). As mentioned earlier, the small sample of the pilot study and item bias in terms of language and culture may have had implications for these correlations. It may have been that more participants showed harmonious passion than obsessive passion; therefore, the high correlations between HP and the PDC and the absence of correlations between OP and the PDC.

Next, the specific objectives of Part 2 of the study are presented. Since the specific objectives formed part of the total parallel mixed-method approach, the numbering of the specific objectives will continue from Part 1 to Part 2.

Specific objectives: Part 2

Specific objective 3*: To explore passion among professional nurses and nursing students.*

Specific objective 3 was achieved by exploring passion among professional nurses and nursing students. Passion for work, based on the dualistic model of passion, is a relatively new field of research. At the time of planning this research project, no research could be found on the topic within the South African context or, more specifically, within the South African nursing context. This led to the exploratory nature of the present study. For the purpose of future research within the nursing context, it was therefore necessary to understand what passion for work (nursing) among South African nurses entailed. Semi-structured interviews were held and data were analysed via thematic analysis. Four main themes were extracted from the data: PDC, compassion, job investment and personal characteristics.

PDC included subthemes similar to those measured by the passion scale in Part 1 of the study to measure the presence of passion in individuals. These included: love/like nursing, valuing nursing, time/energy investment and autonomous internalisation. The qualitative part of the

study confirmed the presence of these PDC among South African nurses. Except for the findings of the quantitative part of the study, the qualitative part of the study provided more proof that the passion scale may be used within the South African nursing context.

Compassion was outlined as an awareness of other individuals' distress/suffering, a longing to help relieve them of their ailments and taking action to help them by taking caring of them (McCaffrey & McConnell, 2015). The subthemes included empathy, caring and helping other as well as holistic care. These themes linked closely to the description of compassion above. Empathy referred to a mode of becoming aware of another person's suffering. Caring and helping referred to a willingness to help and the actual act of helping, while holistic care referred to the treatment of a patient as a whole (physically, psychologically, emotionally, and spiritually). The compassion theme with its related subthemes was considered to be the primary responsibility of nurses in terms of the South African nursing pledge.

The job investment theme referred to the additional responsibilities, tasks or roles in which passionate nurses get themselves involved in above and beyond their primary responsibilities. Subthemes related to job investment were identified as: going the extra mile (doing more for others than expected), role model (being an example to others in the workplace), change agents (embracing change, recognising opportunities for change and initiating change), empowering others (providing freedom, power and authority to people to use their own initiative during problem-solving and decision-making) and life-long learning (being active learners pursuing new learning opportunities). The job investment theme was therefore considered to be related to the improvement or enhancement of nursing in the clinical practice environment and the profession as a whole.

Personal characteristics were those specific traits that were attributed to nurses who were regarded as being passionate. The sub-themes included being competent and confident, being committed, showing resilience, interpersonal skills in terms of communication and listening skills and the leadership skills in terms of motivation of others. It was concluded that these characteristics were particularly relevant to the passionate South African nurse.

Specific objective 4: *To conceptualise 'nursing passion' for the South African context.*

Specific objective 4 was achieved by integrating the results of the qualitative part of the present study. This led to the following conceptualisation of nursing passion in South African:

'*Nursing passion' refers to compassionate nurses who are competent, confident and resilient in the execution of their duties while demonstrating appropriate communication, listening and motivational skills; they show a strong preference for nursing based on their love for the profession, the enjoyment it brings and the inherent value or importance they attribute to it. Their commitment towards nursing is revealed by a willing investment of time and energy into the holistic care of their patients, the constant improvement and enhancement of the practice environments in which they operate as well as the nursing profession as a whole. These nurses autonomously internalised nursing into their identities and therefore do not merely nurse for the sake of nursing, it rather becomes part of their true selves: being* ***nurses.***

Since the qualitative part of the present study confirmed the presence of the PDC (as mentioned in the quantitative part of the study), among South African nurses, these criteria were also included in the nursing passion conceptualisation.

Specific objective 5: *To make recommendations for organisations/practice and future research*

In order to keep to the structure of this concluding chapter, specific objective 5 will be addressed under the recommendations section further down in this chapter.

Next, the conclusions that were made about the specific objectives of Article 2 are presented. The general objective (or purpose) of the article is presented first, followed by the conclusions made on the specific objectives.

5.1.3 Article 2

General objective

General objective 2 of the overall research project: *To investigate the psychometric properties of the passion scale using Rasch analyses; and to determine whether the addition of a frame-of-reference had any significant effects on the scale.*

In conjunction with the first research study that tested the factor structure of the passion scale and its internal consistency, this second study intended to further investigate the psychometric properties of the passion scale by means of Rasch analysis. As part of this analysis, the addition of a frame-of-reference (nurse/nursing) to the passion scale was investigated. The intention of adding a frame-of-reference to the scale was to contextualise the passion scale for use among South African nurses. The six items of the harmonious passion subscale and the six items of the obsessive passion subscale were included in the analysis. Since the PDC items do not form part of the two-factor structure of the passion scale, they were excluded from analysis in this study. The exclusion of these items is generally accepted when the subscales of the passion scale are analysed (see Vallerand et al., 2003; Mageau et al., 2009; and Marsh et al., 2013). An original version of the passion scale and an adapted version thereof (containing the frame-of-reference) were analysed and compared. A quantitative approach with a cross-sectional survey design was used for the purpose of the study. Rasch analysis was used to analyse the data. The general objective of this study was achieved by reaching all the related specific objectives.

Next, the conclusions drawn from the specific objectives of Article 2 are provided.

Specific objective 1: *To conceptualise the dualistic model of passion, the passion scale, frame-of-reference effect and Rasch analysis from the literature.*

Specific objective 1 of this study was achieved by conducting a literature review focusing on the main construct used in the study. As such, the dualistic model of passion was described as consisting of both harmonious and obsessive passion. It was indicated that harmonious passion is associated with positive outcomes at work, whereas obsessive passion is associated with less desired outcomes at work. The process whereby passion is internalised into the identity and how it may or may not consume the identity was explained.

The development of the passion scale was described in terms of its factor structure, reliability and construct validity. The use of the passion scale within different contexts was indicated. Frame-of-reference effects were explained as adding context to psychometric tests. The addition of a frame-of-reference provides participants in a study with the same frame-of-reference when they answer items on a scale. This may improve the reliability and criterion validity of psychometric instruments. Lastly, the use of the Rasch model, within the context of this study, was explained. Item response theory under which the Rasch model resorts was contrasted with classical test theory in order to motivate the use thereof. The Rasch model was then explained in terms of how it operates in fitting data to the Rasch model. It was mentioned that Rasch analysis can be used to check the quality of item performance of instruments, to determine whether the instrument should be adapted and to investigate the functioning of the rating scale. For the purpose of adapting the passion scale in order to add a frame-of-reference and to analyse its psychometric properties, Rasch analyses were considered to be the appropriate method for analysing the statistical data in this study.

Specific objective 2: *To analyse the subscales of an original and adapted passion scale in terms of their response categories operation.*

Specific objective 2 of this study was achieved by analysing the subscales of an original and adapted passion scale in terms of their response categories operation. The response categories of the seven-point Likert scale of the original and adapted harmonious and obsessive passion subscales were evaluated. This entailed whether participants responded according to the intended ordering of the two scales. Response category probability curves were used to determine whether participants responded as intended. Disordered thresholds were revealed for both the HP and OP subscales and did not show fit with the Rasch model. The response categories were collapsed and revealed a six-point Likert scale. A six-point Likert scale was, however, not acceptable within the context of the dualistic model of passion, since a midpoint was required on the scale. The use of a five-point scale would have brought the midpoint of the scales too close to the extremes. It was therefore concluded that the seven-point Likert scale should still be considered for future use while some correction for response styles should be considered. Further investigation into the items that led to the disordered thresholds was also suggested.

Specific objective 3: *To analyse the subscales of an original and adapted passion scale in terms of their item locations and the fit of the items to the Rasch model.*

Specific objective 3 of the study was achieved by analysing the subscales of an original and adapted passion scale in terms of their item locations and the fit of the items to the Rasch model. After rescoring the Likert scale of both the original and adapted harmonious passion subscales, the fit statistics were analysed to check the overall functioning of the items against the specifications of the Rasch model. Both harmonious passion subscales revealed good fit to the Rasch model.

The Likert scale of both the original and adapted obsessive passion subscales was also rescored and analysed in terms of the fit statistics. Model fit was, however, not achieved for the two obsessive passion subscales. Invariance was not achieved and therefore differential item functioning was present. The participants therefore had different probabilities of success on the items of the two obsessive passion subscales. Items 1 and 5 on the original obsessive passion subscale and item 1 on the adapted obsessive passion subscale were identified as the causes of the subscale misfit. It was concluded that the wording of these items may have been confusing or inadequate for the context within which it was used. Further investigation into these items was suggested.

Items were deleted one by one until the Rasch criteria for fit were met. After deleting item 1on both subscales, there was no further significant misfit of the items. Overall fit to the Rasch model was achieved and differential item functioning was therefore eliminated. After the removal of item 1 on both obsessive passion subscales, the names of the scales were changed to the modified original obsessive passion subscale and the modified adapted obsessive passion subscale.

During the aforementioned analysis, both the adapted harmonious passion subscale and modified adapted obsessive passion subscale performed better than the original harmonious passion subscale and modified original obsessive passion subscale. This was again ascribed to the frame-of-reference added to the items of the adapted subscales.

Differences between the harmonious passion subscales in terms of the easiest and most difficult item to endorse were ascribed to boredom of a long measurement instrument in which the subscales were included and the addition of a frame-of-reference to the adapted subscale. The same applied to the obsessive passion subscales with the addition of social desirability that may

have had an impact on the way items were endorsed. It was concluded that the overall functioning of the items of both harmonious passion subscales was satisfactory, but that item 6 on the original harmonious passion subscale needed some revision. The overall functioning of the remaining modified obsessive passion subscales was also found to be satisfactory.

Specific objective 4*: To analyse the subscales of an original and adapted passion scale in terms of their item/person threshold distribution (Targeting).*

Specific objective 4 was achieved by analysing the subscales of an original and adapted passion scale in terms of their item/person threshold distribution. This analysis entailed an investigation into the range and spread of item and person locations. Person-item distribution maps were analysed for this purpose. The person separation index (PSI) values and Cronbach alphas indicated good reliability for both harmonious passion and both obsessive passion subscales. The original obsessive passion subscale revealed a PSI of .85 and a Cronbach alpha of .87. In contrast, the adapted harmonious passion subscale revealed a PSI of .82 and a Cronbach alpha of .84. In terms of the modified original obsessive passion subscale, the PSI of reliability was .83 and the Cronbach alpha .86. The modified adapted harmonious passion subscale revealed a PSI of .77 and a Cronbach alpha of .81.

Analysing both harmonious passion subscales and both obsessive passion subscales revealed that item and person locations were well spread. Targeting of the original harmonious passion subscale was better than the adapted harmonious passion subscale. However, the adapted subscale revealed a standard deviation (*SD*) closer to 1 than the original subscale. It was concluded that the addition of a frame-of-reference pulled the test scores of the adapted subscale closer to the mean since respondents answer items with a similar frame of mind. The same applied to the modified adapted obsessive passion subscale that also showed a *SD* closer to 1 than the original version.

The modified original obsessive passion subscale revealed slightly better reliability than the modified adapted obsessive subscale. This was attributed to the deletion of item 1 earlier in the analysis. It was concluded that this item should be revisited for possible re-inclusion. Although the reliability of the modified original obsessive passion subscale was higher than that of the modified adapted subscale, the latter was better targeted. This was based on its person location scores being closer to zero and a *SD* closer to 1.

Although PSI values were high for both harmonious passion subscales and both obsessive passion subscales, the gaps identified in their item ranges revealed more room for improvement of reliability. It was therefore suggested that more items can be developed to target more person locations in order to increase reliability.

Specific objective 5: *To analyse the subscales of an original and adapted passion scale in terms of the extent to which the items are dependent on one another (Local independence).*

Specific objective 5 was achieved by analysing the subscales of an original and adapted passion scale in terms of the extent to which the items was dependent on one another. Local independence refers to the requirement that responses on items are independent from responses on other items. In terms of this analysis, it was found that one item on the original harmonious passion subscale and two items on the modified adapted obsessive passion subscale revealed item dependencies. The dependence of items may have implications for reliability of the subscales (Hill, 2015). A solution for local independence is to combine items that are locally dependent or to delete these items (Esakki et al., 2018). Since the targeting of the subscales revealed that more items in the scale were needed to increase reliability, no one of these options were acceptable. It was suggested that the items should be checked and rephrased to address item dependence before further use.

Specific objective 6: *To analyse whether the items of the original and adapted passion scale subscales function the same across two ethnic groups (Differential Item Functioning (DIF).*

Specific objective 6 was achieved by analysing whether the items of the original and adapted passion scale subscales functioned the same across two ethnic groups. DIF was used to explore possible item bias in terms of ethnicity. Uniform DIF was found to be present in all the subscales under analysis. White participants constantly scored higher on some items than African participants. The modified adapted passion subscale was the only scale showing non-uniform DIF. Items of the scale therefore did not function uniformly across the latent trait (obsessive passion). Removing items that caused DIF was not an option, since this would have reduced the number of items in the scales and impact on reliability of the subscales. This was particularly true for the modified adapted obsessive passion subscale whose items were already

reduced to five. A procedure of Hagquist and Andrich (2017, p.5) was used to remove all DIF. It was concluded that the items of the scales that led to DIF should be addressed for future use.

Specific objective 7: *To compare the subscales of the original and adapted passion scale in terms of their operating characteristics (Unidimensionality).*

Specific objective 7 was achieved by comparing the subscales of the original and adapted passion scale in terms of their operating characteristics. For this purpose the Rasch assumption of unidimensionality was tested. When unidimensionality is not present, it is regarded as a violation of the Rasch local independence assumption. In order to test for unidimensionality, t-tests were performed to equate the two versions of the harmonious passion subscales as well as the two version of the obsessive passion subscales. The results revealed multidimensionality and therefore a violation of the Rasch assumption of local independence. This implied that the original harmonious passion subscale measured something slightly different than the adapted harmonious passion subscale, and that the modified original obsessive passion subscale measured something slightly different than the modified adapted obsessive passion subscale. The conclusion was made that the addition of a frame-of-reference contributed to this multidimensionality. Therefore, adding a frame-of-reference differentiates the adapted subscales from the original subscales.

Specific objective 5: *To indicate practical implications as well as limitations and recommendations for organisations/practice and future research.*

In order to keep to the structure of this concluding chapter, specific objective 5 will be addressed under the recommendations section further down in this chapter. Next, the conclusions that were made pertaining to the objectives of Article 3 are presented. The general objective (or purpose) of the article is presented first, followed by the conclusions made on the specific objectives.

5.1.4 Article 3

General objective

General objective 3 of the overall research project: *To report on the development and psychometric properties of the nursing passion indicator scale (NPIS).*

The general objective of Article 3 was to report on the development and psychometric properties of the newly developed NPIS. This scale was developed to be used in conjunction with the nursing passion scale, a contextualised version of the passion scale developed by Vallerand et al. (2003). The NPIS was developed to measure the conceptualisation of nursing passion. It is therefore an indicator of the elements contained in the nursing passion conceptualisation (see Rabie, 2018; Chapter 1). The NPIS provides contextualised information that can be used in conjunction with the passion scale in order to assist in the management of nursing passion within clinical practice environments. The general objective of this study was achieved by reaching all the related specific objectives.

Next, the conclusions drawn from the specific objectives of Article 3 are provided.

Specific objective 1: *To conceptualise the dualistic model of passion, the passion scale and nursing passion from the literature.*

Specific objective 1 was achieved by conducting a literature review focusing on the main constructs used in the study. As such, the dualistic model of passion, the passion scale and nursing passion were conceptualised from the literature. The dualistic model of passion was described in terms of how both harmonious and obsessive passions are developed and their implications. The passion scale was described in terms of the measurement of both harmonious and obsessive passion. The PDC were explained as the elements in the passion scale that determine whether a person is passionate about activities/work or not. Findings made by means of the use of the passion scale were mentioned. Nursing passion was described within the context of how it was conceptualised in Rabie (2018; Chapter 1) of the present research project.

Specific objective 2: *To report on the development of the NPIS.*

Specific objective 2 of the study was achieved by reporting on the development of the NPIS. The scale development guidelines of DeVellis (2012) were followed during the development of the NPIS. In order to develop the scale, clarity was needed on what exactly it was supposed to measure. The conceptualisation of nursing passion was therefore important. Semi-structured interviews were held with a number of nurses during a previous phase of the larger research project (see Rabie, 2018; Chapter 1). Thematic data analysis resulted in four main themes: PDC, job investment, compassion and personal characteristics. Since the PDC are measured with the passion scale, items were not developed for this theme and its related subthemes. A large item pool was, however, developed to measure each of the remaining themes and its subthemes. Items were then checked for ambiguity, being too long, reading difficulty level, semantics, multiple negatives and double-barrelled items. Since the NPIS is to be used in conjunction with the nursing passion scale, which measures nursing passion on a seven-point Likert scale, it was decided to keep to this format during the development of the NPIS. A panel of experienced researchers then scrutinised the items of the scale and, based on their recommendations, it was decided whether to make changes to the items. The scale was then administered to a sample of registered and student nurses.

Specific objective 3: *To determine the factor structure of the NPIS.*

Specific objective 3 was achieved by determining the factor structure of the NPIS. Since this NPIS was a newly developed scale, it was important to conduct an EFA in order to reduce the number of items of the scale and to determine its factor structure. A separate EFA was done for each of the three identified main themes. Once the EFA process started, the main themes were referred to as scales and the subthemes were referred to as factors. The EFA resulted in a five-factor structure for the job investment scale, a three-factor structure for the compassion scale and a five-factor structure for the personal characteristics scale. The five factors loading on the job investment scale were: going the extra mile, organisational citizen behaviour, mentoring, life-long learning, and change agent. The three factors loading on the compassion scale were: patient care, compassion satisfaction and empathetic patient engagement. The five factors loading on the personal characteristics scale were: professional commitment, attentiveness, inspirational, resilience, and professional self-concept.

Specific objective 4: *To determine the internal consistency of the different scales within the NPIS*

Specific objective 4 was achieved by determining the internal consistency of the different scales within the NPIS. In order to use the NPIS on a new sample of nurses, it was important to determine its internal consistency. In order to do so, the Cronbach alpha values were evaluated to determine whether the internal consistency was any good. All the factors loading on the job investment scale, compassion scale and personal characteristics scale revealed Cronbach alphas between .70 and .90, except for the professional self-concept factor. This factor revealed a Cronbach alpha of .64, which was considered to be moderate. However, within the context of the exploratory nature of this study, this value was acceptable. Overall, based on the internal consistency of the different scales within the NPIS, it was safe to say that the NPIS had adequate reliability for use on a new sample of nurses for the purpose of conducting a confirmatory factor analysis.

Specific objective 5: *To make recommendations for organisations/practice and future research*

In order to keep to the structure of this concluding chapter, specific objective 5 will be addressed under the recommendations section further down in this chapter.

Next, the limitations of the research project, as reported in Article 1, will be presented. This will be followed by the limitations of Articles 2 and 3.

5.2 Limitations of the study

Article 1

The sample of study 1 (both quantitative and qualitative) consisted mainly of females. In addition, the largest percentages of participants were either white or African with very few Indian or coloured participants. The data that were therefore collected analysed and interpreted were mainly based on white and African females. Furthermore, pertaining to the qualitative part of study 1, only professionally registered nurses and student nurse formed part of the sample and were interviewed. The view of patients and other healthcare workers who are in contact

with these nurses might have provided some additional information on the passion that nurses show toward their work.

In terms of the quantitative phase, the sample size was adequate for the purpose of a pilot study, but a larger sample size may have yielded better results, especially in terms of the partial correlations.

The passion scale that was used in this study was initially developed in French and later translated to English. It was also mainly used in westernised countries. The English version was used during the pilot study of the quantitative part of the study. No changes were made to the scale before administering it within the South African context. Since the intention was to test the instrument during a pilot study for future use within the South African context, this was an acceptable practice. Since South Africa has 11 different official languages and the fact that most South Africans speak English as a second or third language, it may have impacted on the results obtained. The scale was also not check for being culturally fair. South Africa is known for being culturally diverse; therefore, this may also have impacted on the results. Item bias in terms of language and culture may have had an effect on the results obtained.

The passion scale was developed in such a way that it can be used within different contexts. The researcher was of the opinion that the scale will function better when both the instructions and items were adjusted to fit the context within which it will be used; in other words, adding a frame-of-reference to the items. The passion scale also provides generic information about passion for activities/work within different contexts, but does not provide specific contextualised information about the portrayal of passion in a particular setting such as nursing.

Next, the limitations of Article 2 will be presented.

Article 2

As was the case in Article 1, most participants were female with only a few males participating in the study. It was therefore not possible to determine differential item functioning in terms of gender. Very few coloured and Indian participants were taken up in the sample. This may also have implications for the future use of the passion scale on these ethnic groups. The inclusion of undergraduate students may also have affected the results obtained. Student nurses may feel very different about their future career than those who are already in the profession.

Next, the limitations of Article 3 will be presented.

Article 3

The same sample of participants that were used in study 2 (see Rabie, 2018; Chapter 2) were also used in study 3. For this reason, the limitations pertaining to the participants will not be repeated here.

In addition, nursing passion was conceptualised based on the qualitative data collected in Study 1 (see Rabie, 2018; Chapter 1). Participants in Study 1 consisted of registered professional nurses and student nurses. It may be that the inclusion of additional participants such as patients and other medical and non-medical personnel may have contributed additional information towards the nursing passion conceptualisation.

Next, the recommendations made for organisations/practice and future research as mentioned in Article 1 are presented. This will be followed by the recommendations of Articles 2 and 3.

5.3 Recommendations

Recommendations are provided for the organisation/practice and future research. These recommendations relate to specific objective 5 (Article 1), specific objective 8 (Article 2) and specific objective 5 (Article 3) that were not yet addressed in this concluding chapter.

Article 1

Specific objective 5: *To indicate practical implications as well as limitations and recommendations for organisations/practice and future research.*

Specific objective 5 was reached by indicating practical implications as well as limitations and recommendations for organisations/practice and future research. In this study, males as well as Indian and coloured participants were underrepresented in the research sample. It was recommended that this issue be addressed in similar studies in future. The sample size of this study was adequate for a pilot study; however, the small sample may have had implications for the results of this study. It is therefore recommended that larger sample sizes should be used in future studies where the passion scale is applied. Language use and cultural fairness of the passion scale were not determined during the pilot study. It was recommended that these be investigated in future studies. The researcher was of the opinion that a contextualised passion

scale would have delivered better results. It was therefore recommended that the addition of a frame-of-reference (nurse/nursing) to the items of the passion scale must be further investigated.

It was also recommended that a scale should be developed for the measurement of the nursing passion conceptualisation. The intention of such a scale was to supplement the nursing passion scale (a contextualised version of the original passion scale) in order to provide additional contextualised information about the portrayal of nursing passion in the workplace; whereas the nursing passion scale will indicate the presence of passion among nurses and whether this passion is harmonious or obsessive in nature, the new scale will assist in focusing intervention strategies to the benefit of nurses their patients, their practice environments and the nursing profession as a whole.

Article 2

Specific objective 8: *To make recommendations for organisations/practice and future research.*

Specific objective 8 was reached by providing recommendations for organisations/practice and future research. Since the subscales of the passion scale consisted of only six items each, any deletion of items may have impact on the reliability of the subscales. It was therefore recommended that any items on the subscales that resulted in bias or misfit must be revisited before a decision is made on the deletion thereof. This was to ensure that the reliability of the subscales be maintained.

Although the present study revealed a six-point Likert-type scale, this was rejected based on the fact that the passion scale is an established measure of passion for activities/work. In addition, the six-point Likert scale did not have a midpoint as is required in the dualistic model of passion. Furthermore, a five-point Likert scale would have brought the extremes of the scale to close to the centre. It was therefore recommended that the continued use of the seven-point Likert scale be considered.

As a way to increase reliability of the subscales, it was recommended that more items be developed to target more of the person locations.

The findings revealed that the addition of a frame-of-reference led to better functioning of the passion scale subscales. Therefore, it was recommended that a frame-of-reference (nurse/nursing) should be added to the items of the passion scale.

The theoretical framework of the passion scale is based on the dualistic model of passion, and therefore the analysis of the passion scale was only based on the two subscales, harmonious and obsessive passion. It is recommended that the five additional items included in the passion scale, to measure the PDC, should be investigated in terms of their relationship with harmonious and obsessive passion.

During the Rasch analysis, it was found that some items lead to differential item functioning. As was mentioned earlier, in an attempt not to delete items for the sake of reliability, it was recommended that these items should be further investigated before a decision about deletion is made. This particular study investigated the particular psychometric properties of the passion scale and the addition of a frame-or-reference. In terms of future use in the clinical practice environment, the scale must first be adapted and tested again in terms of the recommendations made in this study. The newly adapted scale must then be administered again for validation purposes and for use in the in the clinical practice environment.

Article 3

Specific objective 5: *To make recommendations for organisations/practice and future research.*

Specific objective 5 was reached by providing recommendations for organisations/practice and future research. In order to validate the conceptualisation of nursing passion on which the NPIS was built, it is recommended that future qualitative studies should also include patients, as well as other medical and non-medical personnel in their samples to obtain a broader view of nursing passion. This may assist in validating the current conceptualisation and contribute to the improvement of the NPIS.

Few males were included in the present study as was the case with the Indian and coloured ethnic groups. It is recommended that more males as well as Indian and coloured participants

be included in future studies that investigate the psychometric properties of the NPIS. This will ensure that any bias that may be contained within the NPIS related to these groups can be addressed.

In light of the NPIS being a newly developed scale it was recommended that it be administered on a new sample of nurses in order to tests its psychometric properties by means of a confirmatory factor analysis.

Since the NPIS was developed to be used in conjunction with the nursing passion scale (see Rabie, 2018; Chapter 2), it is recommended that when the NPIS is administered to a new sample of nurses that the nursing passion scale be administered at the same time. This will allow for an investigation into how these two scales complement one another. It is recommended that the NPIS as well as the nursing passion scale must first be validated before official use in practice.

Next, the contributions that this research made to the field of industrial psychology are presented. The overall contribution of this thesis is presented followed by the contributions of each individual research article.

5.4 Contribution of this research project to the field of industrial psychology

Overall contribution

Passion for work, based on the DMP, is a relatively new field of research that originated in Canada. Vallerand et al. (2003) initially tested the dualistic nature of passion in 2003 and also developed the passion scale for measuring this dualistic nature of passion. Vallerand and Houlfort (2003) also applied the model with success for the first time in the work environment. For a number of years, since 2003, most research related to the DMP investigated the passion that people had for their activities such as gambling (Philippe & Vallerand, 2007), sport (Vallerand, et al. 2006), online shopping (Wang & Yang, 2008), studying (Stoeber, Cilds, Hayward, & Feast, 2011) and dancing (Rip, Fortin, & Vallerand, 2006).

In recent years, there has been a steady increase in research related to passion for work. Research on the topic over the last eight years included issues such as: the role that passion for

work play in burnout (Lavigne, Forest, & Crevier-Braud, 2012; Vallerand, Paquet, Philippe, & Charest, 2010); affective, behavioural and cognitive consequences of harmonious and obsessive passion for work (Forest, Mageau, Sarrazin, & Morin, 2011); work engagement versus workaholism (Gorgievski-Duijvesteijn & Bakker, 2010); passion for work and heavy work investment (Houlfort, Philippe, Vallerand, & Ménard, 2013); the development of passion for work (Perrewé, Hochwarter, Ferris, McAllister, & Harris, 2014); the dualistic model of passion for work (Birkeland & Buch, 2015); passion and organisational citizenship (Qadeer, Ahmed, Hameed, & Mahmood, 2016); job passion and work engagement (Astakhova & Ho, 2017) and; work passion, career success and improved quality of life (Bushardt, Young, & Beal, 2018).

The conclusion can be drawn that passion for work is closely related to the field of industrial psychology, investigating topics that are related to employee wellbeing and performance. At the time that the present research was conducted, up to the end of 2018 when the study was concluded, no research was found where the dualistic model of passion was applied in research within the South African context and particularly within the South African nursing context.

Overall, the present study therefore contributed to the field of industrial psychology in South Africa by initiating research on the passion construct from the perspective of the dualistic model of passion within the South African nursing context. The research revealed the necessity of understanding the context in which passion is measured. Understanding the context makes it possible to realise why the passion of nurses are directed at specific dimensions of their work. Evaluation of these dimensions (the conceptualisation of nursing passion) will assist in managing the passion that nurses show towards their work.

Next, the specific contribution of Article 1 is presented.

Article 1

In light of work passion being a relatively new field of research and an absence of research on the topic within the South African nursing context, the research reported on in Article 1 conducted the groundwork for future studies on work passion within the nursing context of South Africa. In Article 1, two specific contributions were made.

Firstly, the passion scale used to measure the dualistic nature of passion, was tested in a pilot study to determine its suitability for use within the South African nursing context. It was

concluded that the instrument was useable, but that further investigations were needed in terms of its items, convergent validity and that a larger sample was needed than that of the initial pilot study. This was therefore the first time the passion scale was tested within the South African nursing context and therefore the groundwork was done for further investigation into the use of the scale and the validation thereof in future studies within this context.

Secondly, In order to conduct research on the passion that nurses showed toward nursing, it was important to understand the 'nursing passion' construct. This study was the first within the South African context to conceptualise this construct. This paved the way for future research on nursing passion within the nursing context.

Together, these quantitative and qualitative studies contributed to the field of industrial psychology by doing the groundwork for future investigations into the work passion (nursing passion) of South African nurses. This may in future contribute to the effective management of nursing passion in clinical practice environments that will benefit nurses themselves, their patients, the clinical practice environments they function in, the nursing profession as well as the South African healthcare system.

Next, the specific contribution of Article 2 is presented.

Article 2

In article 2, the psychometric properties of the passion scale were investigated and the effect of the addition of a frame-of-reference to the items of the passion scale was investigated by means of Rasch analysis. This article contributed to the field of industrial psychology by further investigating the passion scale for the future validation thereof within the South African nursing context. The validation of the scale will make it possible to measure passion within clinical practice environments and to manage the passion of nurses in these environments. In this study, two specific contributions were made that should be kept in mind before the validation of the passion scale within the nursing context can take place.

Firstly, the Rasch analysis has shown that the items of the passion scale should be further investigated in terms of adding more items for the purpose of increasing reliability and in terms of the revision of existing items that created problems pertaining to the fit of the data to the Rasch model. The latter was important since the deletion of misfitting items, in a scale consisting of only six items, may reduce reliability.

Secondly, this study contributed by showing that adding a frame-of-reference (i.e. nurse or nursing) may improve the performance of an adapted (or contextualised) scale above that of an original scale without such frame-of-reference. The implication of adding a frame of reference to the passion scale will contextualise it for specific use within the nursing context. This implied that, in future, such scale will be called the nursing passion scale.

Lastly, the use of Rasch analysis for investigating the psychometric properties of the passion scale was unique. This was especially true within the South African context where research on the passion scale is new. However, the researcher also did not find international studies where Rasch analyses were used investigate the psychometric properties of the passion scale. If these existed, they were very rare.

Next, the specific contribution of Article 3 is presented.

Article 3

In Article 3 the development of a new instrument called the NPIS was discussed. It was identified that the passion scale on its own does not provide enough contextual information about nursing passion in particular. Information about how passion is portrayed within nursing contexts will be helpful in the management of nursing passion within clinical practice environments. For this purpose, the NPIS was developed to capture this contextual information. The scale was developed to be used in conjunction with the passion scale (or nursing passion scale if contextualised to nursing).

The research reported on in Article 3 contributed to the field of industrial psychology by doing the groundwork for the further development of the NPIS for future use within the South African nursing context. This scale, in conjunction with the passion scale (nursing passion scale), may assist in the effective management of nursing passion in the clinical practice environments of nurses in future.

In conclusion, the research presented in this thesis provided insight and built theory on the work passion of nurses. It will expectantly stimulate further research and benefit the health sector, the management of nurses and ultimately improve patient care.

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