THE DEVELOPMENT AND EMPIRICAL EVALUATION OF AN INTENTION TO QUIT STRUCTURAL MODEL FOR NURSES IN THE PUBLIC SECTOR IN SOUTH AFRICA

by
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ABSTRACT

Nursing staff turnover is significantly higher than turnover experienced in other occupational groups. Resultantly studying turnover and turnover intent in the health care industry is important. Turnover intent has been cited as the most immediate determinant of actual turnover, and high nurse turnover and consequent diminished staff numbers have a significant detrimental effect on performance and the nature of care received by patients.

Countless individual and organisational factors that influence employee turnover and intention to quit have been reported in the literature, which can either heighten or lower turnover intent. The study is based on the theory of the job demands-resources model, distinguishing between factors that operate as either resources or demands, in an individual's work environment; and how that contributes to turnover or intention to quit.

Given the majority of demands inherently present in the work done by nurses, the current study focussed specifically on examining the influence of resources on lowering intention to quit; through their influence on job satisfaction and affective commitment. Organisational resources included in the study were family supportive supervisor behaviour and psychosocial safety climate; whereas resilience and calling orientation were included as personal resources.

The study made use of an ex post facto correlational design to test the relationships between the various constructs. A non-probability convenience sample of n = 184 public health sector nurses, employed in hospitals in the Northern and Western Cape, completed a composite questionnaire. Intention to quit was measured with the intention to quit scale by Cohen (1993). Job satisfaction was assessed by means of Ng's (1993) Nurse Satisfaction Scale (NSS) and the pay satisfaction subscale of the Job Satisfaction Survey (JSS) (Spector, 1985). The Affective commitment scale (ACS) was used to measure Affective commitment. Family supportive supervisor behaviour was assessed with the FSSB scale (Hammer et al., 2008), and psychosocial safety climate with the PSC-12 (Hall et al., 2010). To measure calling orientation, Dik et al. (2012) calling and vocation questionnaire (CVQ) was utilised. Resilience was measured with the resilience subscale of the psychological capital questionnaire (PSQ-24) (Luthans et al., 2007). And finally, perceived organisational effectiveness was assed with a POE questionnaire.

The psychometric properties of the measuring instruments, utilized in the study, were examined by means of item analysis and confirmatory factor analysis (CFA). The structural model was tested using Structural Equation Modelling (SEM) to determine the effectiveness with which the model explained unique variance in intention to quit. The two interaction effects within the model was tested by means of moderated multiple regression.

The results indicated significant relationships existing between a number of constructs. Both affective commitment and job satisfaction were confirmed as significant predictors of intention to quit. Family supportive supervisor behaviour was shown to significantly influence affective commitment, job satisfaction as well as psychosocial safety climate. Psychosocial safety climate, in turn, emerged as a significant predictor of job satisfaction as well as affective commitment. Support was found for the influence of calling on resilience, as well as job satisfaction on perceived organisational effectiveness. No support was found for the influence of resilience on Psychosocial safety climate, job satisfaction or affective commitment. The influence of perceived organisational effectiveness on calling was also found to be insignificant. While weak evidence in support of calling moderating the relationship between psychosocial safety climate and job satisfaction was obtained, no evidence was found for the moderating effect of resilience.

This study contributed to the body of research focussed on the antecedents of intention to quit. Based on the practical implications of the findings several managerial recommendations are put forward. In conclusion, the results indicate that the model provides a partial, yet plausible explanation of the network of variables accounting for variance in intention to quit among public health sector nurses in South Africa.

OPSOMMING

Omset onder verpleeg personeel is beduidend hoër as omset-tendense in ander beroepskategorieë. Dit is daarom belangrik om omset, asook omset-intensies, in die gesondheidsindustrie te bestudeer. Omset intensie word gereken as die mees onmiddellike bepaler van werklike omset. Hoë verpleegster-omset, en dus verminderde personeel-getalle het 'n beduidende nadelige invloed op prestasie van verpleegsters en die aard van sorg ontvang deur pasiënte.

Talle individuele en organisatoriese faktore wat werknemer-omset en omset-intensie beïnvloed deur dit te verhoog of verlaag, word gerapporteer in literatuur. Die huidige studie is gebaseer op die "Job Demands-Resources" model, wat onderskeid tref tussen faktore wat dien as hulpbronne en die wat dien as eise in 'n individu se werksomgewing; en hoe dit bydra tot omset of omset-intensie.

Gegewe die groot hoeveelheid eise inherent teenwoordig in verpleeg personeel se werk het die studie spesifiek gefokus op die invloed van hulpbronne op die verlaging van omset intensie; deur hul invloed op werksbevrediging en affektiewe toegewydheid. Organisatoriese hulpbronne ingesluit in die studie sluit in familie ondersteunende lynbestuur gedrag asook psigososiale veiligheids-klimaat; terwyl veerkragtigheid en roeping oriëntasie ingesluit is as persoonlike hulpbronne.

Die studie het gebruik gemaak van n "ex post facto" korrelasie ontwerp om die verwantskappe tussen die verskillende konstrukte te toets. N nie-waarskynlikheid steekproef van n = 184 publieke sektor verpleeg personeel, werkagtig in hospitale in die Noord en Wes-Kaap, het die volledige vraelys voltooi. Omset intensie was gemeet met die "Intention to Quit" skaal deur Cohen (1993). Werksbevrediging was geassesseer deur Ng (1993) se "Nurse Satisfaction Scale" (NSS) asook die "Pay Satisfaction" subskaal van die "Job Satisfaction Survey" (JSS) (Spector, 1985). Die "Affective Commitment Scale" (ACS) was gebruik om affektiewe toegewydheid te meet. Familie ondersteunende supervisor gedrag was gemeet met die "Family Supportive Supervisor Behaviour" (FSSB) skaal (Hammer et al., 2008). Psigososiale veiligheids klimaat is gemeet met die "Psychosocial Safety Climate" PSC-12 vraelys van Hall et al. (2010). Om roeping oriëntasie te assesseer was Dik et al. (2012) se "calling and vocation questionnaire" (CVQ) gebruik. Veerkragtigheid was gemeet deur die verkragtigheid subskaal van die "Psychological Capital Questionnaire" (PSQ-24) (Luthans et

al., 2007). Laastens was waargenome organisatoriese effektiwiteit gemeet met n vraelys wat spesifiek vir die doel van hierdie studie ontwikkel was.

Die psigometriese eienskappe van die meetinstrumente wat in die studie gebruik is, was ondersoek deur middel van item analise en bevestigende faktor analise. Die strukturele model was getoets met "Structural Equation Modelling" (SEM) om die effektiwiteit waarmee die model unieke variansie in omset intensie verklaar te bepaal. Die twee interaksie effekte in die model is getoets deur middel van "moderated multiple regression".

Die resultate van die studie het aangedui dat beduidende verwantskappe tussen 'n paar van die konstrukte bestaan. Beide affektiewe toegewydheid asook werkbevrediging is bevestig as beduidende voorspellers van omset intensie. Verder het familie ondersteunende lynbestuur gedrag 'n beduidende invloed het op affektiewe toegewydheid, werkbevrediging asook psigososiale veiligheidsklimaat gehad. Op sy beurt het psigososiale veiligheids klimaat na vore gekom as n beduidende voorspeller van werkbevrediging, sowel as affektiewe toegewydheid. Ondersteuning was gevind vir die invloed van roeping op veerkragtigheid, asook werksbevrediging op waargenome organisatoriese effektiwiteit. Geen ondersteuning is gevind vir die invloed van veerkragtigheid op psigososiale veiligheids klimaat, werkbevrediging of affektiewe toegewydheid nie. Die invloed van waargenome organisatoriese effektiwiteit op roeping oriëntasie was ook uitgewys as onbeduidend. Terwyl swak bewyse ter ondersteuning van die moderende effek van roeping oriëntasie op die verhouding tussen psigososiale veiligheids klimaat en werksbevrediging gevind is, was daar geen ondersteunede bewyse gevind vir die moderering effek van veerkragtigheid nie.

Die studie het bygedra tot die navorsing gefokus op die bepalers van omset-intensie. Gebasseer op die praktiese implikasies van die bevindinge word verskeie bestuurs- aanbevelings voorgele. Ter afsluiting, die resultate dui aan dat die model 'n gedeeltelike, maar geloofwaardige verduideliking bied van die veranderlikes wat veranderinge veroorsaak in die omset intensies van verpleeg personeel in die publieke gesondheid sektor in Suid-Afrika.

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CHAPTER 1

INTRODUCTION

Employee turnover has, for the most part, been viewed as a hindrance for organisational functioning, yet neither is it a secret that it can also be a strategic management tool (Hansen, 2005; McEvoy & Cascio, 1987). However, regardless of the direction in which the argument flows, it cannot be denied that whenever employees voluntarily resign or intend to do so at a higher rate than deemed acceptable, that something more significant might be underlying the phenomena. Research has shown that nursing staff turnover is significantly higher than turnover experienced in other occupational groups (van der Heijden, van Dam & Hasselhorn, 2009). Turnover is defined as an event in which employees either leave their organisation or relocate to another area within the organisation (Currie & Hill, 2012); by extension it may be defined as the pace at which a hospital loses nursing staff (Hayes et al., 2006).

Intention to quit (ITQ) per definition is when an employee plans to, or contemplates, leaving an organisation (Firth, Mellor, Moore & Loquet, 2004). ITQ ought to be of great importance to management as ITQ predicts turnover (Rhéaume, Clément & LeBel, 2011). Hayes et al. (2006, p. 239) support this by suggesting turnover intent to be "the most immediate determinant of actual turnover". Studying turnover intent in the health care industry is important, as high nurse turnover and consequent diminished staff numbers have a significant detrimental effect on performance and the nature of care received by patients (Pillay, 2009). Moreover, according to Pillay (2009) high turnover has significant economic implications in terms of loss of investment, as the cost of training nurses in South Africa in 2009 was estimated to be about R300 000 per nurse.

That most people want their work to mean something seems apparent (Steger, Dik & Duffy, 2012), yet there exists the possibility that to some individuals doing meaningful work carries more value than for others. Literature on the subject indicates that nurses in particular experience a calling for meaningful work (McNeese-Smith & Crook, 2003). According to Steger, Littman-Ovadia, Miller, Menger and Rothmann (2013) the concept of meaningful work relates to an individual's perception that one's work is important, worthy, and has positive meaning. Whether one's work is viewed as meaningful is based on individual judgement and relates to a feeling or value that must be experienced first-hand. Regarding your work as

meaningful, or serving a purpose, designates work that is a calling, which is a characteristic of meaningful work (Steger et al*.,* 2012).

Having a calling orientation or experiencing meaningful work has been associated with numerous positive outcomes. For example, meaningful work is more central to employees' lives, leading to higher levels of engagement, commitment and more importantly such employees report less turnover intent (Steger et al., 2013). Other positive outcomes associated with meaningful work and having a calling orientation include increased job satisfaction and better functioning of work teams (Steger et al., 2012). However, the problem evidently is that while it is generally assumed that nurses experience a calling for the work they do (Toode, Routasalo & Suominen, 2011), they also display high levels of turnover, especially in the South African public health sector. It would therefore seem that businesses, or more specifically hospitals, have something to gain when their employees experience work as meaningful, and evidently should want to employ nurses who view their work as a calling based on the positive outcomes it could potentially hold.

Toode et al. (2011) support the claim that often times nurses experience a calling for the work they do and that they are motivated by the meaningfulness they find in their work. While only a limited number of studies have investigated the relationship between meaningful work and engagement (Steger et al., 2013), results nonetheless indicate meaningful work to be a predictor of engagement (Olivier & Rothmann, 2007; Stringer & Broverie, 2007). Elaborating on the concept of engagement, Steger et al., (2013) maintain there exists a multitude of factors that could potentially increase or decrease work engagement, and it appears that the Job Demands-Resources model (Bakker & Demerouti, 2007) guide attention towards understanding such factors relating to the work place. Bakker and Demerouti (2007, p. 312) define job resources as "physical, psychological, social or organisational aspects of the job that are functional in achieving work goals, reduce job demands and associated costs and stimulate personal growth and development" and job demands as "physical, psychological, social or organisational aspects of the job that require sustained physical and/or psychological effort or skills and are therefore associated with certain physiological and/or psychological costs". Steger et al., (2013) demonstrate that according to the model, engagement is a likely consequence when resources outweigh demands, however when demands outweigh resources, the opposite is the case and employees will be prone to burnout. Burnout is

positively related to high levels of stress and turnover, and high levels of both are generally associated with nursing, especially in developing countries such as South Africa (Görgens-Ekermans & Brand, 2012).

Countless individual and organisational factors that influence employee turnover and ITQ have been reported in the literature (Currie & Hill, 2012; Delobelle et al., 2010; Firth et al., 2004; Görgens-Ekermans & Brand, 2012; Hayes et al., 2006; Pillay, 2009) which can either heighten or lower turnover intent.

Organisational factors that have been found to induce turnover intent include: job dissatisfaction, lack of promotional opportunities, and supervisory support (Delobelle et al., 2010); unit size, work environment, workplace location (Currie & Hill, 2012); workload, management style, work schedules (Hayes et al., 2006); burnout, stress (Görgens-Ekermans & Brand, 2012); and lack of workplace safety (Pillay, 2009).

Individual factors that have been shown to either induce or prohibit turnover intent include: family, values, age, generational cohort (Currie & Hill, 2012); marital status, home obligations, kinship responsibilities (Hayes et al., 2006); personal agency, self-esteem and social support (Firth et al., 2004).

Nurses generally have a high calling for the work they do (McNeese-Smith & Crook, 2003), yet they also generally exhibit high levels of turnover and intention to quit (Delobelle et al., 2010). Various factors have been shown to influence turnover intent directly. However, the key question that this study aims to address is why it is that even with a high calling orientation, and therefore an experience of meaningful work, does the high turnover intention in nurses exist? This question suggests the possibility that various factors (organisational or individual) may influence the nomological network of factors in which calling orientation and ITQ is situated.

For example, Hammer, Kossek, Bodner, and Crain (2013) suggest that support from meaningful others in an individual's close environment enables individuals to more effectively cope with stressors, leading to improved well-being outcomes. Incidentally, a lack of resources leads to burnout, which increases employee ITQ (Bakker & Demerouti, 2007). The majority of nurses in South Africa are female (Wildschut & Mqolozana, 2008). It could, therefore, be argued that women nurses generally are more prone to have both work and

family responsibilities, which they have to balance. This balancing act can be a stressor which may impact on ITQ. Hammer et al. (2013) suggest that organisations can assist women in balancing their work and family responsibilities through supervisors providing support for their family roles, namely family supportive supervisor behaviour (FSSB). In fact, the construct has been found by Olde-Dusseau, Britt and Greene-Shortridge (2012) to be related to reduced levels of turnover intent. For the purpose of this research it will be assumed that the absence of FSSB will influence ITQ in such a way as to promote turnover intent.

Pillay (2007) reports that public hospitals in South Africa have unique challenges that contribute to increased stress levels of employees. One of the most prominent challenges is a severe lack of resources, characterised by the following: stagnation of government funding for health care, disproportionate distribution of medical professionals in the public sector compared to private sector, and redistribution of government funding (Coovadia, Jewkes, Barron, Sanders & McIntyre, 2009; Pillay, 2007).

 According to the job demands-resources model of Bakker and Demerouti (2007) a lack of resources leads to burnout, which negatively impacts employee psychological well-being. To combat the deterioration of employee mental well-being organisations have to actively reduce stressors and create an environment in which employees feel physically and mentally protected. To that end Bailey, Dollard and Richards (2015) proposed the facilitation of a Psychosocial Safety Climate (PSC). According to the authors, PSC is a specific aspect of the organisational environment that may lead to a reduction in negative work related outcomes. The presumption is that managers, guided by policies and procedures for the protection of employee psychological well-being, will be able to recognise when work is becoming too demanding for employees and adjust work accordingly through the provision of resources. Thus through the facilitation of PSC, organisations will provide employees with resources that can serve to counteract burnout and decrease employee ITQ.

Apart from organisational factors that could significantly influence the ITQ nomological network, several significant individual factors should also be considered. For example, resilience is defined by Gillespie, Chaboyer and Wallis (2009) as the individual capacity to rebound and get back to original condition following hardships. The authors further describe it as the ability to recover to former adaptive behaviours characteristic of people, before their psychological or physical well-being was disrupted by some event. In other words, resilience

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has been shown to act as a buffer, protecting individuals from risks to their personal well-being. The assumption is that the more resilient a person, the quicker they will revert back to a normal state of being and the less severe the impact of negative events will be on them. It is argued in this study that the nursing environment, which is generally characterised by high levels of burnout and stress (Görgens-Ekermans & Brand, 2012), is one in which resilient nurses could potentially perform better than their non-resilient counterparts, as they would then be less severely affected by high job demands.

The purpose of this study is to put forward a possible nomological network of factors influencing nurse ITQ as a means to better understand and conceptualise the psychological processes underlying nurse ITQ. Further emphasis is placed on locating the calling orientation construct within said network of individual and organisational resources, as well as to understand its influence on ITQ. Calling, as an individual resource, is conceptualised to have direct and indirect influences on variables such as resilience, psychosocial safety climate, perceived organisational effectiveness, affective commitment and job satisfaction. In addition, family supportive supervisor behaviour as an important organisational resource is also included in the model – although not directly being influenced by calling.

The research purpose will be addressed by attempting to achieve the following research objectives: a) develop a conceptual model[1], depicting the dynamic complexity of the variables causing variance in the psychological processes underlying nurse ITQ; b) test the fit of the reduced structural model with Structural Equation Modeling via LISREL; c) evaluate the significance of the hypothesised paths in the model; d) consider the modification of paths in the model by inspecting the modification indices and how the possible modification of paths are supported theoretically; and e) test the moderating effects in the conceptual model by means of moderated regression analyses.

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[1] The conceptual model can be divided into two parts, a reduced structural model and interaction effects. The reduced structural model was tested by means of SEM in LISREL, whereas the interaction effects were tested with moderated multiple regression in SPSS.

CHAPTER 2

LITERATURE REVIEW: DEVELOPING A STRUCTURAL MODEL OF INTENTION TO QUIT FOR NURSES IN THE PUBLIC SECTOR IN SOUTH AFRICA

Due to the nature of nursing work, one can generally assume that nurses are directed to the profession through experiencing a calling for helping others. Beukes and Botha (2013), for example, also concluded this on the basis of nurses knowing that their work impacts on the lives of others, which according to the authors, is a characteristic of having a calling orientation.

Wrzeniewsky, McCaley, Rozin and Schwartz (1997) distinguished between three types of orientations people have to their work namely, a job, a career or a calling. For the purpose of this research the focus will be on calling orientations. Numerous authors have contributed to the literature on calling orientations, and a number of definitions exist. Beukes and Botha (2013) define a calling as feeling as though one has been placed on earth to perform certain work tasks. Cardador, Dane and Pratt (2011) state that people with callings expect work to have a purpose, to be fulfilling, and see work as a highly significant facet of their lives. However, Dik and Duffy (2009, p 427) have constructed their own working definition of callings as being:

> A calling is a transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-oriented values and goals as primary sources of motivation.

The authors direct attention to a few key points regarding this definition. First, the perceived source or sources of the calling can be anything ranging from God (i.e. a higher being), to the needs of society. Second, callings can be sought after in a wide variety of work roles, and individuals can have more than one calling. Third, a calling is not something static, but involves a dynamic process of re-evaluating the purpose and meaningfulness of work activities.

A useful summary by Elangovan, Pinder and McLean (2010), that stems from a wide array of research on callings, state that callings imply an orientation towards an activity. Secondly, callings concern a sense of clear purpose and personal undertaking, and thirdly, callings concern pro-social intentions on the part of the individual with the calling.

The first statement involves the fact that where callings are concerned, individuals are doing something for others, rather than being on the receiving end of their actions. Furthermore, regardless of where the calling comes from, the focus is directed towards what the person does. The second statement relates closely to the work of Dik and Duffy (2009) and Cardador et al. (2011) where callings imply a sense of purpose, direction, meaning and personal undertaking. This provides insight into the saying 'you are what you do', thus callings are more than just finding something to do. According to Elangovan et al. (2010, p. 429-430) the third statement concerns "a desire to make the world a better place" associating callings with serving others, and "a dedication to a cause greater than oneself".

From the above, it is argued for the purposes of this study that, in general, it could be assumed that nurses fall into the category of having a calling orientation based on a number of inferences. Firstly, the type of activities nurses engage in is far from glamorous (e.g. bathing patients, cleaning bedding and patient garments, administering medication, cleaning infected wounds, documentation, dealing with patient, family and related emotional issues, working with doctors, dealing with death), and it can be assumed that unless a person feels as though that is why they were put on earth, they would not otherwise have chosen this profession (Beukes & Botha, 2013). Secondly, the work of a nurse has purpose and is fulfilling because they have an impact on people's lives, extending further than just the patients' life, but also to that of their families. Thirdly, other than the benefit of doing meaningful work, nurses are not on the receiving end of the work they do, rather they do something for others, i.e. a purpose directed activity. Finally, it is generally assumed that nurses do what they do to make the world a better place. This, however, may not hold true for all nurses. However, it would be reasonable to argue that a nurse working in rural desolate areas like Askham in the Northern Cape, most probably does the job for more than just the salary, the bigger purpose of serving the community could drive this calling orientation.

Now that it has been argued for the purposes of this research that nurses, for the most part, generally may have high calling orientations, the question as to why the turnover rate and ITQ in the profession is so high compared to other occupations (van der Heijden et al., 2009) needs to be asked? This is an especially important question to ask given that one would expect people with calling orientations to stay in their occupations longer than those without a calling (Dobrow Riza & Heller, 2015).

Turnover and turnover intent are greatly familiar terms in the vocabulary of organisations. Currie and Hill (2012, p. 1181) define turnover as "the rate at which an organisation gains and loses employees", whereas Firth et al. (2004) define ITQ as planning and/or contemplating leaving an organisation. The focus of this research will be on ITQ, as ITQ has been cited as being one of the most significant predictors of turnover (Rhéaume et al., 2011), and "the most immediate determinant of actual turnover" (Hayes et al., 2006, p. 239). As a result it can be argued that ITQ is to turnover what thought is to action.

Based on a concept analysis, Takase (2010, p. 4) claims ITQ is "a multi-stage process consisting of three components, which are psychological, cognitive, and behavioural in nature", which the author explains as follows. First, ITQ begins with a psychological response to negative elements of organisations or jobs, which trigger emotional and attitudinal withdrawal reactions on the part of the employee. Second, the core of the process consists of the cognitive manifestation of the decision to leave, as an intention and/or thought, that could trigger the third part of the process, namely behaviours that lead to turnover. These withdrawal actions can be either behavioural or verbal, and can be directed at withdrawing from the current job or future employment opportunities.

According to Pillay (2009) incidences of turnover and ITQ among nurses in South Africa are higher in the public health sector and rural areas of the country, compared to the private health sector and urban areas; which begs the question, why? Perhaps the answer to this question should be considered by asking what are likely factors that contribute to decisions of nurses to stay at their organisations? To this end, Currie and Hill (2012, p. 1181) state that, "job satisfaction is often found to be a strong and consistent predictor of retention and the lack of it is important in accounting for loss of qualified staff to an organisation".

It has been established in the introduction that turnover and ITQ is generally preceded by a number of factors on both individual (e.g. age, home obligations, personal agency, self-esteem), and organisational level (e.g. lack of promotional opportunities, unit size, work environment, work schedules). However, it appears as though the influence of these factors on ITQ is mediated by their effect on satisfaction and organisational commitment (van der Heijden et al., 2009). In support of this, Bobbio and Manganelli (2015) report that the majority of nurses who quit and/ or intend to quit have low levels of satisfaction concerning the job,

co-worker relationships, relations with superiors and/ or physicians, and are also less committed to the organisation than those who remain in the organisation.

Lu, Barriball, Zhang and While (2012), state that job satisfaction is one of the variables in organisational behaviour that is the most frequently studied. For this reason there is no shortage of existing literature on job satisfaction, and numerous definitions have been provided for the construct. According to Lu, While and Barriball (2005) classic models of satisfaction concern the feelings individuals have regarding their jobs. However, the authors also contend that satisfaction is more than just the nature of the job, and also includes what individuals expect their jobs to provide. Lu et al. (2012, p. 1018) define job satisfaction as an "affective orientation that an employee has towards his or her work". The authors also explain that satisfaction can be considered in totality, as a global attitude toward the job, or individually in terms of the attitude towards numerous aspects of the job. In general it appears as though job satisfaction is considered to be an attitude, consisting of cognitive, affective and behavioural components (Crede, Chernyshenko, Stark, Dalal & Bashshur, 2007; Fisher, 2010).

One of the most well-known theories of job satisfaction is the two-factor theory of Herzberg and Mausner (1959), which directs attention to the fact that satisfaction and dissatisfaction are separate constructs and not opposite ends of a continuum. According to the authors intrinsic factors/ motivators (e.g. achievement, recognition, responsibility, autonomy, work itself) cause satisfaction; whereas a lack of extrinsic/hygiene factors (e.g. company policy, administration, supervision, salary, interpersonal relations, working conditions) cause dissatisfaction.

According to Crede et al. (2007) a vast range of factors give rise to satisfaction and/or dissatisfaction, including: economic/ macro-environmental factors, objective characteristics of the job, workplace events, and dispositional influence. In addition, Lu et al. (2012) and Delobelle et al. (2010) provided a list of factors that lead to job satisfaction and/or dissatisfaction for nurses, namely: working conditions, relationships with patients, co-workers and managers, the work itself, workload, staffing, schedules, challenging work, task requirements, pay, training, advancement, promotion, responsibility, autonomy, leadership styles, the nature of the work itself and organisational policy.

In addition to the multitude of factors that cause job satisfaction, of equal importance is the consequences of satisfaction. Throughout the literature there is consensus on the fact that job satisfaction is related to ITQ, and that the relationship is negative (Crede et al., 2007; Delobelle et al., 2010; De Gieter, Hofmans & Pepermans, 2011; Fisher, 2010; Lu et al., 2012).

The relationship between job satisfaction and ITQ amongst nurses can be explicated as follows: firstly, one can argue that nurses will experience higher levels of job satisfaction when, amongst others, they have good working conditions, positive interpersonal relationships, when the work itself is challenging and interesting, and when schedules are not too demanding. Secondly, when these conditions are present, and job satisfaction is high, nurses will have lower ITQ, because their attitude towards the job is positive. On the contrary it could be argued that when nurses have poor working conditions, negative interpersonal relationships, boring work, and overly demanding schedules, satisfaction levels will most likely be lower. When satisfaction is low, the individual's attitude towards the job is assumed to be negative, and ITQ will be high, because the job have limited power in retaining the individual. The latter scenario might explain why nurses in the public health sector and rural areas of South Africa have higher ITQ.

According to Delobelle et al. (2010), research conducted on South African nurses' ITQ point in general to low job satisfaction levels. The authors advocate a couple of reasons for the low levels of satisfaction, consistent with the argument proposed above. These include pay, promotion, working conditions, high workload, lack of resources and stress. Given this argument, the following hypothesis is stated:

Hypothesis 3[2]: Job satisfaction has a negative linear relationship with ITQ.[3]

In addition to the influence of job satisfaction on ITQ, existing ITQ literature points to another influential factor that affects ITQ namely, organisational commitment, or rather a lack thereof (Bobbio & Manganelli, 2015; Firth et al., 2004; van der Heijden et al., 2009).

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[2] Hypotheses are numbered from 3 onwards, as the first two hypotheses concern the substantive research hypothesis ($H_{01} - H_{02}$).
[3] Hypotheses are formulated for the purpose of constructing the conceptual model in Figure 2.1.

Organisational commitment concerns the attitude and behaviour an individual has regarding an organisation's objectives (Ahmad & Oranye, 2010). A number of different definitions of commitment exist in the organisational commitment literature. Over 30 years ago Mowday, Steers and Porter (1979, p. 27) defined it as:

> the relative strength of an individual's identification with and involvement in a particular organisation, which is characterised by belief in and acceptance of organisational goals and values, willingness to exert effort on behalf of the organisation, and a desire to maintain membership in the organisation.

A more recent definition provided by van der Heijden et al. (2009, p. 618) state that organisational commitment is "the employee's affective attachment to his or her occupation, and a person's belief in and acceptance of the values of one's occupation or line of work, and a willingness to maintain membership in that occupation". Ahmad and Oranye (2010, p. 574) on the other hand define it as "an individual's emotional, rational and moral commitment to the goals and ideals of an organisation that he or she belongs to".

Allen and Meyer (1990) suggested a three-component model of commitment, advocating the idea that commitment consists of three separate but related constituents namely, affective, normative and continuance commitment. Affective commitment refers to an individual's emotional attachment to, identification with, and involvement in the organisation. Normative commitment concerns an individual feeling obliged to stay with the organisation, and continuance commitment relates to perceptions about cost of staying with and/or leaving the organisation (Ahmad & Oranye, 2010; Erdheim, Wang & Zickar, 2006; Johnson & Yang, 2010; Solinger, Olffen & Roe, 2008).

Consistent among all the various definitions is the notion that commitment, and its components, is an attitudinal state characterising one's relation to an organisation, with implications concerning the maintenance of membership in said organisation.

Organisational commitment has been shown to be caused by a number of factors including: organisational justice (Suliman, 2007), organisational trust (Colquitt, Scott & LePine, 2007), as well as job tenure, job satisfaction, job involvement and promotional opportunities (DeConick & Bachmann, 2011). Organisational commitment also has a number of consequences, of which the most important for the purpose of this research is ITQ (Bobbio & Manganelli, 2015).

The relationship between organisational commitment and ITQ becomes clear when one poses the question, what will make nurses not want to leave their organisation? It seems probable that if a nurse is highly committed to an organisation that he or she would not want to leave that organisation. In contrast to that it is sensible to assume that lower levels of commitment would easily translate into higher turnover intention, as similar with satisfaction, the organisation will have limited power in retaining the nurse.

The first element of the definitions provided of commitment entails continuance commitment, which refers to the perceived value, in monetary terms, of remaining in an organisation. Hence, nurses who perceive no monetary value in remaining with the organisation, will be less committed to the organisation and have high ITQ. The opposite also holds true, in that if a nurses perceive great monetary value in remaining with an organisation, they will not want to leave as their continuance commitment will be high and their ITQ low. High salaries and monetary benefits are examples of factors that can facilitate continuance commitment, whereas poor salaries will have the opposite effect. Delobelle et al. (2010) indicated that in general South African nurses are not satisfied with their pay. One can reasonably infer that to translate into low continuance commitment, which in turn translates into higher ITQ. Thus, the argument can be made that if nurses were to receive higher salaries, it could stimulate continuance commitment and lower their ITQ levels.

Another element of the definitions on commitment entail a desire of wanting to remain employed in the organisation due to a feeling of obligation. It logically follows that if a nurse has no desire to remain employed in an organisation, for whatever reason, then that nurse will probably have a desire to quit, and therefore display high ITQ.

The final element of commitment, and also the most important one for the purpose of this study, is affective commitment. Affective commitment refers to an acceptance of the organisation, job and occupation's goals and values. This dimension of organisational commitment has been singled out in the current study, due to the nature of the resource factors (resilience, calling, family supportive supervisor behaviour and psychosocial safety climate) included in the study, tapping mostly onto the affective dimension of organisational commitment. The type of commitment incited in nurses, by the resources, also has an emotive quality, whereby nurses feel supported on an emotional level.

Hence it can be argued that if a nurse does not accept and/or identify with the goals and values of the organisation, thereby foregoing an emotional attachment, he or she will be less affectively committed to the organisation, which would result in increased ITQ. The opposite can also be true, in that if nurses display low or zero ITQ it may be because that nurse is emotionally committed, due to an acceptance of and identification with the objectives of the organisation and occupation. Given the foregoing arguments the following hypothesis is stated:

Hypothesis 4: Affective commitment has a negative linear relationship with ITQ.

A couple of factors, unique in their influence on satisfaction and affective commitment, have been identified in the literature on ITQ amongst nurses; these include family supportive supervisor behaviour (FSSB), psychosocial safety climate (PSC) and resilience.

FSSB is a form of organisational support and has been defined by Hammer, Kossek, Zimmerman, and Daniels (2007) as behaviours exhibited by supervisors that are supportive of employees' family responsibilities. The construct consists of the dimensions of emotional support, instrumental support, role-modeling behaviours and creative work-family management. According to Hammer, Kossek, Anger, Bodner and Zimmerman (2011) a supportive supervisor is one that shows empathy towards employees who express a desire for work-family balance. FSSB is a multidimensional construct consisting of the four dimensions listed above.

Emotional support is the first dimension of FSSB and refers to the perception that one is being cared for, that one's feelings are being considered, and that individuals feel comfortable communicating with the source of support when needed (Hammer, Kossek, Yragui, Bodner & Hanson, 2008). The authors also assert that it involves the extent to which supervisors express concern for the way in which work responsibilities affect families. Hammer et al., (2011) maintain that emotional support is realised through supervisors listening to, and showing they care for employees' work-family demands.

The second dimension, instrumental support, is reactive and relates to how the supervisor responds to employees' work and family issues in the form of daily management transactions (Hammer et al., 2008).

The third dimension, role modelling behaviours, concerns supervisors demonstrating to employees how to integrate work and family, through enacting such behaviours on the job (Hammer et al., 2008; Hammer et al., 2011). The authors continue to explain that role modelling involves providing examples of behaviours useful in attaining certain work-family and life outcomes.

Unlike the second dimension, the fourth and final dimension of FSSB, creative work-family management, is proactive and innovative (Hammer et al., 2008; Hammer et al., 2011). The authors assert that it concerns actions on the part of management to restructure work in order to facilitate employee effectiveness on the job and at home.

Straub (2012, p. 16) considers the following as examples of FSSB:

> eliminating negative career consequences associated with devoting time to family related needs; promoting the availability of benefits and raising work–life balance issues in internal meetings; encouraging employees to use work–family practices and actively judging employee performance on the basis of output; and not making long hours or unrealistic work schedules a prerequisite for promotion.

Wayne, Casper, Matthews and Allen (2013) have found that when employees perceive their organisations and supervisors to be supportive of their family responsibilities, ITQ decreases while satisfaction and affective commitment increases. In a nursing context, this relationship can be best understood against the background of two assumptions. The first assumption is that the majority of nurses in South Africa are female (Wildschut & Mqolozana, 2008). Secondly, that women in South Africa are mostly in charge of family responsibilities, as traditional roles for women are still the norm, as opposed to other European countries (Schreuder & Coetzee, 2011).

According to Bagger and Li (2011) women especially experience tension in balancing their work and family/home responsibilities. The authors also suggest that the stress of constantly attempting to achieve synergy between these two opposing roles can result in negative outcomes, including job dissatisfaction. Apart from nurses' demanding work tasks, they often times work shifts and rarely get public holidays off (Burch et al., 2009).bFor women having families to take care of, this could potentially cause work-family conflict, especially if the woman's partner also has a full time job. According to Schreuder and Coetzee (2011) work-

family conflict is a major contributor to the experience of work related stress, often times spilling over to the personal domain of individuals' lives, and can also lead to burnout. Lapierre and Allen (2006) suggest that supervisors can reduce the interference of work responsibilities on family responsibilities, which typically drain employees from valuable energy needed need either domain.

Bagger and Li (2011) claim that if an employee feels their supervisors care about their family needs, they may hold more positive perceptions about the work environment, which could manifest in the form of more job satisfaction, and ultimately reduced stress levels. According to the social exchange theory (SET; Cropanzano & Mitchell, 2005), obligations between parties are created through a series of interactions based on the rules of reciprocity (Zhu et al., 2015). According to Görgens-Ekermans and Steyn (2016) the relationships of parties relying on reciprocal interdependence, will in time progress into commitments of a trusting and loyal nature. In an organisational context then, high quality trusting relationships should theoretically result in positive attitudes towards the organization. Based on SET, one could argue that if supervisors exhibit family supportive behaviours, it may be perceived by employees as though their organisation is committed to them, which could trigger an obligation to provide something in return, causing them to reciprocate the commitment. Wayne et al. (2013) argue that the reason why FSSB could translate into commitment on the part of the employee is because a supportive environment benefits the employee, and the employee then repays the organisation with positive work attitudes.

It can, therefore, be argued then that FSSB influences ITQ through the work attitudes job satisfaction and affective commitment in various ways. Firstly, the experience of FSSB could cause employees to be more satisfied with their work environment and supervisors, which could increase overall job satisfaction, resulting in lower ITQ. Secondly, the experience of FSSB could potentially result in employees feeling more positive about their work environment, increasing their perception that the organisation is committed to them, and causing the employee to reciprocate that commitment.

In contrast it can also be argued that the majority of nurses in the public health sector and those working in rural areas are more prone to quit, because they are not committed or satisfied, due to a lack of supportive work environments. Pillay (2009, p. 40) reported that the public health sector is "under-resourced and over-used", which together with increasing

numbers of nurse turnover, aggravates the problem further. That in mind, it is not too much of a stretch to infer that, in the public sector, supervisors' main concern will not be on exhibiting FSSB, as they themselves operate in turbulent work environments. Given these arguments, the following hypotheses are proposed:

Hypothesis 5: FSSB has a positive linear relationship with job satisfaction.

Hypothesis 6: FSSB has a positive linear relationship with affective commitment.

It is well known that stressful work environments lead to negative employee well-being outcomes (Bakker & Demerouti, 2007). To that end, Görgens-Ekermans and Brand (2012) stress that burnout, as merely one of the many negative outcomes, can seriously impair employee mental and physical health. On the other hand, when employees have sufficient resources to outweigh work demands, burnout is less likely and mental and physical health is not impaired. It is unfortunate that the situation in the public health sector in South Africa is especially plagued by a lack of resources (Pillay, 2009). Hence, nurse burnout in the public sector should be a common occurrence.

Against the background of Bakker and Demerouti's (2007) Job Demands-Resources model, Hall, Dollard, Winefield, Dormann and Bakker (2013) propose psychosocial safety climate (PSC) to be a resource, by means of which organisations can improve the mental well-being of their employees. PSC is defined as policies, practices and procedures for the protection of worker psychological health and safety, and relates to exemption from psychological and social risk or harm (Dollard & Bakker, 2010).

According to Idris, Dollard, Coward and Dormann (2012, p. 20), PSC cuts across the following four domains: first, senior management support and commitment, which refers to "quick and decisive action by managers to correct problems or issues that affect psychological health"; second, management priority, which is characterised by "the priority management give to psychological health"; third, organisational communication, which refers to "the extent that the organisation communicates with employees about issues that may affect psychological health and safety, and brings these to the attention of the employees"; and fourth, organisational participation and involvement, which reflects "the principle that work stress prevention involves all organisational levels".

Dollard et al., (2012) insist that PSC characterises management's support for and commitment to employee psychological health and the prevention of work stress. The authors also demonstrate that when organisations operate in high PSC contexts, supervisors aim to protect and enhance employee mental health through certain policies and practices. On the other hand, Hall et al. (2013), maintain that low levels of PSC indicate a lack of value placed on employee psychological health by supervisors. The probability of the latter being the case in the South African public health sector, with its lack of resources, is very real.

According to Bakker and Demerouti (2007) support is a resource that counteracts burnout, as a result FSSB, as a type of support, could also be classified as a job resource. FSSB can be argued to relate closely with the second domain of PSC, senior management support and commitment. Based on this assumption, one can argue that when employees experience FSSB they will feel supported, and perceive themselves as operating in a relatively safe working environment. Thus, it could be argued that in an hospital where more FSSB is being exhibited, nurses could potentially be exposed to less stress and long term burnout, which could result in increased mental well-being, due to more perceived PSC. Therefore, the following relationship is proposed:

Hypothesis 7: FSSB has a positive linear relationship with PSC.

Leadership style, working conditions, workload, schedules, company policy, and administration have been identified as antecedents to job satisfaction (Lu et al., 2012; Delobelle et al., 2010). All these factors are incidentally consistent with elements of PSC.

According to Dollard (2012), PSC is a facet-specific element of an organisation's climate, making it an attribute of the organisation as opposed to the individual employee. As a result, individual employees may also experience PSC differently. Management drives PSC, and has discretionary control concerning whether or not policies will be executed (Dollard, 2012). The implication is that PSC levels will differ between organisations, and how it is perceived by various employees within the same organisation. According to Dollard and Bakker (2010) PSC in itself is an organisational resource, and also leads to the creation/provision of other resources. Dollard (2010, p. 81) supports this by arguing that, "in high PSC contexts where managers are concerned about worker well-being, managers will ensure that workers have enough resources to do the job". Bakker and Demerouti (2007) maintain that sufficient resources leads to engagement, and in turn, other positive work outcomes. According to

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Görgens-Ekermans and Steyn (2016) these positive work outcomes resulting from engagement, include among others job satisfaction. The results of a study by Dollard (2012) provided empirical evidence for PSC resulting in increased job satisfaction through the provision of job resources.

Consequently, for the purposes of this study it will be argued that if nurses experience PSC at work, it may lead to increased job satisfaction and reduced ITQ. This is because PSC is in itself a resource, and because high PSC contexts leads management to create/provide more resources. On the other hand, it can be argued that higher ITQ among nurses, could possibly stem from job dissatisfaction due to a lack of PSC, as a vital resource for employee well-being. Therefore, the following hypothesis is proposed:

Hypothesis 8: PSC has a positive linear relationship with job satisfaction.

Hypotheses 4 and 5 argue that FSSB will be positively related to affective commitment, as well as PSC. Following a similar argument, it is possible to argue that increased levels of PSC could also lead to higher affective commitment. Perceiving the organisational climate as being conducive to the facilitation of employee mental well-being, may also lead employees to perceive the climate as psychosocially safe. It is possible to argue that this perception could harbour in employees the feeling that the organisation is committed to, and cares for their well-being. Drawing on the principles of SET (Cropanzano & Mitchell, 2005), being the recipient of PSC, generates an obligation on the part of the employee to repay; causing employees to reciprocate that commitment. On the other hand, if employees operate in unstable environments detrimental to mental health and well-being, as is assumed to be the case in certain nursing contexts (Görgens-Ekermans & Brand, 2012), it can be argued that employees may feel psychosocially vulnerable and unprotected. If this is the case, it is unlikely that employees will foster feelings of commitment toward the organisation, and may be more prone to experience feelings of ITQ. Hence, the following hypothesis is proposed:

Hypothesis 9: PSC has a positive linear relationship with affective commitment.

It has already been established that nurses have demanding work tasks and operate in turbulent environments (Beukes & Botha, 2013). In the South African public health sector, the situation is particularly bleak. The country faces a number of health care related challenges, including but not limited to the following: an HIV and tuberculosis epidemic, poor

administrative management, low morale, lack of funding and the brain drain (Chopra et al.*,* 2009). In addition to these, Coovadia et al. (2009) claim stagnation in government funding of health care, to be another major challenge. In support of this, Chopra et al. (2009, p. 1027) maintain that, "55-60% of total health expenditure is spent in the private sector on less than 15% of the country's population". Finally, one of the biggest challenges is, according to Coovadia et al. (2009, p. 830), a "maldistribution of staff and poor skills of many health personnel". This is confirmed by Chopra et al. (2009) who also state that the private health sector absorbs a disproportionate number of skilled staff, as opposed to the public sector. Despite this, we still find nurses employed in public hospitals throughout South Africa, which begs the question, what possible individual characteristics could play a role in nurses' decision to remain working in public hospitals? To this end, Luthans, Vogelgesang and Lester (2006) propose resilience to be a specific individual factor that influences nurse ITQ.

Luthans (2002, p. 702) defines resilience as "the developable capacity to rebound or bounce back from adversity, conflict, and failure or even positive events, progress, and increased responsibility". Resilience embodies overcoming both adverse setbacks and constructive but potentially overwhelming occurrences. By extension, Youssef and Luthans (2007) argue that resilience refers to a positive psychological resource capacity. In addition, Avey, Reichard, Luthans and Mhatre (2011) claim that resilience, together with the psychological resources of hope, optimism and efficacy, constitutes the four dimensions of what is known as psychological capital (PsyCap). PsyCap has empirically shown to have an influence on job satisfaction, organisational commitment and psychological well-being at work (Görgens-Ekermans & Herbert, 2013). Based on this research, it seems plausible to argue that for the purposes of this research psychological capital and its constituents, specifically resilience, could influence ITQ through job satisfaction and affective commitment. Lack of job satisfaction in nurses has been ascribed to, among other things, poor working conditions, negative co-worker and manager relationship, overwhelming workload, and stress (Delobelle et al., 2010; Lu et al., 2012). When these conditions are present, individuals will likely not have a positive affective orientation to their work (Lu et al., 2012), i.e. job satisfaction. Resilience as a positive psychological resource capacity, could potentially buffer against the negative effects of the factors mentioned above, in that the person remains satisfied in their job despite adversity. The resilience then interrupts the normal course of events, where negative

experiences no longer have the same effect, and a certain level of job satisfaction is maintained.

Similarly, concerning affective commitment, when for example a lack of trust, organisational justice, and lack of job involvement is present, an individual is unlikely to be committed to the organization. However, resilience characterised by the capacity to bounce back from negativity, could potentially reverse or at least stunt the expected negative result of a lack of affective commitment. Due to resilience an individual could potentially remain affectively committed to an organisation, because the resilience buffers against negative experiences. The more resilient the individual the more satisfied and committed they are likely to be. Therefore, the following hypotheses are proposed:

Hypothesis 10: Resilience has a positive linear relationship with job satisfaction.

Hypothesis 11: Resilience has a positive linear relationship with affective commitment.

According to Youssef and Luthans (2007, p. 779), resilience acknowledges the need to adopt both proactive and reactive actions in the face of adversity. The authors further suggest that:

> Reactively, resilience uniquely recognises the potential that setbacks, traumas, and even positive but overwhelming events can have a destructive impact, even on the most hopeful and optimistic individuals, and hence the need to bounce back. The capacity for resilience promotes the recognition and acknowledgement of such impact, allowing the affected individual the time, energy, and resource investment to recover, rebound, and return to an equilibrium point. Proactively, resilience also allows for the use of setbacks as "springboards" or opportunities for growth beyond that equilibrium point.

In terms of the relationship between resilience and perceived PSC, one can argue that if employees are more resilient, it would take less effort or interventions of lower intensity on the part of management to facilitate the perception of PSC in employees. This is due to the fact that resilience itself may be viewed as a psychological safety enhancing and/or facilitating mechanism. Thus, it could be argued that resilient employees will more easily perceive the organisational climate as psychosocially safe, because they are less severely impacted by it, and may bounce back faster from negative workplace events that threaten mental well-being. The opposite also holds true in that people low on resilience are more likely severely and

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readily affected negatively by adverse workplace events, threatening their actual and perceived psychological safety, because they experience more stress due to an inability to bounce back. As a result it can be argued that resilient nurses will be able to better cope with demanding and turbulent work environments, thus being less prone to ITQ, because those turbulent environments may not necessarily lead to job dissatisfaction or lack of organisational commitment, due to the experience of a PSC. Therefore, it is hypothesised that:

Hypothesis 12: Resilience has a positive linear relationship with PSC.

Based on this line of reasoning, it can be concluded that resilience may, therefore, play an important role in lowering ITQ amongst employees operating in turbulent career contexts like nursing. Along those same lines, Dobrow Riza and Heller (2015, p. 698) argue that calling orientations also "play an important role in career pursuit even within challenging career contexts". According to Vaksalla and Hashimah (2015) doing meaningful work can cause nurses to also be engaged in their work. This is because engagement incorporates a sense of work that is meaningful through dedication, a dimension of work engagement (Bakker & Demerouti, 2007). The authors also describe dedication as being heartily committed to work and experiencing a sense of significance and challenge. In the introduction of this study it was argued that regarding your work as meaningful designates work that is a calling, which is a characteristic of meaningful work (Steger et al., 2012). Thus, it is argued here that pursuing callings and doing meaningful work fosters engagement, containing a perseverance element, which then could likely promote career resilience.

As a result there is a possibility that employees pursuing callings will remain motivated, despite adverse working environments, because calling orientations may facilitate career resilience. Consequently, if an employee works as a nurse because she experiences a calling to help sick people, either because it is her passion or she feels she has been called by God, that calling will be what motivates her to keep going during hard times, ultimately fostering resilience. Therefore, the following hypothesis is proposed:

Hypothesis 13: Calling has a positive linear relationship with resilience.

As previously discussed, the various existing definitions of callings have a number of implications, and for the purpose of introducing the final construct, a select few of these will

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be accentuated. According to Dik and Duffy (2009) callings involve a dynamic process of re-evaluating the purpose and meaningfulness of work activities. This implies that nurses with calling orientations, will on a continuous basis reassess whether or not the work they do is meaningful and serves a purpose. Incidentally, this could also mean that nurses on a continuous basis re-examine whether or not they are successful in fulfilling their callings; and whether or not their organisation serves as a mechanism through which they can carry out their calling. Another important aspect, as stated by Elangovan et al. (2010), is that where callings are concerned, individuals are engaging in behaviours or actions for the benefit of others. The authors also indicate that in some instances, people who pursue callings are striving towards making the world a better place. Thus, it can be assumed the degree to which the person with the calling feels they have achieved the above mentioned ends, is the degree to which they regard themselves as successful in realising their calling. This also applies to the organisation, as a mechanism through which nurses can fulfil their callings. As a result it could be argued that the degree to which nurses perceive that their organisation assists them in realising their callings, refers to nurses' perception of organisational effectiveness. Perceptions of organisational effectiveness, in this sense, then become a mechanism of subjective feedback on how successful such nurses seem to be in realising their callings.

It is important to note that perceived organisational effectiveness (POE) has no formal definition, due to the completely subjective nature of the construct. However, Walton and Dawson (2001, p. 173) does provide a conceptualisation that aids in understanding the construct namely, that "organisational effectiveness is a hypothetical abstraction existing in people's minds giving meanings to ideas or interpretation about organisational effectiveness, but having no objective reality".

Perceived organisational effectiveness then relates to individual employees' perceptions or feelings about whether the organisation in which they are employed, is successful. The implication is, furthermore, that the criteria for evaluating organisational success is neither objectively related to actual organisational success, nor will the same criteria hold for different employees.

Based on the above it can be argued that perceived organisational effectiveness influences calling orientations in the sense that it forms part of the continuous re-evaluation process central to calling orientations. That is, if nurses perceive their organisation as effective in

providing care and serving the community, they are more likely to perceive themselves as effective in realising their calling, thereby strengthening the pursuit of the calling. The opposite could also hold true in that if a nurse is employed in a hospital, which is essentially unsuccessful as a health care organisation, that nurse would not experience the organisation as a vehicle by means of which his/her calling is fulfilled. This realisation (or perception) may cause the pursuit of the calling to diminish. Given these arguments the following hypothesis is proposed:

Hypothesis 14: POE has a positive linear relationship with calling.

The previous discussion of job satisfaction highlighted the fact that the construct can be considered in totality, as a global attitude toward the job, or individually in terms of the attitude towards numerous aspects of the job (Lu et al., 2012). Earlier discussion also indicated numerous factors that give rise to job satisfaction, including the nature of the work itself (Crede et al., 2007; Lu et al., 2012; Delobelle et al., 2010). However, it is interesting to note that Lu et al. (2005, p. 211) state "what makes a job satisfying or dissatisfying does not depend only on the nature of the job, but also on the expectations that individuals have of what their job should provide". Consequently, it can be argued that a nurse in pursuit of a calling, of which a fundamental facet is doing meaningful work, will expect the job to be meaningful; and the degree to which meaningfulness is experienced will cause the nurse to be satisfied, because the reality of the job met the expectations of the job. Incidentally, it could futher be argued that if the nurse is satisfied with the job because of the fact that it allows him/her to do meaningful work, thereby strengthening the calling, the nurse may perceive the organisation as effective. In this sense then, higher levels of perceived job satisfaction may lead to higher levels of POE.

Another argument, although perhaps a bit contentious, can be made to describe the relationship of job satisfaction on POE. Hypothetically, a person that is highly satisfied with their jobs, not only in totality but also with multiple aspects especially in terms of outcome related aspects, will perceive the organisation as effective; where outcome related aspects refer to that which nurses striving towards fulfilling a calling, deem important (e.g, making a difference, helping others). Hypothetically, the opposite could also hold true in that if a person with a calling is extremely dissatisfied with aspects of his/ her job that they regard as important, that person may perceive the organisation as not effective; Here important factors

would refer to for example making a difference, doing meaningful work and providing quality care to patients. Hence, the following hypothesis is proposed:

Hypothesis 15: Job satisfaction has a positive linear relationship with POE.

In addition to the above mentioned hypotheses, two moderating relationships are also present in the structural model. The first refers to the relationship between POE and calling. In terms of this relationship it was argued that the degree to which a nurse perceives the organisation as effective is the degree to which he/she feels the calling is being realised, either serving to strengthen or disintegrate the calling. It could, however, be argued that this relationship could most likely be moderated by resilience, positively influencing the effect of POE on calling. That is, individuals who have the same scores on POE, but differ in terms of their standing on the construct of resilience, will most probably have different calling scores. To this end it is argued that high resilience operates as a buffer against low POE scores, in that low POE scores does not necessarily imply low calling scores; as opposed to a scenario where an individual has lower resilience, which would most probably result in lowered calling scores. For the individual with a calling, low POE scores will activate the resource of resilience which serves to protect the calling. Thus without resilience, the negative impact of low POE scores on calling will be more severe.

Hypothesis 16: Resilience moderates the relationship between POE (resilience*POE) and calling.

The second moderating effect that is important for this study is proposed for the PSC and job satisfaction relationship. In terms of this relationship it was argued that the experience of PSC may lead to increased job satisfaction; due to the fact that PSC is a resource itself and because PSC contexts tend to generate the provision of other resources. It is argued, however, that this relationship could possibly be moderated by calling, which may positively influence the effect of PSC on job satisfaction. For example, it is plausible to argued that individuals who have the same scores on PSC, but differ in terms of their calling levels, will have different job satisfaction scores. In moderating this relationship, the presence of calling safeguards against low PSC scores, in that low PSC scores do not necessarily imply low job satisfaction scores; as opposed to a scenario where an individual has zero presence of a calling, which will result in lowered job satisfaction. Calling would moderate the relationship in this way because as Dobrow Riza and Heller (2015, p. 698) state, calling orientations "play an important role in

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career pursuit even within challenging career contexts". As a result, nurses with callings will be able to persevere in less favourable work situations characterised by low PSC, because their callings may facilitate career resilience (see hypothesis 11). Thus without calling, the negative impact of low PSC scores on job satisfaction will be more severe.

Hypothesis 17: Calling moderates the relationship between PSC (calling*PSC) and job Satisfaction.

This chapter provided an overview of the constructs included in this study. The theoretical arguments presented above justified the inclusion of job satisfaction, affective commitment, resilience, PSC, POE, calling orientation, and FSSB in a nomological network of factors believed to cause variance in the ITQ of public health sector nurses in South Africa. Depicting these arguments, the conceptual model (Figure 2.1) was developed, consisting of a reduced structural model as well as interaction effects.

The structural model and interaction effects will be tested to determine whether it does in fact offer a valid account of the variance in ITQ among public health sector nurses.
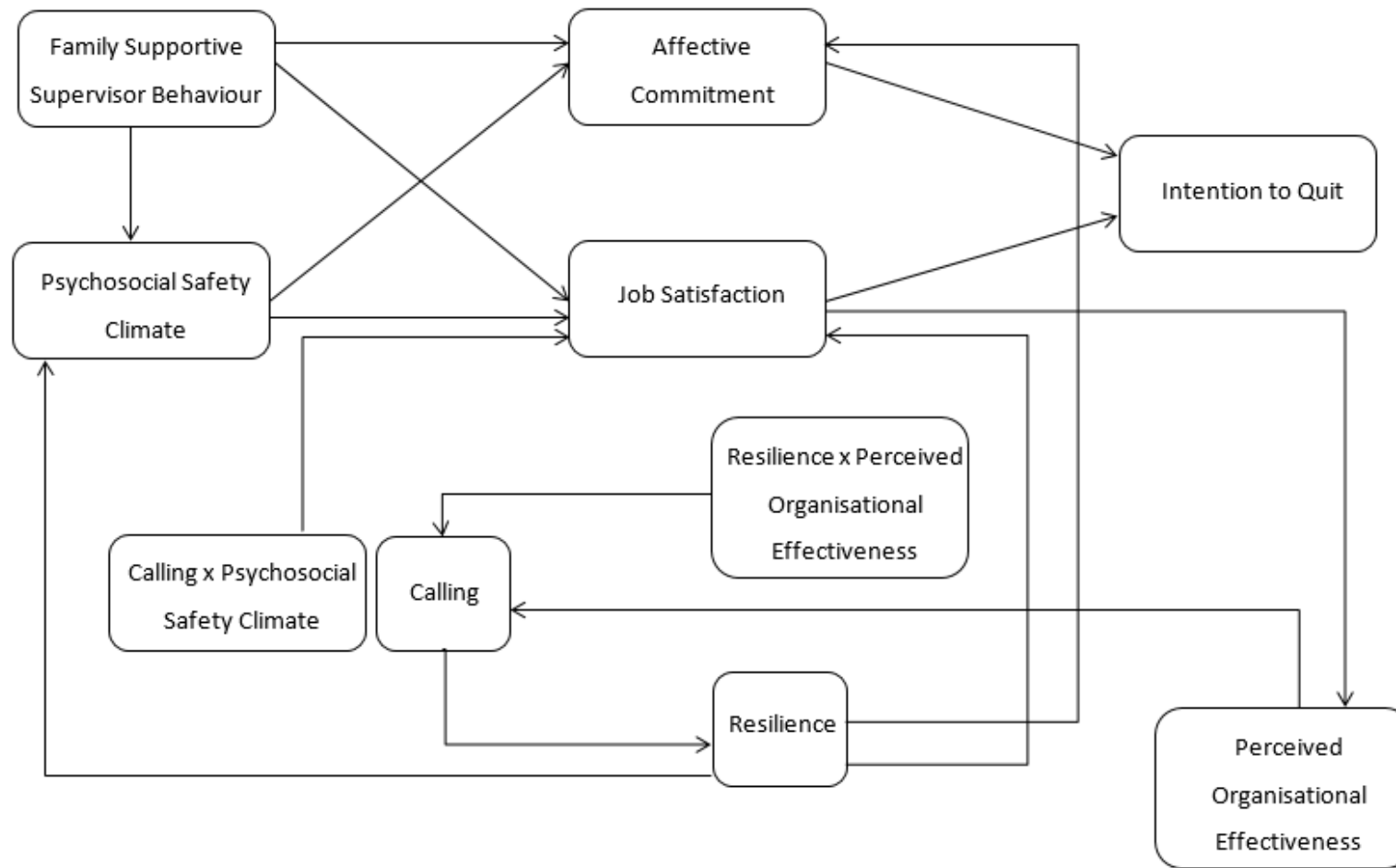
Figure 2.1. *ITQ Conceptual Model*

CHAPTER 3

METHODOLOGY

3.1 Introduction

In order to empirically test the ITQ structural model proposed in chapter two, a specific methodological approach is required. The chosen research methodology should be an appropriate approach to test the research initiating question, namely what causes variance in intention to quit amongst nurses. The validity of the methodological approach, in response to the research initiating question derived in chapter two, needed to be empirically evaluated. The ITQ conceptual model (Figure 3.1) could be considered valid to the extent that the reduced structural model (Figure 3.2) fits the available empirical data and the multiple regression analyses (testing the interaction effects) returned acceptable results. Therefore, the objective of the following chapter is to describe the procedure used to evaluate the validity of the methodological response to the research initiating question. A thorough, detailed and comprehensive description of the methodology is required to ensure scientific rationality. To this end the current chapter includes the following sections: substantive research hypotheses, statistical hypotheses, research design, sampling, participants, data collection, statistical analyses, and validity of the measuring instruments utilised in this study.

3.2 Research Purpose and Objectives

The purpose of this study was to attempt to explicate a possible nomological network of factors affecting the ITQ of nurses in the South-African public health sector. The research purpose was addressed by attempting to achieve the following research objectives:

a) develop a conceptual model, depicting the dynamic complexity of the variables causing variance in the psychological processes underlying nurse ITQ;

b) test the fit of the reduced structural model;

c) evaluate the significance of the hypothesised paths in the model;

d) consider the modification of paths in the model by inspecting the modification indices and how the possible modification of paths are supported theoretically; and

e) test the moderating effects in the conceptual model by means of moderated regression analyses.

3.3 Substantive Research Hypothesis

The purpose of this study was to put forward a possible nomological network of factors influencing nurse ITQ as a means to better understand and conceptualise the psychological processes underlying nurse ITQ. Further emphasis was placed on locating the calling orientation construct within said network of individual and organisational resources, as well as to understand its influence on ITQ. Calling, as an individual resource, was conceptualised to have direct and indirect influences on variables such as Resilience, Psychosocial Safety Climate, Perceived Organisational Effectiveness, Affective Commitment and Job Satisfaction. In addition, Family Supportive Supervisor Behaviour as an important organisational resource was also included in the model – although not directly being influenced by Calling.

Theorising about the possible relations between these variables led to the development of a conceptual model[4] presented in Figure 3.1.

The overarching substantive hypothesis (hypothesis 1) of this study was that the conceptual model depicted in Figure 3.1 provided a valid description of the psychological processes causing variance in ITQ amongst nurses in the South African public health sector. The overarching substantive hypothesis was dissected into the following fifteen path specific substantive research hypotheses:

Hypothesis 3[5]: Job satisfaction has a negative linear relationship with ITQ
Hypothesis 4: Affective commitment has a negative linear relationship with ITQ.

Hypothesis 5: FSSB has a positive linear relationship with job satisfaction.

Hypothesis 6: FSSB has a positive linear relationship with affective commitment

Hypothesis 7: FSSB has a positive linear relationship with PSC

Hypothesis 8: PSC has a positive linear relationship with job satisfaction

Hypothesis 9: PSC has a positive linear relationship with affective commitment

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[4] The conceptual model can be divided into two parts, a reduced structural model and interaction effects. The reduced structural model was tested by means of SEM in LISREL, whereas the interaction effects were tested with moderated multiple regression in SPSS.

[5] The path specific hypotheses are numbered from 3 onwards, as the first two hypotheses concern the substantive research hypothesis ($H_{01} - H_{02}$).

Hypothesis 10: Resilience has a positive linear relationship with job satisfaction.

Hypothesis 11: Resilience has a positive linear relationship with affective commitment.

Hypothesis 12: Resilience has a positive linear relationship with PSC.

Hypothesis 13: Calling has a positive linear relationship with resilience.

Hypothesis 14: Job satisfaction has a positive linear relationship with POE.

Hypothesis 15: POE has a positive linear relationship with calling.

During the data analysis phase (reported in chapter 4) it emerged that the testing the proposed interaction effects with LISREL in the intention to quit structural model was not possible. Initial inclusion of the interaction effects[6] led to the measurement model not converging, as their inclusion increased the number of model parameters to estimated, to more than that of the sample size (n = 184). Therefore, the two interaction effects were excluded from the original structural model and tested via moderated multiple regression analyses; by means of mean centering, with SPSS version 23 (IBM Corp, 2013). The process is discussed in more detail in Section 4.6. As a result, the interaction effects, though not included in the reduced structural model, still formed part of the conceptual model.

The two path specific hypotheses for the interaction effects were as follows:

Hypothesis 16: Resilience moderates the relationship between POE (resilience*POE) and calling.

Hypothesis 17: Calling moderates the relationship between PSC (calling*PSC) and job Satisfaction.

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[6] To test the interaction effects, the orthoganalising technique by Little, Bovaird and Widamen (2006) was used. The technique involved calculating all possible product terms from the indicators of the latent variables involved in the latent interaction effect or latent squared effects, regressing each product term on all the individual indicators of the latent variables involved, and then calculating the residuals for each regression model. The residuals were then used to represent the indicator variables for the latent interaction effect variables or latent squared effect variables
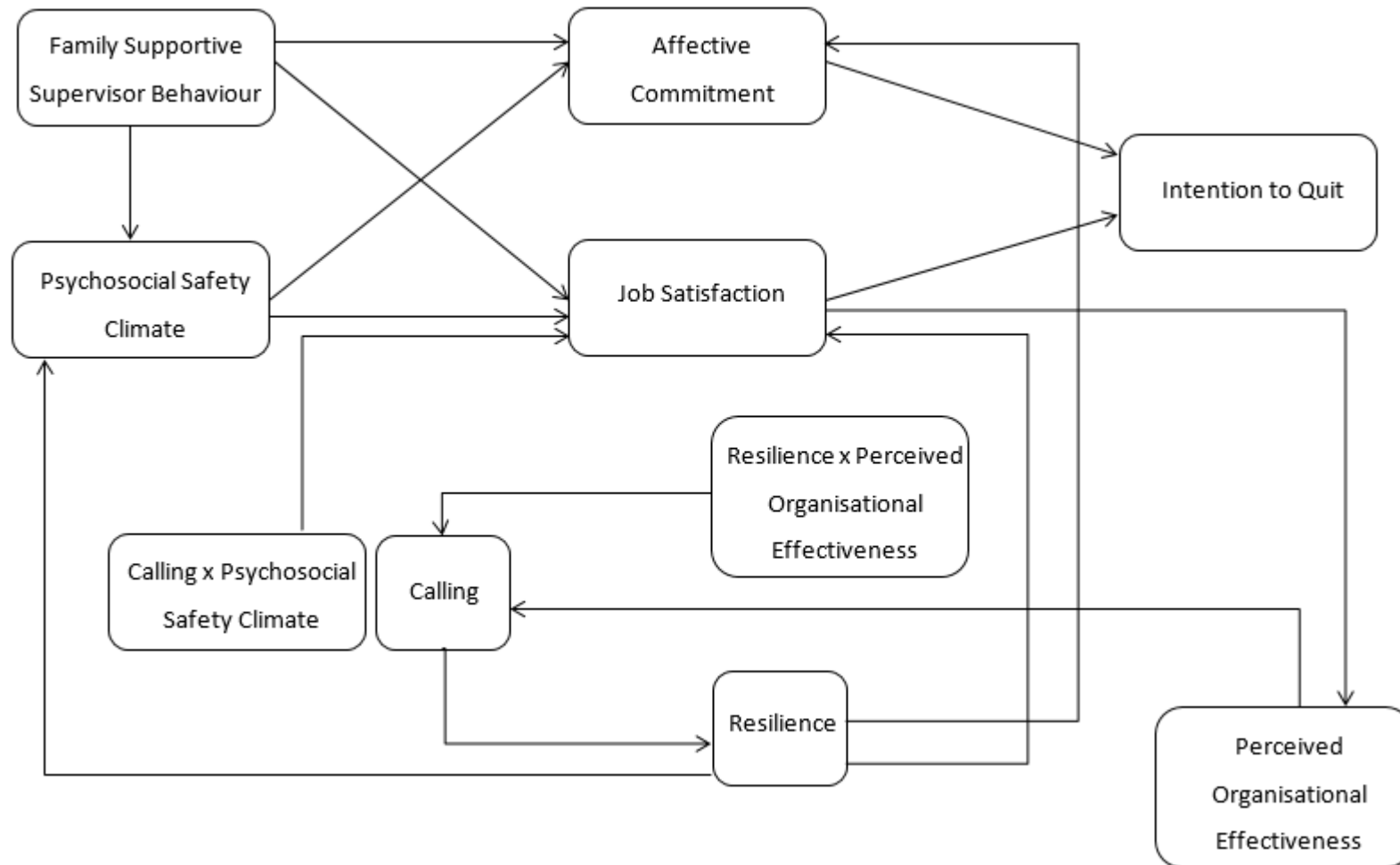
Figure 3.1. *ITQ Conceptual Model*

3.4 Statistical Hypothesis

The statistical hypotheses (for the reduced structural model) were formulated using the conventional LISREL notational system (Jöreskog & Sörbom, 1998). Hypothesis one claimed that the reduced structural model (Figure 3.2) provided a valid account of the psychological processes underlying nurse ITQ. If the overarching substantive research hypothesis was understood to mean that the reduced structural model provided a perfect account of the psychological processes underlying ITQ, the substantive research hypothesis would be translated into the following exact fit null hypothesis (hypothesis 2a[7]):

H_{02a}: RMSEA = 0

H_{a2a}: RMSEA > 0

This however, is an extremely unrealistic expectation. A more realistic aim would be to attempt to obtain close model fit. Hence, if the overarching substantive research hypothesis was taken to mean that the reduced structural model provided an approximate account of the psychological processes underlying ITQ, the substantive research hypothesis would be translated into the following close fit null hypothesis:

H_{02b}: RMSEA ≤ 0.05

H_{a2b}: RMSEA > 0.05

The overarching substantive research hypothesis was separated into thirteen path specific research hypotheses, and translated into path coefficient statistical hypotheses, listed in Table 3.1.

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[7] The overarching substantive research hypothesis is dissected into an exact fit and close fit null hypothesis for the measurement model (H_{01a} and H_{01b}) and the structural model (H_{02a} and H_{02b}). The hypotheses are numbered in this sequence as the measurement model results are presented before the structural model results.

Table 3.1 Path coefficient statistical hypotheses

Hypothesis 3:	Hypothesis 8:	Hypothesis 13:
H_{03}: $\beta_{76} = 0$	H_{08}: $\beta_{64} = 0$	H_{013}: $\beta_{21} = 0$
Ha_3: $\beta_{76} < 0$	Ha_8: $\beta_{64} > 0$	Ha_{13}: $\beta_{21} > 0$
Hypothesis 4:	Hypothesis 9:	Hypothesis 14:
H_{04}: $\beta_{75} = 0$	H_{09}: $\beta_{54} = 0$	H_{014}: $\beta_{36} = 0$
Ha_4: $\beta_{75} < 0$	Ha_9: $\beta_{54} > 0$	Ha_{14}: $\beta_{36} > 0$
Hypothesis 5:	Hypothesis 10:	Hypothesis 15:
H_{05}: $\gamma_{61} = 0$	H_{010}: $\beta_{62} = 0$	H_{015}: $\beta_{13} = 0$
Ha_5: $\gamma_{61} > 0$	Ha_{10}: $\beta_{62} > 0$	Ha_{15}: $\beta_{13} > 0$
Hypothesis 6:	Hypothesis 11:	
H_{06}: $\gamma_{51} = 0$	H_{011}: $\beta_{52} = 0$	
Ha_6: $\gamma_{51} > 0$	Ha_{11}: $\beta_{52} > 0$	
Hypothesis 7:	Hypothesis 12:	
H_{07}: $\gamma_{41} = 0$	H_{012}: $\beta_{42} = 0$	
Ha_7: $\gamma_{41} > 0$	Ha_{12}: $\beta_{42} > 0$	

All thirteen path specific hypotheses formulated were included in the reduced structural model and tested via SEM.
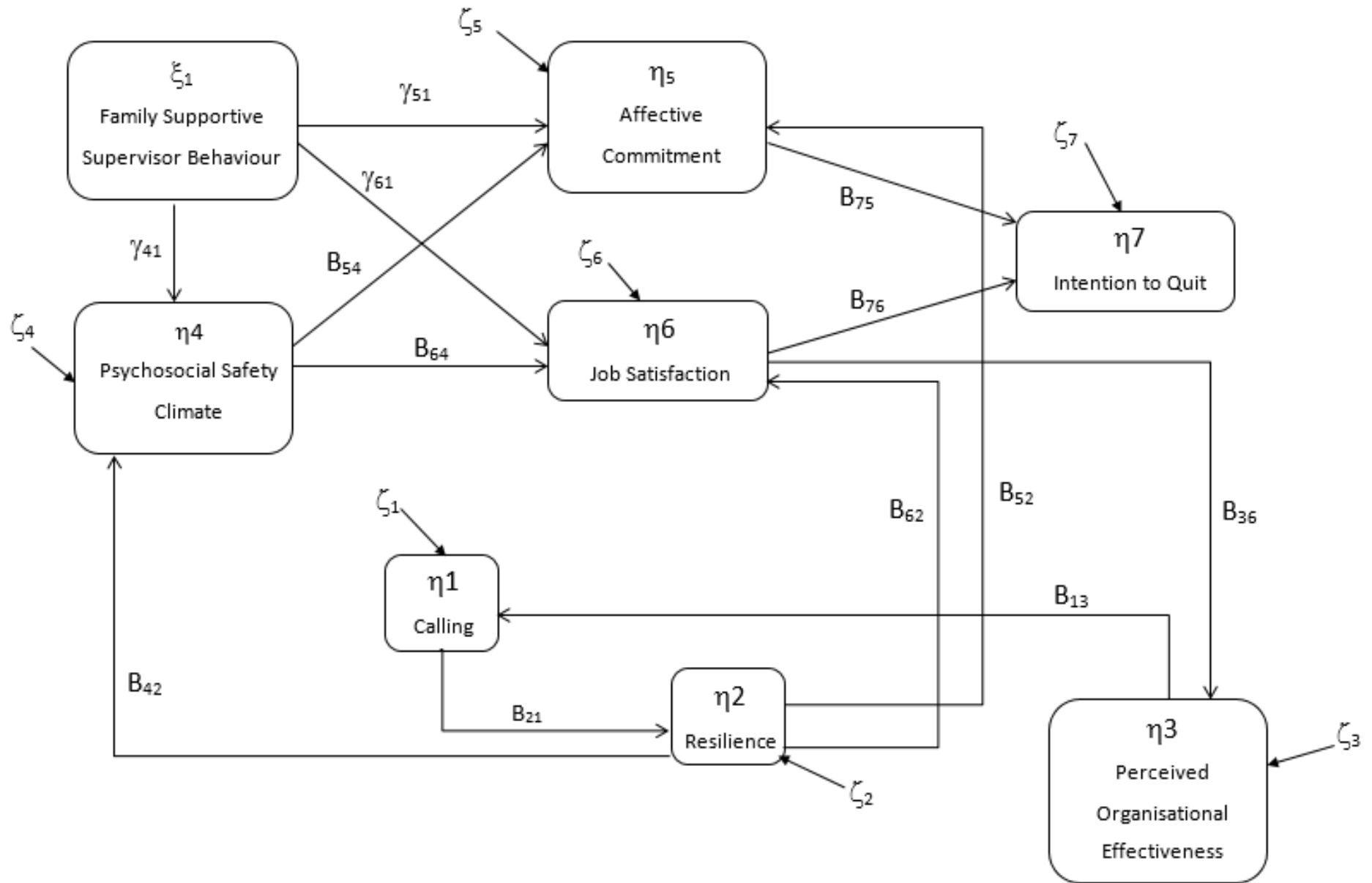
Figure 3.2. *ITQ reduced Structural Model*

3.5 Research Design

In order to empirically test the validity of the substantive research hypothesis, a strategy or scheme is required to direct the collecting of empirical evidence to test the hypothesis. Kerlinger (1973, p. 300) defines the research design as the "plan, structure, and strategy of investigation conceived so as to obtain answers to research questions and to control variance". The author also suggests that the main purpose of the research design is to provide answers to research questions and to control variance. Incidentally, the research design can be seen as a control mechanism. Kerlinger (1973, p. 306) further explains the principles behind this mechanism to be "maximising systematic variance, control extraneous systematic variance, and minimising error variance".

The current study utilised an *ex post facto* correlational design, as the variables examined in the study did not lend themselves to manipulation (see Figure 3.3). Kerlinger (1973, p. 379) defines *ex post facto* research as follows:

> *ex post facto* research is systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables.

$[X_{11}]$ … Y_{11}

$[X_{21}]$ … Y_{21}

:   :

$[X_{i1}]$ … Y_{i1}

:   :

$[X_{n1}]$ … Y_{n1}

Figure 3.3. *Ex Post Facto Correlational Design*

Each type of research design has its own underlying logic, hence the underlying logic of the *ex post facto* research design will subsequently be discussed. In *ex post facto* designs each

latent variable is operationalised in terms of two or more indicator variables. In this type of design the researcher obtains measures on the observed variables (at least two indicator variables per latent variable) and calculates the observed covariance matrix.

Estimates for the freed structural and measurement model parameters are obtained in an iterative fashion with the objective of reproducing the observed covariance matrix as closely as possible (Diamantopoulos & Siguaw, 2000). If the fitted model fails to accurately reproduce the observed covariance matrix, it follows that the measurement and/or structural model does not provide an acceptable explanation for the observed covariance matrix. It then follows that the structural relationships hypothesised by the model do not provide an accurate portrayal of the psychological process shaping the phenomenon of interest (Diamantopoulos & Siguaw, 2000). The opposite, however, is not true. If the covariance matrix derived from the estimated structural and measurement model parameters closely agrees with the observed covariance matrix it would not imply that the psychological dynamics postulated by the structural model necessarily produced the observed covariance matrix. It can, therefore, not be concluded that the psychological process depicted in the model necessarily must have produced the levels of the endogenous latent variables comprising the phenomenon of interest. A high degree of fit between the observed and estimated covariance matrices would only imply that the psychological processes portrayed in the structural model provide one plausible explanation for the observed covariance matrix. This conclusion, however, would only really be warranted if prior evidence would exist that the measurement model fits closely (Babbie & Mouton, 2001).

3.6 Sampling

According to Babbie (2004) sampling is the process of selecting observations. Two main types of sampling exists namely, probability and non-probability sampling. Probability sampling makes use of random sampling at one or more stages, whereas non-probability sampling does not (Kerlinger, 1973). The target population for the current study was South African nurses employed in the public health sector. Due to physical constraints and practicality concerning costs and location, the current study utilised non-probability sampling procedures. To select the final sampling units, non-probability convenience sampling was be used. Although non-probability sampling has its weaknesses, the current situation of the study necessitated it.

The sampling population for the current study included one public hospital in the Western Cape and one in the Northern Cape. The hospitals were chosen based on accessibility and convenience.

The ideal sample size for conducting the study was calculated to be 365[8], with a minimum sample size of 61. Only 188 responses were obtained, of which only 184 could be utilized for the analyses. Many suggest that in order to obtain reliable SEM estimates, sample sizes should exceed 200 cases (Anderson & Tatham, 2006), whereas others argue no less than 100 cases are appropriate for SEM (Gorsuch, 1983)

3.7 Research Participants

All participants invited to participate in the study were employed in public hospitals in both the Northern and Western Cape provinces of South Africa. The sample characteristics are discussed in more detail in Section 4.2.

3.8 Data Collection Procedure

Upon obtaining ethical clearance from the departmental ethics screening committee and the Research Ethics Committee of Stellenbosch University, permission was requested from the Department of Health (DOH) to conduct the study in state hospitals to which access would be readily available (e.g. Western Cape, Northern Cape). Once approval was granted by the DOH, contact was made with representatives of the chosen hospitals, for data collection permission purposes.

After permission was obtained, the various units' matrons were contacted individually to obtain name lists of the nurses in the units. The lists were only utilized for coding, book keeping, and combating low response rate purposes.

All nursing staff employees were encouraged to participate in the study by explaining the purpose of the study, informed consent, confidentiality, and voluntary participation. Upon agreement from participants, hard copy questionnaires were distributed by the researcher,

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[8] The sample size was calculated by means of Preacher and Coffman's statistical power software.

and subsequently collected from collection boxes placed strategically throughout the hospital.

In contrast, at a subsequent hospital, all matrons were addressed in a meeting upon which the purpose of the study was explained. All matrons present were handed hard copies of the questionnaires, to subsequently distribute throughout their units. A collection box was placed in the head of nursing's office where participants could drop off completed questionnaires, which was then collected by the researcher.

3.9 Evaluation of Research Ethics

The purpose of reflecting on potential ethical risks associated with the research is to safeguard the dignity, rights, safety and well-being of the research participants involved in this study (Stellenbosch, 2012). In agreement with the objectives of Stellenbosch University (2013, p. 2) the current research was committed to satisfying the "promotion of scientific integrity and ethically responsible research". Obtaining ethical approval to conduct social, behavioural and educational research at Stellenbosch University (SU) is a necessary prerequisite; and the responsibility lies with the researcher to ensure that clearance is obtained prior to completion of the research (Stellenbosch University, 2013). According to the Stellenbosch University (2013, p. 4) ethics policy social, behavioural and educational research refers to "all research involving interaction with or observation of human subjects, or information linked to human subjects, or research involving groups of individuals, or organisations". Evidently empirical behavioural research necessitates either actively or passively involving people in the research study. However, this runs the risk of compromising dignity, rights, safety and well-being of the research participants. Resultantly, the critical question is whether the potential risks to the participants are justified by the purpose of the research study (Stellenbosch University, 2012).

Annexure 12 of the Ethical Rules of Conduct for Practitioners Registered under the Health Professions Act (Act no. 56 of 1974) (Republic of South Africa, 2006, p. 41) requires psychological researchers to obtain institutional permission from the organisation from which research participants will be solicited. Hence, institutional permission was obtained from the participating hospitals (Appendix B).

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Each research participant approached for the purpose of the study had the right to voluntarily decide whether she/he wished to accept an invitation to participate in the research. According to Stellenbosch University (2012, p. 18) as well as Horn, Graham, Prozesky and Theron (2015, p. 12) to make an informed decision the participant needed to be informed on, and capable of the following:

- The objective and purpose of the research,

- What participation in the research involves,

- How research results will be disseminated and used,

- Who the researchers are,

- Where they can make further enquiries about the research,

- What their rights as participants are,

- Participants must be competent to give consent, and

- Consent must be given voluntarily.

In addition to the above, it is also important to ensure that consent forms address participants in a direct manner, and is written in simple and easily understandable language.

For the purpose of obtaining informed consent in this study, participants were informed of the nature of the study, and given the choice to freely participate, or to decline participation. They were provided with the above information, in order for them to make an informed decision as to whether they wished to participate or not. The informed consent form was presented as a preamble to the composite questionnaire (see Appendix C).

3.10 Statistical Analysis

The following sections delineate the various techniques of statistical analyses utilized in this study. These techniques include missing values analysis, item analysis, dimensionality analysis (via Exploratory Factor Analysis, if necessary), confirmatory factor analysis, and fitting the structural model with Structural Equation Modelling (SEM).

3.10.1 Missing values

There are a number of reasons why missing values are encountered. These include, for example, purposeful or accidental non-response errors, or the fact that participants drop out of studies. Noting and treating missing values are important because if they are not

appropriately handled, invalid conclusions could result. Missing values can be dealt with in a number of ways including list wise/case deletion, pairwise deletion, imputation by matching, mean substitution and indicator variable adjustment (Acock, 2005). An appropriate strategy for dealing with missing values is chosen based on the nature of the missing values in the dataset, specifically the amount of missing values and whether or not the data shows a multivariate normal distribution.

In this study imputation by matching was chosen as the most appropriate method to treat the missing values. This decision was based on the amount of missing values and the fact that the assumption of multivariate normality was not met (process fully explained in Section 3.11.2). The process of imputation by matching consists of replacing missing values with actual values. These values are obtained by utilizing other cases with similar response patterns over a set of matching variables (Enders & Bandalos, 2001).

3.10.2 Item analysis

According to Murphy and Davidshofer (2005) item analysis can help increase our understanding of tests. Tests, or measuring instruments measure an individual's standing on a latent variable by eliciting a response from said individual by means of stimuli, i.e. the items on the test. Item analysis can indicate why tests are reliable, and may also provide suggestions for the improvement of a test's measurement characteristics. Item analysis can serve to pinpoint test items that do not measure the correct constructs or ones that are poorly worded, limiting the reliability and validity of tests. Once such items are removed, the reliability and validity of the test can be improved (Murphy & Davidshofer, 2005).

In an attempt to gauge how effective the measuring instruments were at measuring the latent variables in the study, as well as to identify any poor items for elimination, item analysis was performed. SPSS version 23 (IBM Corp, 2013) was utilized for the item analyses. A range of statistical results were considered for the purpose of making decisions concerning the quality of items, including: item-total correlations, squared multiple correlations, changes in Chronbach Alpha should poor items be deleted, and inter-item correlations.

3.10.3 Factor analysis

Apart from item analysis, factor analysis also needed to be conducted. Factor analysis is defined by Babbie (2010, p. 491) as "a complex algebraic method for determining the general dimensions or factors that exist within a set of concrete observations". There are two main types of factor analysis, namely Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). For the purpose of this study, CFA was primarily used, as the original factor structures of all the instruments needed to be tested and validated on the sample of this study. EFA, on the other hand was only utilized in instances where CFA results indicated the measurement models of the various instruments used, did not obtain good fit.

3.10.4 Confirmatory factor analysis

CFA is defined as "a type of structural equation modelling (SEM) that deals specifically with measurement models, that is, the relationships between observed measures or indicators and latent variables or factors" (Brown, 2006, p. 1). Comprehensive LISREL model fit indices can only be interpreted unambiguously for or against the fitted structural model, if it can be shown that the indicator variables used to operationalise the latent variables successfully reflected the latent variables they were assigned to represent. The fit of the measurement model used to operationalise the structural model therefore needs to be evaluated prior to fitting the comprehensive LISREL model (i.e. the structural model). A poor fitting comprehensive LISREL model can only be unambiguously interpreted as evidence against the structural relations hypothesised by the structural model, if the measurement model fits closely; and the indicator variables load significant and strongly on the latent variables they were tasked to reflect. The measurement model was fitted by analysing the covariance matrix. Maximum likelihood estimation was used if the multivariate normality assumption was satisfied. If the multivariate normality assumption had to be rejected, either Robust Maximum Likelihood (RML) estimation or Diagonally Weighted Least Squares (DWLS) estimation was used.

LISREL 8.8 (Du Toit et al*.,* 2001) was used to perform the confirmatory factor analysis.

3.10.5 Dimensionality analysis / EFA

According to Wilbers (2014, p.61) "the intention of dimensionality analysis is to confirm the uni-dimensionality assumption on each subscale". Dimensionality analyses permits the researcher to identify and remove items with inadequate factor loadings, and/or to split heterogeneous subscales into two or more homogenous subscales.

In the current study, using EFA to examine instrument factor structure, depended on the results of the CFA. If the CFA results were to suggest poor model fit between the observed data and the theoretical model, EFA was performed. Resultantly, no EFA's were performed based on poor CFA results of any of the measurement instruments. EFA was however performed on the newly developed POE scale to determine the instrument's factor structure. The instrument was developed by the researcher specifically for the current study, to determine each participant's perceived organisational effectiveness.

3.10.6 Structural equation modelling (SEM)

Structural equation modelling is used for the purpose of analysing multivariate data, and is also an appropriate method of theory testing (Savalei & Bentler, 2010). According to the authors, SEM goes beyond common regression modelling to integrate multiple independent and dependent variables as well as hypothetical latent constructs that may be represented by groups of observed variables.

3.10.6.1 Variable type

Identification of variable type when fitting SEM models, include specifying individual items as indicator variables, or creating item parcels. According to Wilbers (2014) psychometric properties, factor solutions and model fit needs to be considered in order to make this decision, as each method has both advantages and disadvantages. The major disadvantage of using individual items is a practical one, in that it increases the number of measurement model parameters to be estimated, and therefore sample size; whereas the use of item parcels has the opposite effect (Bandalos & Finney, 2001).

A subsequent requirement pertaining to variable type included specifying the variables as measured on continuous scales. All factors measured in the current study utilised ordinal scales, which then had to be specified as continuous to perform the CFA analyses. According

to Muthen and Kaplan (1985) no serious distortion of either the parameter, standard error or chi-square estimates results when specifying ordinal scales as continuous.

3.10.6.2 Multivariate normality

According to Du Toit, Du Toit and Hawkins (2001) improper analysis of continuous non-normal variables in SEM may result in incorrect standard errors and chi-square estimates. Theron (2010) supports this by claiming that inappropriate estimation techniques can have significant negative effects on model fit. As a result the univariate and multivariate normality of the indicator variables have to be evaluated (conducted with PRELIS), in order to choose the most appropriate estimation technique for the data. Univariate tests analyse variables individually for deviations from normality, if such deviations are encountered, the multivariate distribution cannot be normal.

If the data in this study did not follow a multivariate normal distribution, Robust Maximum Likelihood estimation was used (Mels, 2003).

3.10.6.3 Fitting the comprehensive structural model

The comprehensive LISREL model, comprising the measurement model (describing the hypothesised structural relationships between the latent variables and their corresponding item parcel indicators) and the structural model (describing the hypothesised structural relations between the latent variables) was fitted by analysing the covariance matrix. Maximum likelihood estimation would be used if the multivariate normality assumption was satisfied. If the multivariate normality assumption were to be rejected, either Robust Maximum Likelihood estimation or Diagonally Weighted Least Squares estimation would be used. LISREL 8.8 (Du Toit & Du Toit, 2001) was used to perform the structural equation analysis.

3.11 Measuring Instruments

In order to empirically evaluate whether the intention to quit structural model provided a valid description of the psychological processes causing variance in ITQ amongst nurses in the South African public health sector, measures of the latent variables in the model needed to be obtained.

Measuring the identified latent variables of the ITQ structural model required the use of standardised measuring instruments to operationalise each latent variable. According to Diamantopoulos and Siguaw (2000), should any of the measures utilized be of questionable quality, assessment of the hypothesised relations in the model should be questioned as well. Hence, as a starting point measurement instruments were identified through a literature review whose psychometric properties, after investigation, were considered sound, and applicable to this study.

The following sections present the results of the investigation into the psychometric properties of the instruments used to operationalize the latent variables in the structural model. The psychometric properties are discussed in terms of reliability, validity, and response format. Each measure was evaluated by means of item analysis, CFA, and when necessary EFA, to determine the success with which they represented the latent variables in the model for this study.

Following the item analyses, poor performing items were marked and considered for removal. Where CFA results of measures indicated mediocre fit, EFA was performed to investigate the possible reasons for poor fit.

3.11.1 Data preparation

Before importing the data into SPSS, the questionnaire data was captured in an excel spreadsheet. To ensure precision of the data set, random cross-checks were done of completed questionnaires in the captured data sheet. Before recoding reverse scored items, the missing values in the dataset were analysed and subsequently imputed. The imputation of the missing values is discussed in the following section.

3.11.2 Missing values

Missing values were encountered presumably as a result of either purposeful or accidental non-response errors. Before any data could be analysed these missing values had to be dealt with. Imputation by matching was used for this purpose.

Each questionnaire consisted of 111 items, and a sample size of 184 was obtained. Consequently, the final dataset contained 20 424 possible item responses, of which 285 were missing, resulting in 1.3% missing data points in the total dataset. To satisfy the preconditions

for imputation by matching, the normality assumption should be rejected and the percentage of missing values less than 30%. As both these conditions were met (the distribution of missing values are represented in table 3.2 and 3.3), imputation by matching was utilised.

Table 3.2
Distribution of missing values across measures

Instrument	Number of missing values
Calling and Vocation Questionnaire	72
Nurse Satisfaction Scale	99
Affective Commitment Scale	27
Family Supportive Supervisor Behaviour	34
Psychosocial Safety Climate	24
Resilience	12
Perceived Organisational Effectiveness	13
Intention to quit	4

Table 3.3
Distribution of missing values across measurement model items

C1	C2	C3R	C4	C5	C6	C7	C8	C9	C10
4	8	14	3	8	8	1	11	1	3
C11	C12	C13NP	S1	S2	S3	S4R	S5	S6	S7R
3	2	6	1	1	0	4	3	1	5
S8R	S9	S10R	S11	S12R	S13R	S14R	S15R	S16	S17R
2	1	6	2	2	3	1	1	2	4
S18	S19R	S20R	S21	S22	S23	S24	S25	S26R	S27R
1	2	3	2	3	5	2	2	4	1
S28	S29NP	S30NP	S31NP	S32NP	S33NP	S34NP	S35NP	S36NP	S37NP
1	3	2	2	6	2	5	2	2	1
S38NP	S39NP	S40NP	S41NP	A1	A2	A3	A4R	A5R	A6R
2	4	0	3	0	0	7	1	7	1
A7	A8R	A9NP	A10NP	A11NP	A12NP	F1	F2	F3	F4
3	3	3	2	0	0	5	5	5	1
F5	F6	F7	F8	F9	F10	F11	F12	F13	F14
0	3	4	2	3	0	4	2	0	0
P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
5	6	0	1	1	2	2	3	1	1
P11	P12	R1R	R2	R3	R4	R5	R6	R7NP	O1

1	1	4	0	0	2	1	3	2	1
O2	O3	O4	O5	O6	O7	O8	O9	I1	I2
2	2	4	1	2	0	1	0	1	2

I3
1

3.11.3 Calling

For the purpose of measuring the calling construct, the Calling and Vocation Questionnaire (CVQ) was utilised. Dik, Eldridge, Steger and Duffy (2012, p. 3) conceptualises calling as follows:

> A calling is a transcendent summons, experienced as originating beyond the self, to approach a particular life role in a manner oriented toward demonstrating or deriving a sense of purpose or meaningfulness and that holds other-oriented values and goals as primary sources of motivation.

The CVQ is comprised of three 4-item subscales reflecting the presence of calling, namely: *Presence-Transcendent Summons*, *Presence-Purposeful Work* and *Presence-Prosocial Orientation*; and three 4-item subscales reflecting the search for calling, namely: *Search-Transcendent Summons*, *Search-Purposeful Work* and *Search-Prosocial Orientation*. Therefore, the CVQ consists of 24 items with a four-level response scale (1 = not at all true of me, 2 = somewhat true of me, 3 = mostly true of me, 4 = absolutely true of me). The total internal consistency Cronbach reliability coefficient of the CVQ was reported to be .89 for CVQ-Presence and .87 for CVQ-Search; the total test-retest Cronbach reliability coefficients were reported to be .75 for CVQ-Presence and .67 for CVQ-Search (Dik, Eldridge, Steger & Duffy, 2012).

3.11.3.1 Item analysis

Item analyses were conducted on the three subscales of the instrument measuring the *Presence of Calling*, as well as the entire *Presence* subscale. The decision was made to exclude the Search for calling subscale, and subsequent items, as the study argued that nurses are in the occupation because a calling (to a more or lesser degree) was already present and

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established. The results of the subscale item analyses are displayed in table 3.4 and the results of the overall scale item analysis in table 3.5.

Table 3.4
Descriptive statistics for Calling subscales

Calling subscale	Number of items	M	SD	α
PTS	4	13.18	2.44	.61
PPW	4	14.50	1.62	.60
PPO	4	14.79	1.45	.67

Note: PTS = Presence Transcended Summons; PPW = Presence Purposeful Work; PPO = Presence Prosocial Orientation

Table 3.5
Descriptive statistics for Calling scale

Scale	Number of items	M	SD	α
Calling	12	42.47	4.25	.746

The item analyses results showed that none of the three subscales' reliability coefficients exceeded the critical cut off value, indicating acceptable reliability, of .70 (Nunnally, 1978). The scales instead indicated moderate reliability. The total calling scale however, was able to obtain an acceptable reliability of .75 (.74 rounded up). The *Presence-Transcendent Summons* subscale obtained an alpha of .61, with item total correlations ranging between .28 (item C1) and .57 (item C13NP), and squared multiple correlations ranging from .17 (item C1) to .74 (item C13NP). Despite these values, none of the items, if deleted, would have resulted in significant improvements in the subscale's reliability.

The *Presence-Purposeful Work* subscale with a reliability of .60 (.59 rounded up), obtained the lowest alpha coefficient of the three subscales. The scale's item total correlations ranged between .35 (item C9) and .46 (item C7), and the squared multiple correlations ranged between .48 (item C7) and .55 (item C9). All items were retained, as the removal of none of the items would have resulted in significant improvements in the alpha coefficient.

The *Presence-Prosocial Orientation* subscale obtained an alpha of .67, the highest of the three subscales. The item total correlations ranged between .42 (item C10) and .52 (item C8), whereas the squared multiple correlations ranged between .18 (item C10) and .28 (item C8).

All items were retained as none, if deleted, would have resulted in significant improvements in the subscale's reliability.

Due to the fact that no poor items could be identified based on the above results, all items measuring calling with the CVQ were retained in further analyses.

3.11.3.2 Confirmatory factor analysis

The CFA on the set of indicator variables of the CVQ-Presence subscale of the CVQ was performed by means of structural equation modelling (SEM) with LISREL 8.8 (Jöreskog & Sörbom, 2002). The calling measurement model consisted of 12 observed variables regressed on three latent variables.

Before any analyses could be done it was necessary to inspect the multivariate normality of the indicator variables, the results of which are displayed in Table 3.6. The null hypothesis of multivariate normality had to be rejected (skewness and kurtosis: $\chi^2 = 856.72$, $p = .00$). Resultantly Robust Maximum Likelihood (RML) estimation was used to obtain the model parameter estimates.

Table 3.6
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
54.33	26.75	.00	237.00	11.88	.00	856.72	.00

The purpose of the CFA was to determine whether the indicator variables used to operationalise the latent variables, in the measurement model, successfully reflected the latent variables they were assigned to represent. A successful operationalization would be one where the measurement model adequately reproduced the observed covariance matrix. More specifically, operationalization would be successful if factor loadings were statistically significant and adequately large ($p < .05$; $\lambda > .40$), and error variances adequately small (Brown, 2015). As obtaining exact model fit was highly unlikely, for the purpose of this study, obtaining close model fit was considered sufficient. Appendix E contains the path diagram of

the measurement model fitted for the CVQ-Presence subscale. Table 3.7 presents the CFA results.

Table 3.7
Goodness of fit statistics Calling measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
143.64*	95.96*	51	1.88	.93	.94	.07	.07	.069	.07

Note: X^2 = Chi-square; S-BX^2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

The CFA results indicated, based on the Satorra Bentler Scaled chi-square value of 95.961, and p value of 0.00, that the exact fit null hypothesis (RMSEA = 0) had to be rejected (p < .05). However, the RMSEA of 0.069 indicated good model fit (Hair et al., 2006). In addition, testing the close fit null hypothesis indicated that close model fit was obtained (p > .05). According to Hair et al. (2006) for a sample of this size and a model with less than 12 observed variables, a CFI of .97 or more, and an SRMR and RMSEA of .08 or lower, indicates appropriate model fit. Consequently, the current model's RMSEA of .069 and SRMR of .07 supported good fit. The CFI of .94 was however slightly below the recommended value, but was still considered appropriate.

All factor loadings were statistically significant (t ≥ 1.64). The completely standardized factor loadings ranged from .42 (item C13NP) to .72 (item C6). One factor loading (item C5 = PTS) was below 0.4 (0.33). Based on the results obtained from the CFA, good model fit can be concluded for the measurement model.

3.11.4 Affective commitment

In order to measure the affective component of the construct organisational commitment, the Affective Commitment Scale (ACS) was utilised. The ACS defines affective commitment as an "employees' emotional attachment to, identification with, and involvement in, the organization" (Allen & Meyer 1990, p. 1). The ACS consisted of 8 items, and has a 7-point Likert scale response format (I = strongly disagree, 2 = moderately disagree, 3 = slightly disagree, 4 = neither disagree nor agree, 5 = slightly agree, 6 = moderately agree, 7 = strongly

agree). The internal consistency Cronbach reliability coefficient of the ACS was reported by the authors to be .87. In terms of convergent validity, it was reported that the ACS correlated well with other instruments including the Organisational Commitment Questionnaire with a coefficient of .83 (Allen & Meyer 1990).

3.11.4.1 Item analysis

Item analysis was performed on the unidimensional ACS, the results of which are reported in Table 3.8. With an alpha coefficient of .819, the ACS exhibited sufficiently high reliability.

Table 3.8
Descriptive statistics ACS

Scale	Number of items	M	SD	α
ACS	8	25.80	6.43	.82

The scale's corrected item total correlations ranged between a modest .215 (Item A3) and a high value of .784 (Item A12NP); with squared multiple correlation values of .14 and .79 for the same items. The results furthermore indicated that if deleted, the absence of item A3 would increase the scale's reliability to .84. However, the increase was judged to not be significant enough to warrant compromising the scale's integrity, by deleting the item. Resultantly the decision was made to retain the item. Consequently, all eight items of the ACS were retained for further analysis.

3.11.4.2 Confirmatory factor analysis

Inspection of the multivariate normality results, Table 3.9, indicated that the assumption of multivariate normality had to be rejected ($p < .05$). As a result RML estimation was used for the CFA, the results of which are reported in Table 3.10.

Table 3.9
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
8.49	6.89	0.00	96.77	6.23	0.00	86.25	0.00

The measurement model consisted of eight observed variables regressed on one latent variable, (Appendix F contains the path diagram for the fitted affective commitment measurement model).

Table 3.10
Goodness of fit statistics AC measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
51.313*	86.25*	20	4.31	.95	.97	.1	.06	.089	.02

Note: X^2 = Chi-square; S-BX^2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

Evaluation of the CFA results revealed a Satorra Bentler Scaled chi-square value of 86.25, and p value of 0.00, indicating that the hypothesis for exact model fit (RMSEA = 0) had to be rejected (p < .05). Moreover, the close fit null hypothesis also had to be rejected (p < .05). However, according to Hair et al. (2006), when fitting a model for a sample of this size (<200) with less than 12 observed variables, a CFI of.97 or more, and an SRMR and RMSEA of .08 or lower, indicates appropriate model fit. Based on these cut-off values, the CFI value of .97, and SRMR value of .06 indicated good model fit. The RMSEA of .089 marginally exceeded the good fit benchmark. It is concluded, therefore, that the overall goodness of fit statistics indicated acceptable/reasonable model fit.

All factor loadings at t ≥ 1.64, were statistically significant. The completely standardized lambda-X solution revealed factor loadings varying from .47 (Item A2) to .95 (item A12NP), except for items A2 (.37) and A3 (.22) falling below .40. Based on all the results it could be concluded that acceptable model fit for the affective commitment measurement model was obtained.

3.11.5 FSSB

For the purpose of measuring the construct Family Supportive Supervisor Behaviour (FSSB), the multidimensional multilevel FSSB scale was used (Hammer et al*., 2008)*. The FSSB scale comprises of four subscales. *Emotional Support* refers to the perception that one is being cared for, that one's feelings are being considered, and that individuals feel comfortable

communicating with the source of support when needed. *Role Modelling Behaviours* concerns supervisors demonstrating to employees how to integrate work and family, through enacting such behaviours on the job. *Instrumental Support* relates to how the supervisor responds to employees' work and family issues in the form of daily management transactions. *Creative Work Family Management* concerns actions on the part of management to restructure work, in order to facilitate employee effectiveness on the job and at home (Hammer et al*.,* 2008).

The FSSB scale consists of 14 items, and has a 5-point Likert scale response format (1 = strongly disagree to 5 = strongly agree). Reliability coefficients reported for the total FSSB score was .94, while reliability coefficients for the subscales ranged between .73 and .90 (Hammer et al*.,* 2008). The FSSB scale also correlated well with measures of general supervisor support and measures of supervisor support behaviours, with coefficients of .74 and .68, indicating convergent validity (Hammer et al*.,* 2008).

3.11.5.1 Item analysis

Item analysis was conducted on the total scale, as well as the four subscales of the FSSB scale, the results of which are reported in Tables 3.11 and 3.12. The total FSSB scale obtained a very high alpha coefficient of .97, indicating a very high level of internal consistency.

Table 3.11
Descriptive statistics for FSSB scale

Scale	Number of items	M	SD	α
FSSB	14	49.35	13.23	.97

All four subscales' alpha coefficients far exceeded the critical cut-off value of .70, (Nunnally, 1978). The *Emotional Support* subscale produced an alpha coefficient of .91. Inspection of the corrected item total correlations revealed values ranging from .77 (Item F2) to .83 (Item F3), with the corresponding squared multiple correlations ranging from .61 to .69. None of the items were identified as poor and subsequently considered for deletion.

The *Instrumental Support* subscale also produced a high alpha coefficient of .93. The item total statistics revealed corrected item total correlations varying from .82 (Item F7) to .88 (Item F5) and corresponding squared multiple correlation values of .67 and .78 respectively.

No items were flagged as possible poor items, and consequently none were considered for deletion from the item pool.

The *Role Modelling Behaviour* subscale produced a reliability coefficient of .95. Inspection of the corrected item total correlations revealed values ranging from .88 (Item F8) to .91 (Item F9), with the corresponding squared multiple correlations ranging from .78 to .83. All subscale items were retained.

Finally the *Creative Work Family Management* subscale obtained a reliability coefficient of .94. Inspection of the corrected item total correlations revealed values ranging from .83 (Item F11) to .89 (Item F14), with the corresponding squared multiple correlations ranging from .69 to .79. Consequently, all subscale items were retained in further analyses.

Table 3.12
Descriptive statistics for FSSB subscales

FSSB subscale	Number of items	M	SD	α
ES	4	13.73	3.134	.91
IS	3	10.63	3.107	.93
RMB	3	10.59	4.001	.95
CWFM	4	14.4	3.031	.94

Note: ES = Emotional Support; IS = Instrumental Support; RMB = Role Modelling Behaviours; CWFM = Creative Work-Family Management

To conclude the FSSB item analyses results, all 14 items on all four subscales were retained for further analyses.

3.11.5.2 Confirmatory factor analysis

The results of the test for multivariate normality, presented in Table 3.13, indicated that the null hypothesis of multivariate normality had to be rejected ($p < .05$). Resultantly, RML estimation was made use of to derive the model parameter estimates.

Table 3.13
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
55.16	22.39	.00	315.56	13.01	.00	670.61	.00

The FSSB measurement model consisted of 14 observed variables regressed on four latent variables (see Appendix G for the fitted FSSB model). The results of the CFA are reported in Table 3.14.

Table 3.14
Goodness of fit statistics FSSB measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
197.83*	148.61*	71	2.09	.99	.99	.04	.03	.077	.01

Note: X^2 = Chi-square; $S\text{-}BX^2$ = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

As anticipated, the exact fit null hypotheses (RMSEA = 0) had to be rejected (p < .05) with a Satorra Bentler Scaled chi-square value of 148.61. As indicated by the p-value (.01) of the close fit null hypothesis, statistical evidence of close model fit also had to be rejected (p < .05). Based on simulation studies, according to Hair et al. (2006), for a model tested on a sample of less than 200 (as in this study), with between 12 and 30 observed variables, a CFI of .95 or more, and an SRMR and RMSEA of .08 or lower, indicates good model fit. Based on these cut-off values the SRMR of .03 commented positively on the model's fit. In addition, the RMSEA of .077 and CFI of .99 further corroborated the conclusion of good model fit.

Inspection of the results revealed that all factor loadings were statistically significant (t ≥ 1.64).The completely standardized lambda-X solution revealed all factor loadings exceeded the .4 cut-off value. Loadings ranged from .78 (item F2) to .96 (item F9). Based on the overall results, it could be concluded that the model achieved good fit.

3.11.6 Psychosocial Safety Climate

In order to measure the Psychosocial Safety Climate (PSC) construct, the PSC-12 was utilised (Hall, Dollard & Coward, 2010). The PSC-12 defines PSC as "an organisational climate for employee psychological safety and health" (Hall et al., 2010, p. 355). The PSC-12 comprises of four 3-item subscales. *Management Support and Commitment* refers to immediate and decisive action by management to rectify problems and issues that affect psychological health. *Management Priority* refers to the priority given by management to psychological health. *Organisational Communication* refers to the extent to which factors that can affect

psychological health are communicated to employees. *Organisational Participation/Involvement*, concerns the degree of involvement of the entire organisation in stress prevention (Idris et al*.,* 2012).

The PSC-12 consists of 12 items, and has a 5-point Likert scale response format (1 = strongly disagree to 5 = strongly agree, including a midpoint = neither disagree nor agree). In the original validation study a Cronbach alpha internal consistency reliability coefficient of .94 was reported for the total scale, with reliability coefficients of between .77 and .90 that was reported for the different subscales (Hall et al*.,* 2010).

3.11.6.1 Item analysis

The results of the item analyses performed on the PSC total scale and subscales are displayed in Tables 3.15 and 3.16. The total PSC scale obtained an excellent reliability coefficient of .95 (Nunnally, 1978). The *Management Support and Commitment* subscale obtained a reliability coefficient of .90, far above the suggested .70 cut-off. Inspection of the subscale's item-total statistics revealed moderately strong corrected item-total correlations ranging from .71 (Item P3) to .80 (Item P1) and corresponding squared multiple correlation values ranging from .51 to .66. The results indicated that none of the items, if deleted, would result in a higher reliability coefficient for the subscale. Consequently, all items were retained.

The *Management Priority* subscale produced an excellent reliability coefficient of .95 (Nunnally, 1978). Inspection of the item-total statistics revealed corrected item-total correlations ranging from .87 (Item P4) to .93 (Item P5) and squared multiple correlation values ranging from .76 to .86. All subscale items were subsequently retained.

The *Organisational Communication* subscale obtained a reliability coefficient of .86. The Item-total statistics of the subscale revealed corrected item-total correlations ranging from .63 (Item P9) to .80 (Item P8). The corresponding squared multiple correlation values ranged from .41 to .67. The results furthermore indicated that if deleted, the absence of item P9 would increase the scale's reliability to .88. However, the increase was decidedly not significant enough, given that the internal consistency of the scale already far exceeded the benchmark for good reliability (Nunnally, 1978). As a result, the choice was made to retain the item, and maintain the scale's integrity.

The *Organisational Participation and Involvement* subscale, according to Nunnally (1978), produced a very high reliability coefficient of .85. The item-total statistics revealed corrected item-total correlations ranging from .68 (Item P10) to .81 (Item P11) and corresponding squared multiple correlation values ranging from .50 to .65 respectively. None of the items if deleted would have resulted in an increase in the scale's alpha coefficient. All items were subsequently retained in the item pool for further analysis.

Table 3.15
Descriptive statistics for PSC scale

Scale	Number of items	M	SD	α
PSC	12	34.09	10.83	.95

Table 3.16
Descriptive statistics for PSC subscales

PSC-12 subscale	Number of items	M	SD	α
MSC	3	8.34	3.031	.90
MP	3	8.11	3.263	.95
OC	3	8.73	2.948	.86
OPI	3	8.91	2.938	.85

Note:MSC = Management Support and Commitment; MP = Management Priority; OC = Organisational Communication; OPI = Organisational Participation and Involvement

3.11.6.2 Confirmatory factor analysis

Inspection of the multivariate normality results indicated that the assumption of multivariate normality had to be rejected ($p < .05$) (Table 3.17). As a result RML estimation was used for the CFA, the results of which are reported in Table 3.18. The PSC measurement model consisted of 12 observed variables regressed on four latent variable. See Appendix H for the fitted PSC measurement model.

Table 3.17
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
26.59	12.51	.00	219.64	10.27	.00	261.83	.00

The results revealed that the exact fit null hypothesis (RMSEA = 0) had to be rejected (Satorra Bentler Scaled chi-square value of 129.8 and p-value of .00). Moreover, the close fit null hypothesis also had to be rejected (p < .05). Based on the benchmarks of Hair et al. (2006), the CFI (.98) and SRMR (.06) values corroborated good model fit; whereas the RMSEA value of .097 indicated poorer fit.

Table 3.18
Goodness of fit statistics PSC measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
154.55*	129.8*	48		.98	.98	.07	.06	.097	.00

Note: X^2 = Chi-square; $S\text{-}BX^2$ = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

The Lambda-X matrices revealed that all factor loadings were statistically significant (t ≥ 1.64). The completely standardized Lambda-X solution revealed all factor loadings to be above the .4 cut-off value, with an average of .85. Based on the overall results, only reasonable fit of the measurement model could be concluded.

3.11.7 Resilience

For the purpose of measuring the resilience construct, a subscale of the Psychological Capital Questionnaire (PCQ-24) was used (Luthans, Youssef & Avolio, 2007). The PCQ-24 defines resilience as "when beset by problems and adversity, sustaining and bouncing back and even beyond to attain success" (Görgens-Ekermans & Herbert, 2013, p. 1). The PCQ-24 comprises of four subscales (Hope, Optimism, Self-Efficacy and resilience), each consisting of six items with a 6-point Likert scale response format (1 = strongly disagree to 6 = strongly agree). A validation study on the PCQ-24 in the South African context reported a Cronbach alpha reliability coefficient of .69 for the resilience subscale. Support was also found for the discriminant validity of each of the PCQ-24 subscales as well as support for external validity (Görgens-Ekermans & Herbert, 2013).

3.11.7.1 Item analysis

Item analysis was performed on the resilience scale, the results of which are reported in Table 3.19. The scale obtained an adequate reliability coefficient of .73, exceeding the critical .7 cut-off point (Nunnally, 1978). The item-total correlations and squared multiple correlations

ranged from .41(Item R3) to .57(Item R6) and .22 to .46 respectively. However, the results indicated that deleting item R2 would not result in a higher reliability coefficient for the scale, and all resilience items were retained in further analyses.

Table 3.19
Descriptive statistics for resilience scale

Scale	Number of items	M	SD	α
Resilience	6	26.95	4.81	.73

3.11.7.2 Confirmatory factor analysis

Based on the multivariate normality results, Table 3.20, the assumption of multivariate normality had to be rejected (p < .05). RML estimation was employed, the results of which are reported in Table 3.21. The resilience measurement model consisted of six observed variables regressed on one latent variable. Appendix I contains the fitted resilience measurement model.

Table 3.20
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
11.47	13.48	.00	72.98	8.56	.00	255.44	.00

Table 3.21
Goodness of fit statistics Resilience measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
29.23*	26.27*	9	2.91	.91	.94	.01	.08	.10	.03

Note: X^2 = Chi-square; S-BX^2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

The results revealed, based on the Satorra Bentler Scaled chi-square value of 26.27 and p-value of .00, that the exact fit null hypothesis had to be rejected (p < .05). The close fit null hypothesis also had to be rejected (p < .05). Based on the benchmarks of Hair et al. (2006), the CFI (.94) and SRMR (.08) indicates weak evidence to support reasonable fit. The RMSEA value of .1 provides more convincing evidence in support of poor model fit.

All factor loadings were statistically significant. The completely standardized lambda-X solution revealed all factor loadings exceeded the .4 cut-off value, except for item R2 obtaining a value of .37, incidentally the same item that fared poorly in the item analysis. Based on the overall statistics, it can be concluded that the model achieved poor fit.

3.11.8 Job Satisfaction

In order to measure the job Satisfaction construct, the Nurse Satisfaction Scale (NSS) was utilised (Ng, 1993). The NSS considers job Satisfaction as "a multifaceted evaluative-affective reaction to a job" (Ng, 1993, p. 46). According to Ng (1993) in generating items for the NSS, suitable items were pooled from Spector's (1985) Job Satisfaction Survey designed for human service employees, and from studies that focussed explicitly on nurses. The NSS is a multidimensional questionnaire consisting of 24 items, and has a 7-point Likert scale response format (1 = strongly agree to 7 = strongly disagree). According to Ng (1993), studies on multiple samples reported Cronbach alpha reliability coefficients ranging between .84 and .87 for the scale. The test-retest reliability was examined after five months, and a coefficient of .75 was reported. The NSS was cross validated with an organisational commitment scale which produced a coefficient of .64 (Ng, 1993).

Unfortunately, the NSS fails to include a subscale on pay satisfaction, an important element of one's evaluation of satisfaction with the job. However, instead of replacing the NSS, specifically developed for the target group of the current study, the decision was made to include a pay satisfaction subscale of another satisfaction measure, developed by Spector (1985), namely the Job Satisfaction Survey (JSS). The *Pay Satisfaction* subscale consists of four items, and the author has reported a reliability coefficient of .91 for the complete JSS, and a reliability coefficient of .75 for the *Pay Satisfaction* subscale of the JSS (Spector, 1985).

3.11.8.1 Item analysis

Item analysis was performed on the seven subscales of the NSS, and the *Pay Satisfaction* subscale of the JSS. The results are reported in tables 3.22 and 3.23 respectively. An item analysis was also performed on all satisfaction items together, the results of which are reported in table 3.24.

Table 3.22
Descriptive statistics for NSS subscale

NSS subscale	Number of items	M	SD	α
Administration	4	15.32	6.06	.77
Co-workers	4	12.91	4.15	.61
Patient care	3	12.67	4.93	.57
Career	3	12.96	4.15	.23
Supervisor relationship	4	19.71	4.88	.48
Nursing education	3	12.80	4.42	.58
Communication	3	16.77	3.98	.70

The JSS scale obtained mixed results. Two of the subscales' reliability coefficients exceeded the acceptable .70 cut-off (Nunnally, 1978). A further three of the subscales obtained reasonable reliability coefficients, ranging between .57 and .61. However, the final two subscales fared poorly, with reliability coefficients of .23 and .48. According to Hinkin (1995) scale length is commonly associated with internal consistency outcomes, where scales with fewer items (typically less than five) may obtain poorer reliability coefficients. The poor results obtained on the satisfaction subscales, threatened the scale's internal consistency reliability.

Administration and *Communication* were the only subscales that produced acceptable reliability coefficients of .77 and .70 respectively (Nunnally, 1978). The item-total statistics, of the *Administration* subscale, indicated corrected item total correlations ranging between .42 (Item S31NP) and .71 (Item S2) with corresponding squared multiple correlations of .20 and

.56 respectively. Item S31NP had a markedly lower corrected item-total correlation and squared multiple correlation compared to the rest of the items. The results also indicated that should the item be deleted the reliability would increase to .79. However, this increase was not considered significant, and the decision was made to retain the item.

The *Communication* subscale's corrected item total statistics ranged between .44 (Item S24) and .54 (Item S22), with corresponding squared multiple correlations of .20 and .33. With item-total statistics lower than the rest of the items, Item S24 if deleted, would have resulted in the scale's reliability coefficient increasing to .71. The increase was however judged to not be significant enough, and as such the item was retained for further analyses.

The *Co-Workers* subscale obtained a reliability coefficient of .61, which can still be considered reasonable, despite falling below .70. Inspection of the item-total statistics revealed no items with markedly lower corrected item-total correlations or squared multiple correlations than the rest. Incidentally, there were also no items that if deleted would have resulted in a higher reliability coefficient.

The *Patient Care* subscale produced a reliability coefficient of .57, considerably below the accepted norm. The item-total statistics ranged from .34 (Item S14R) to .41 (item S12R) with corresponding squared multiple correlations of .11 and .175 respectively. None of the items, if deleted, would have resulted in a higher coefficient alpha.

The *Career* subscale obtained a very poor internal consistency coefficient of .23, the lowest of all the NSS subscales. The item-total statistics indicated that item S34NP obtained a corrected item-total correlation of .01 and a squared multiple correlation of .00. These values were significantly lower compared to the other items with corrected item-total correlations ranging between .17 (Item S9) and .22 (Item S11); and corresponding squared multiple correlations of .08 and .08 respectively. The results also indicated that should item S34NP be deleted the reliability would increase to .43. However, as the subscale only consisted of three items, deleting the poor item was not feasible. The item's performance was then assessed in the total satisfaction item analyses results (Table 3.24), which indicated that the item

performed satisfactorily. To maintain the scale's integrity, the decision was made to retain the item[9].

The *Supervisor Relationship* subscale produced an alpha coefficient of .48, also considerably below the accepted norm (Nunnally, 1978). Inspection of the item-total statistics revealed that item S38NP had obtained a considerably lower corrected item-total correlation and squared multiple correlation, compared to the other items in the subscale. The rest of the item's corrected item-total correlations ranged from .25 (Item S18) to .38 (Item S39NP), with matching squared multiple correlations of .10 and .16 respectively. The results also indicated that should the item be deleted the reliability would increase to .50. However, this relatively small increase was not considered significant enough to warrant compromising the scale's integrity, and the decision was made to retain the item in the item pool for subsequent analysis.

The *Nursing Education* subscale also obtained an alpha coefficient (α = .58) well below the accepted norm. Inspection of the item-total statistics revealed corrected item total correlations varying between .36 (Item S40NP) and .43 (Item S41NP) and equivalent squared multiple correlations of .13 and .18 respectively. No poor performing items, that if deleted would result in a higher alpha, could be identified. All items on the subscale were retained.

Table 3.23
Descriptive statistics for JSS subscale

JSS subscale	Number of items	M	SD	α
Pay	4	13.02	6.24	.69

The JSS *Pay Satisfaction* subscale obtained an acceptable alpha (α = .69) coefficient. Item S29NP's corrected item-total correlation of .34 and squared multiple correlation of .17, were considerably lower than the rest of the items. The other items' corrected item-total correlations and squared multiple correlations varied from .45 to .59 and from .26 to .35

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[9] Retaining the item had no negative effects on the CFA results for the satisfaction measurement model, as seen in section 3.11.8.2. The item did however obtain a completely standardised lambda-X factor loading of -.06, indicating that the item remained problematic.

respectively. Eliminating Item S29NP would have increased the subscale alpha to .71. However, this increase was not considered large enough to warrant deleting the item.

Table 3.24
Descriptive statistics for NSS

Scale	Number of items	M	SD	α
NSS	24	108.53	20.32	.71

The total NSS reliability result indicated adequate reliability, and none of the potentially poor items previously identified, proved problematic in the total scale analysis. Resultantly all the original NSS items were retained for further analyses.

3.11.8.2 Confirmatory factor analysis

The multivariate normality results indicated that the null hypothesis of multivariate normality had to be rejected ($p < .05$) for both the NSS and *Pay Satisfaction* measurement models (Tables 3.25 and 3.26). Consequently, RML estimation was once again made use of to derive the model parameter estimates for both measurement models.

Table 3.25
Test of multivariate normality for NSS

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
132.99	17.52	0.00	688.55	8.83	0.00	384.64	0.00

Table 3.26
Test of multivariate normality for Pay Satisfaction

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
1.86	4.07	0.00	24.14	0.46	0.64	16.81	0.00

The NSS satisfaction measurement model consisted of 24 observed variables regressed on seven latent variables. Appendix J contains the path diagram for the fitted NSS satisfaction model. The results of the CFA are presented in Table 3.27.

Table 3.27
Goodness of fit statistics NSS measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
370.11*	327.06*	231	1.42	.92	.93	.3	.07	.05	.62

Note: X^2 = Chi-square; S-BX^2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

As anticipated, the exact fit null hypotheses (RMSEA = 0) had to be rejected (p < .05) with a Satorra Bentler Scaled chi-square value of 327.06. However, the results revealed that close model fit was obtained (p>.05). In addition, the RMSEA of 0.05 indicated good model fit. Moreover, the SRMR of .07 further underscored the conclusion of good model fit. The CFI of .93 fell just below the .95 or higher benchmark as set by Hair et al. (2006). Overall, based on the goodness of fit statistics good model fit could be concluded.

Inspection of the Lambda-X matrix revealed that all, but one factor loading (Item S34NP), was statistically significant. The completely standardized Lambda-X solution indicated that the item obtained a factor loading of -.05. This item, Item S34NP, was also identified as problematic in the preceding item analysis (Section 3.12.8.1). The item was thus acknowledged as a particularly poor performing item, but nonetheless retained to be included in the comprehensive measurement and structural models, as it was expected that the problem could be overcome through the use of item parcelling. Two subsequent items obtained completely standardised factor loadings below the .40 cut-off value, namely item S33NP (.37) and item S38NP (.20). While below the accepted cut-off value, the items were decidedly retained for inclusion in the comprehensive measurement and structural models, based on the same premise as with item S34NP.

The *Pay Satisfaction* measurement model consisted of four observed variables regressed on one latent variable. Appendix K contains the path diagram for the fitted pay satisfaction model. The results of the CFA are presented in Table 3.28

Table 3.28
Goodness of fit statistics Pay Satisfaction measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
8.43*	6.08*	2	3.04	.96	.97	.2	.04	.10	.10

Note: X^2 = Chi-square; $S-BX^2$ = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

As anticipated, the exact fit null hypotheses (RMSEA = 0) had to be rejected (p < .05) with a Satorra Bentler Scaled chi-square value of 6.08. As indicated by the p-value (.10) of the close fit null hypothesis, statistical evidence of close model fit was obtained (p < .05). According to Hair et al. (2006), for a model tested on a sample of less than 200, with between 12 and 30 observed variables, a CFI of .95 or more, and an SRMR and RMSEA of .08 or lower, indicates good model fit. Based on these cut-off values the SRMR of .04 commented positively on the model's fit. The CFI of .97 further corroborated the conclusion of good model fit. The RMSEA of .10 however, was somewhat higher than recommended, and subsequently indicated less satisfactory model fit.

Inspection of the results revealed that all factor loadings were statistically significant (t ≥ 1.64).The completely standardized lambda-X solution revealed all factor loadings exceeded the .4 cut-off value. Loadings ranged from .43 (item S29NP) to .73 (item S30NP). Based on the overall results, it could be concluded that the model achieved good fit.

3.11.9 ITQ

For the purpose of measuring the intention to quit (ITQ) construct, a three item scale proposed by Cohen (1993) was utilised. Cohen (1993) makes use of Mobley, Horner and Hollingsworth's (1978, p. 408) definition of ITQ namely, that ITQ is the "precursor of actually quitting" a particular job. The scale consists of three items, and has a 5-point Likert scale response format (1 = strongly disagree to 5 = strongly agree). A Cronbach alpha internal consistency reliability coefficient of .91 has been reported for the scale by the author.

3.11.9.1 Item analysis

Item analysis was performed on the ITQ scale, the results of which are reported in Table 3.29. The scale obtained a good reliability coefficient of .89 (Nunnally, 1978). The item-total statistics revealed no poor performing items, that if deleted, would increase the reliability. The ranges of corrected item-total correlations (.76 to .80) and squared multiple correlations (.57 to .63) were also judged as acceptable.

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Table 3.29
Descriptive statistics ITQ for scale

Scale	Number of items	M	SD	α
ITQ	3	8.52	3.8	.89

3.11.9.2 Confirmatory factor analysis

The decision was made to not conduct a CFA analysis on the ITQ measure, based on the fact that the measure consisted of only three observed variables. This limited amount of observed variables implies there would not be enough degrees of freedom for the analysis, to result in interpretable results.

3.11.10 POE

Due to a lack of existing measuring instruments to measure the Perceived Organisational Effectiveness (POE) construct, a 9 item questionnaire was compiled. POE is defined by Walton and Dawson (2001, p. 173) as "a hypothetical abstraction existing in people's minds giving meanings to ideas or interpretation about organisational effectiveness, but having no objective reality". This definition served as the base from which the questionnaire's items were developed. Developed items were subjected to a review by a panel of subject matter experts where input by the panel informed amendments to the questionnaire. Sample items included: *"The hospital unit I work for serves the community well, and makes a difference – item 3, I feel the hospital unit I work for helps me provide quality care to patients – item 4"*. Appendix D includes the complete list of questionnaire items.

3.11.10.1 Item analysis

Reliability analysis was performed on the POE scale, the results of which are reported in Table 3.30. The scale obtained a reliability coefficient of .92, which far exceeds the .70 critical cut-off value (Nunnally, 1978). This indicates that the scale had very good internal consistency.

The item-total statistics indicated that no poor items could be identified and no items, if deleted, would have resulted in a higher reliability outcome for the scale. The range of corrected item-total correlations (.49 to .86) and squared multiple correlations (.34 to .82) were also considered acceptable. All nine POE items were retained in further analyses.

Table 3.30
Descriptive statistics for POE scale

Scale	Number of items	M	SD	α
POE	9	37.78	5.69	.92

3.11.10.2 Exploratory factor analysis

Factor analysis of the POE measure commenced with EFA prior to CFA, customary for newly developed measures, as it is necessary to first determine the underlying factor structure of the construct. An EFA analysis was subsequently performed on the nine item POE scale. The EFA was conducted utilising principal axis factoring (PAF) with direct oblimin rotation. The results indicated a KMO-value of .899, serving as evidence for the factor analysability of the scale.

The Eigenvalue-greater-than-one rule together with the Scree Plot pointed to the extraction of two factors accounting for 65.21% of the total variance. Investigating the non-redundant residuals with absolute values greater than .05 revealed an acceptable value of 8% for the solution. This indicated the two-factor solution provided an admissible account of the factor structure of the POE measure within the current sample. The structure matrix of the EFA is presented in Table 3.31.

Table 3.31
POE structure matrix

Item	Factor 1	Factor 2
O2	.933	.457
O1	.850	.398
O3	.840	.479
O4	.839	.403
O6	.734	.492
O5	.659	.338
O9	.541	.455
O8	.439	.897
O7	.708	.789

Based on the content of the items loading on the two factors, there appeared to be a distinction between work done in the various hospitals units by nurses and the success of said unit (factor 1), and the work each respective nurse does that contributes to the success of

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their unit (factor 2). However, Item O7 appeared to be quite ambiguous in this regard as it loaded only marginally higher on factor two than factor one. Consequently, CFA was done on the two-factor solution.

3.11.10.3 Confirmatory factor analysis

Based on the EFA results, CFA was conducted to confirm a two factor POE model. Inspection of the multivariate normality results indicated that the assumption of multivariate normality had to be rejected ($p < .05$). Hence, RML estimation was employed to derive the model parameter estimates.

The POE measurement model consisted of nine observed variables regressed on two latent variables. The results of the CFA were rendered inadmissible, as one of the items' factor loadings, in the completely standardised lambda-X matrix, obtained a value above 1.0. The corresponding item of the inadmissible factor loading was item O7, which by cross loading on both factors in the EFA was already flagged as an ambiguous item. Given the inadmissibility of the CFA solution and the ambiguous nature of item O7, the decision was made to delete the item from the item pool. Deletion of item O7 would have resulted in only one item loading on the second factor identified in the EFA, which could not be retained.

Consequently, a second EFA was run with the remaining eight items. The Eigenvalue-greater-than-one rule together with the Scree Plot pointed to the extraction of one factor accounting for 55.82% of the total variance. Investigating the non-redundant residuals with absolute values greater than .05 revealed a value of 25% for the solution. This indicated the one-factor solution provided a fairly admissible account of the factor structure of the POE measure within the current sample. The one factor POE structure matrix is presented in Table 3.32.

Table 3.32
POE structure matrix 2

Item	Factor 1
O2	.927
O3	.845
O1	.837
O4	.831
O6	.737
O5	.658

O9	.565
O8	.454

Following this, a second CFA was run to test the fit of a one-factor measurement model for the POE scale. Based on the multivariate normality results, Table 3.33, the assumption of multivariate normality had to be rejected (p < .05). Resultantly RML estimation followed.

Table 3.33
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
27.91	21.54	.00	139.06	12.09	.00	609.93	.00

The second POE measurement model consisted of eight observed variables regressed on one latent variable. Appendix L contains the fitted POE measurement model. The CFA results are reported in Table 3.34.

Table 3.34
Goodness of fit statistics POE measurement model

X2	S-Bχ2	df	S-Bχ2/ df	NNFI	CFI	RMR	SRMR	RMSEA (CI)	P(close)
30.46*	21.55*	14	1.54	.99	.99	.02	.05	.05	.4

Note: X^2 = Chi-square; S-BX^2 = Satorra-Bentler Scaled Chi-square; NNFI = non-normed fit index; CFI = comparative fit index; RMR = root mean square residuals; SRMR = standardised root mean residual; RMSEA = root mean square error of approximation *p < .05.

The results indicated that the exact fit null hypotheses (RMSEA = 0) could not be rejected (p > .05) with a Satorra Bentler Scaled chi-square value of 21.55 and p-value of .08, indicating exact model fit. Per implication, the close fit null hypothesis also could not be rejected p > .05, as exact fit cannot be obtained without concluding close fit as well. Based on the benchmarks of Hair et al. (2006), the CFI (.99) and SRMR (.05) indicated good model fit. The RMSEA value of .05 provided additional evidence in support of good model fit.

All factor loadings were statistically significant. The completely standardized lambda-X solution revealed all factor loadings exceeded the .4 cut-off value. Based on the overall statistics, it can be concluded that the model achieved very good fit.

As a result of eliminating item O7, a subsequent item analysis was conducted on the remaining POE items, the result of which are reported in table 3.35. The scale obtained a reliability coefficient of .92, which far exceeded the .70 critical cut-off value (Nunnally, 1978). This indicated that the scale had very good internal consistency.

Table 3.35
Descriptive statistics for POE scale

Scale	Number of items	M	SD	α
POE	8	37.78	5.69	.92

3.12 Measuring instruments validation summary

The results of the item analyses conducted on the respective instruments utilized for the study are summarised in Table 3.36.

Table 3.36
Measuring instruments descriptive statistics summary

Scale	Sample size	Number of items	Mean	Standard deviation	Cronbach alpha	Number of items deleted
CVQ	184	12	42.47	4.25	.75	0
ACS	184	8	25.80	6.43	.82	0
FSSB	184	14	49.35	13.2	.97	0
PSC-12	184	12	34.09	10.8	.95	0
Resilience	184	6	26.95	4.81	.73	0
JS	184	28	121.56	20.4	.75	0
ITQ	184	3	8.52	3.8	.89	0
POE	184	8	33.5	5.13	.90	0

Note: CVQ = Calling and Vocation Questionnaire; ACS = Affective Commitment Scale; FSSB = Family Supportive Supervisor Behaviour scale; PSC-12 = Psychosocial Safety Climate scale; JS = Job Satisfaction; ITQ = Intention to Quit; POE = Perceived Organisational Effectiveness.

As is evident from Table 3.35, all eight scales' Cronbach alpha reliability coefficients were above the critical .70 cut-off value (Nunnally, 1978). Resultantly it can be concluded, based on the totality of the results from Section 3.12, that all the scales utilized for the study

demonstrated satisfactory internal consistency. No items were deleted based on the reliability analysis results.

The CFA's conducted on the respective instruments yielded mixed results, ranging from excellent to mediocre model fit. It was resultantly concluded, based on the totality of evidence obtained, that the inclusion of all the instruments in the study were justified; and that the instruments could be utilised to operationalise the various latent variables they were tasked to reflect.

CHAPTER 4

RESULTS

4.1 Introduction

The purpose of this study was to put forward a possible nomological network of factors influencing nurse ITQ as a means to better understanding and conceptualising the psychological processes underlying nurse ITQ. Further emphasis was placed on locating the calling orientation construct within said network of individual and organisational resources, as well as to understand its influence on ITQ. Calling, as an individual resource, was conceptualised to have direct and indirect influences on variables such as resilience, psychosocial safety climate, perceived organisational effectiveness, affective commitment and job satisfaction. In addition, family supportive supervisor behaviour as an important organisational resource was also included in the model – although not directly being influenced by calling. To this end, the various relationships between the proposed variables and their effects on ITQ were investigated. The current chapter serves to report on the empirical evidence obtained during said investigation.

The chapter begins by discussing the study sample characteristics, followed by a review of the fit of both the measurement and reduced structural model. The fit of the measurement model was evaluated in terms of the basket of goodness-of-fit indices, as well as the statistical significance and size of the parameter estimates, derived with LISREL. Structural model fit, as well as the adequacy of the structural model parameter estimates was evaluated by means of structural equation modelling (SEM) in LISREL. The structural model's Beta and Gamma matrices were evaluated to determine the significance of the hypothesised paths. Inspection of the modification indices were conducted to determine if any additional pathways could be identified that would improve model fit[10]. Finally, the proposed interaction effects in the conceptual model were investigated with moderated multiple regression analyses, conducted in SPSS.

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[10] No model modifications were empirically tested. The information on the modification indices were only used to inform possible theoretical arguments related to the modification of the model, in future studies. This has been discussed in chapter 5.

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4.2 Sample Characteristics

The study sample consisted of nursing staff employed in two South African public hospitals (one in the Western Cape, and one in the Northern Cape). Of the approximately 330 questionnaires distributed a total of 184 responses were received, resulting in a 55% response rate. The sample demographic information is presented in Table 4.1.

Based on the sample demographics it is evident that the gender distribution was skewed in that approximately 90% of the sample was female. While not representative of the South African population, this result was expected given that the nursing profession is predominantly female (Wildschut & Mqolozana, 2008). The ethnic distribution of the sample indicated the majority of participants to be Coloured (63%), followed by Africans (27.7%) and Whites (5.4%). Despite being representative of the Western Cape Province, this racial distribution did not correspond to that of South Africa or the Northern Cape Province (Statistics South Africa, 2011).

The aging nursing workforce is both an international and national concern, with a large portion of skilful nursing staff either retiring or approaching retirement (Philips & Miltner, 2015). This trend was also observed in the current sample, as approximately 30% were either at retirement age or approaching the last phase of their careers.

The majority of the sample were married (43.5%) with 52.7% of the sample reporting to have between two and four dependents, implying that most, if not all participants, had family responsibilities.

The most frequently spoken first languages in the sample appeared to be Afrikaans (64.7%) followed by Xhosa (19.6%) and English (7.6%). The primary second language amongst participants was reported to be English (81.5%). From this it was clear that the majority of the sample completed the questionnaire in their second language.

Table 4.1
Sample demographics

Gender		
Category	Frequency	Percentage
Female	166	90.2
Male	11	6
Missing	7	3.8

Ethnicity		
Category	Frequency	Percentage
African	51	27.7
Coloured	116	63
White	10	5.4
Indian	0	0
Missing	7	3.8

Age		
Category	Frequency	Percentage
≤ 19	1	.5
20-29	21	11.4
30-39	35	19
40-49	67	36.4
50-59	46	25
60+	8	4.3
Missing	7	3.8

Marital status		
Category	Frequency	Percentage
Single	66	35.9
Married	80	43.5
Divorced	15	8.2
Separated	6	3.3
Widowed	9	4.9
Living together	8	4.3

First Language		
Category	Frequency	Percentage
Afrikaans	119	64.7
English	14	7.6
Xhosa	36	19.6
Venda	4	2.2
Zulu	7	3.8
Ndbele	0	2.2
South Sotho	4	0
North Sotho	0	0
Tsonga	0	0
Tswana	0	0
Swazi	0	0

Other	0	0

Second Language

Category	Frequency	Percentage
Afrikaans	15	8.2
English	150	81.5
Xhosa	3	1.6
Venda	0	0
Zulu	0	0
Ndbele	0	0
South Sotho	2	1.1
North Sotho	3	1.6
Tsonga	0	0
Tswana	1	.5
Swazi	0	0
Other	1	.5
Missing	9	4.9

Number of dependents

Category	Frequency	Percentage
0	20	10.9
1	32	17.4
2-4	97	52.7
5-7	26	14
8-9	1	.5
10-11	3	1
≥ 12	2	1
Missing	3	1.6

Highest qualification

Category	Frequency	Percentage
< Grade 10	2	1.1
Grade 10	22	12
Grade 12	43	23.4
Post matric certificate	14	7.6
Diploma	66	35.9
Undergraduate degree	10	5.4
Post graduate degree	25	13.6
Missing	2	1.1

Table 4.2 describes the sample characteristics in terms of position in the organisation, tenure, shift work, nursing category, and hospital unit. The most dominantly sampled units across the two hospitals were OBS and gynaecology (19.6%) followed by outpatient departments (17.9%) and ICU (17.4%).

Approximately 70.7% of participants were working day shift, and 27.7% night shift, at the time of the study. Concerning tenure, the majority of participants (44.6%) reported having worked at their organisation for more than five years. Only about 14% of the sample had been employed for one year or less.

Table 4.2
Sample job characteristics

Position in organisation		
Category	Frequency	Percentage
Nurses	144	78.3
Sister	3	1.6
Matron	0	0
Unit manager	4	2.2
Student	4	2.2
Operational manager	10	5.4
Midwife	2	1.1
Training coordinator	1	.5
Missing	16	8.7
Nursing category		
Category	Frequency	Percentage
Nurse	76	41.3
Sister	76	41.3
Matron	6	3.3
Staff nurse	11	6
Student	4	2.2
Missing	11	6
Hospital Unit		
Category	Frequency	Percentage
ICU	32	17.4
Theatre	16	8.7
Paediatrics	6	3.3
Medical	15	8.2

OBS and Gynaecology	36	19.6
Outpatient department	33	17.9
Emergency	12	6.5
Surgery	23	12.5
Tuberculosis	6	3.3
Training	1	.5
Missing	4	2.2

Shift work		
Category	Frequency	Percentage
Day shift	130	70.7
Night shift	51	27.7
Missing	3	1.6

Tenure		
Category	Frequency	Percentage
Less than 1 year	12	6.5
1 year	14	7.6
2 – 5 years	49	26.6
More than 5 years	82	44.6
Missing	5	2.7

4.3 Item Parcels

Items parcels reflecting the various measures' subscales/dimensions, where applicable, were created for the latent variables from individual items, to fit both the measurement and structural models. Creating items parcels overcomes the disadvantages associated with the use of individual items. Using individual items tends to result in quite comprehensive models with numerous parameters to be estimated. Using item parcels has the opposite effect, and are particularly advantageous when sample sizes are smaller. The use of item parcels, therefore, helps ensure that parameters to be estimated do not exceed sample size.

The use of item parcels, however, is not completely free of fault. Item parcels are only effective when uni-dimensionality is met. Another disadvantage is that item parcelling may increase the likelihood of misrepresenting the latent construct (Wilbers, 2015).

According to Bandalos (2002) the use of parcels results in better model fit, as well as more continuous and normally dispersed distributions. Moreover, according to MacCallum, as cited

by Little, Cunningham, Shahar and Widaman (2002, p. 155), compared to item level data, parcelled data "(a) are more parsimonious (i.e., have fewer estimated parameters both locally in defining a construct and globally in representing an entire model), (b) have fewer chances for residuals to be correlated or dual loadings to emerge (both because fewer indicators are used and because unique variances are smaller), and (c) lead to reductions in various sources of sampling error". Based on these advantages it was decided to construct at least two item parcels per latent variable in the model, with the exception of ITQ and resilience. The ITQ items were used as observed variables as there were not enough items to group into at least two parcels (a minimum requirement per latent variable included in the model). Initially, item parcels were created from the resilience items. However, an initial measurement model with these parcels failed to converge, and therefore it was decided to include the resilience items as observed variables representing the latent variable, resilience, in the model.

The item parcels created for calling, job satisfaction, Family supportive supervisor behaviour (FSSB) and psychosocial safety climate (PSC) reflected the grouping of items based on scale subscales. For example, for calling the three sub-scale dimension items were grouped into three parcels. Satisfaction, FSSB and PSC were grouped into eight, four and four parcels, respectively, based on various subscales of these scales. The item parcels created for affective commitment and POE were formed by randomly assigning items to three parcels, per scale.

4.4 Measurement Model

The measurement model portrays the relationships between the various latent variables and their respective item parcel indicators. Fitting the measurement model serves to provide information on the validity and reliability of the measures utilized to represent the observed variables (Diamantopolous & Siguaw, 2000). CFA was conducted on the measurement model to examine model fit and determine whether operationalization of the latent variables were a success. Model fit was examined by means of interpreting the fit indices produced by the CFA analysis.

4.4.1 Screening the data

The measurement model was fitted by performing CFA analysis with LISREL 8.8 (Jöreskog & Sörbom, 2002). Rejecting the null hypothesis of multivariate normality for the observed data (Table 4.3), resulted in the use of RML estimation to perform the CFA.

Table 4.3
Test of multivariate normality

Skewness			Kurtosis			Skewness & Kurtosis	
Value	Z-score	P-value	Value	Z-score	P-value	Chi-square	P-value
333.934	22.903	0.000	1333.718	10.313	0.000	630.919	0.000

4.4.2 Measurement model fit

According to Diamantopolous and Siguaw (2000) the comprehensive LISREL model fit indices can only be interpreted unambiguously for, or against, the fitted structural model, if it can be shown that the indicator variables used to operationalise the latent variables successfully reflected the latent variables they were assigned to represent. The fit of the measurement model used to operationalise the structural model therefore needs to be evaluated prior to fitting the structural model.

The asymptotic covariance matrix was calculated, and the model was fitted to the data with RML estimation. However, this model failed to converge. Therefore, diagonally weighted least square (DWLS) estimation was employed as an alternative estimation technique. Figure 4.1 contains the fitted measurement model.

H_{01a}: RMSEA > 0, hypothesises that the measurement model provides a perfect account of how the latent variables manifest themselves in the indicator variables. However, aiming to obtain perfect fit when using non-simulated data is somewhat unrealistic, and resultantly the rejection of the exact fit hypothesis was expected. Rejection of the exact fit hypothesis subsequently requires testing the close fit null hypothesis H_{01b}: RMSEA > 0.05.

Good model fit would be indicated if the measurement model was successful in reproducing the observed covariance matrix. The measurement model CFA goodness-of-fit statistics are reported in Table 4.4.

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Table 4.4
Goodness of fit statistics ITQ measurement model

Model	ITQ
X2	914.66*
S-Bχ2	806.29*
df	499
S-Bχ2/ df	1.62
NNFI	.94
CFI	.95
RMR	.74
SRMR	.07
RMSEA	.058
RMSEA (CI)	0.551 ; 0.065
P(close)	.04
ECVI	5.46
AIC	998.29
CAIC	1402.92
CN	131.60
GFI	.94
AGFI	.93

Note: X2, Chi-square; S-BX2, Satorra-Bentler Scaled Chi-square; NNFI, non-normed fit index; CFI, comparative fit index; RMR, root mean square residuals; SRMR, standardised root mean residual; RMSEA, root mean square error of approximation *p < .05.; RMSEA (CI) root mean error of approximation confidence interval; df, degrees of freedom; ECVI, Expected cross validation index; AIC, Akaike's information criterion; CAIC, consistent Akaike's information criterion; CN, Critical N; GFI, goodness of fit index; AGFI, adjusted goodness of fit index

A Satorra Bentler Scaled Chi-square (S-Bχ2) of 806.29, with 499 degrees of freedom, and p-value of .00 was obtained. As expected the exact fit null hypothesis had to be rejected (p < .05). The close fit null hypothesis obtained a p-value of .04, and also had to be rejected (p < .05), indicating a lack of statistical close fit. Despite this, examination of the basket of other fit indices suggested that the model did in fact obtain good fit. According to Hair et al. (2006), for a model containing more than 30 observed variables, and a sample size smaller than 250 (as is the case for this model), an RMSEA value of less than .08 together with a SRMR value of .09 or less, and a CFI of above .92, indicates good model fit.

Based on the RMSEA value of .058, the SRMR value of .07 and CFI value of .95 the results suggested good model fit. In addition the NNFI value of .94 also commented positively on the fit of the model. Despite not attaining statistical evidence of close fit, the totality of fit indices obtained from the goodness-of-fit statistics allowed for an overall conclusion of good model fit for the measurement model.

Chi-Square=806.29, df=499, P-value=0.00000, RMSEA=0.058
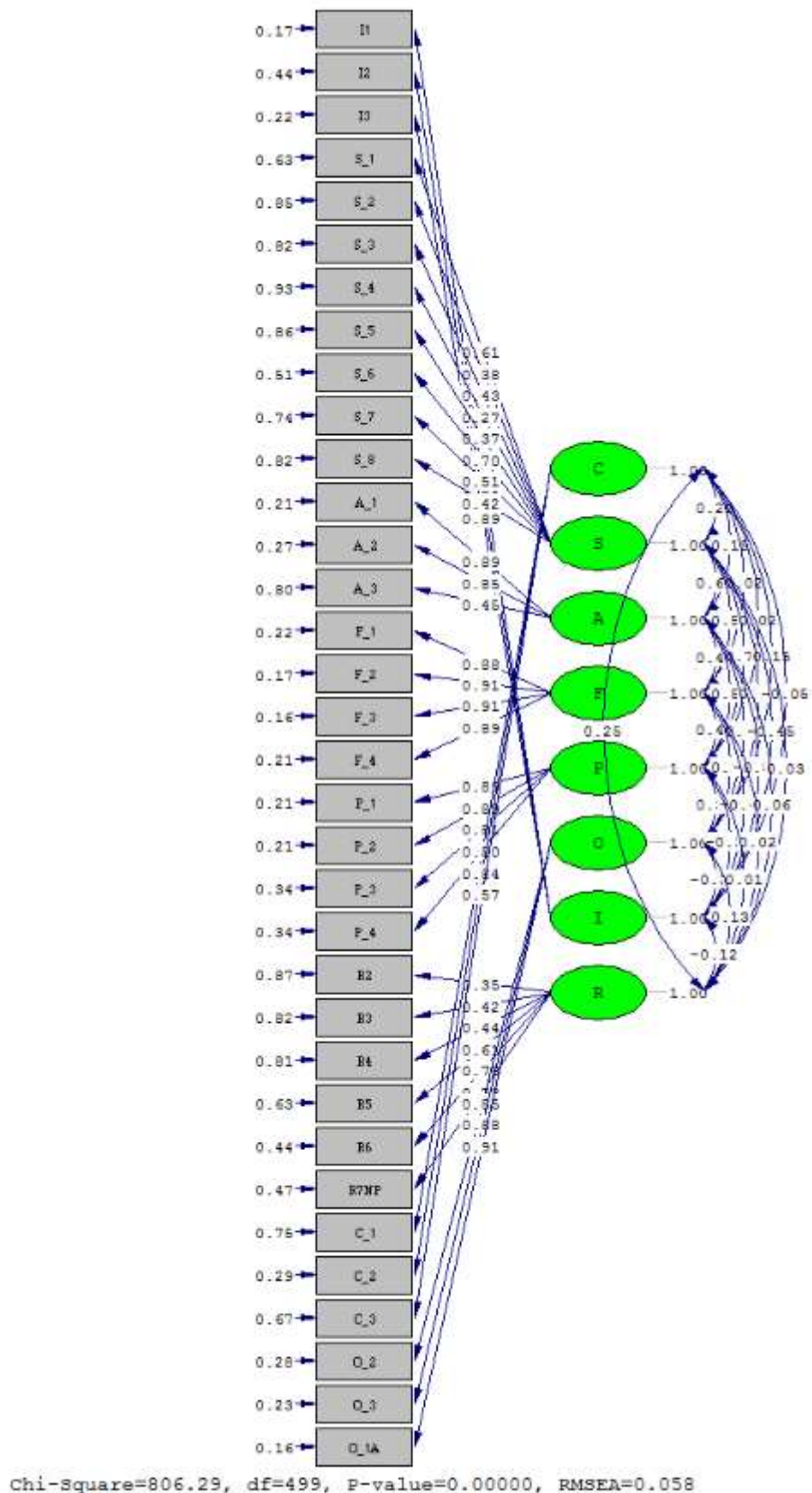
Figure 4.1. Measurement model

4.4.3 Interpretation of the measurement model standardised residuals and modification indices

According to Diamantopolous and Siguaw (2000) inspecting the standardised residuals and modification indices presents pertinent diagnostic information concerning modifications of the model that may lead to improved model fit. The standardised residuals and modification indices, computed for the lambda-X and theta-delta, remarks on the quality of the measurement model (Prinsloo, 2013). When proposed improvements for model fit are limited in number, it comments favourably on the model's fit.

4.4.3.1 Standardised residuals

The standardised residuals are summarised in Table 4.5. There were three values smaller than -2.58 and five bigger than 2.58. These eight large residuals amounted to 1.3% of the total number of unique variance and covariance terms in the observed covariance matrix. The residual matrix contained ([34*(34+1)]/2) = 595 elements. Hence, approximately 1% of the observed variances and covariances were inaccurately estimated from the measurement model parameter estimates. This value, though not ideal, is considered sufficiently small so as not to be considered problematic.

Table 4.5

Summary statistics for the ITQ measurement model standardised residuals

Description	Value
Smallest Standardised Residual	-2.997
Median Standardised Residual	.00
Largest Standardised Residual	4.29
Largest Negative Standardised Residuals	
Residual for R4 and S_1	-2.58
Residual for R5 and S_7	-2.997
Residual for R7NP and R4	-2.74

Largest Positive Standardised Residuals	
Residual for P_4 and S_1	2.74
Residual for R3 and R2	2.72
Residual for R7NP and S_5	3.41
Residual for C_3 and S_7	2.65
Residual for C_3 and C_2	4.29

Note: R4, R5, R7NP, R3, R2 = Resilience; S_1, S_7, S_5 = Satisfaction; C_3, C_2 = Calling; P_4 = Psychosocial safety climate

Presented on a stem and leaf plot, the standardised residuals can be examined collectively (Diamantopolous & Siguaw, 2000). A good fitting model would be characterised by a stem and leaf plot with residuals distributed symmetrically around zero. The distribution of standardised residuals for the model appeared to be very slightly positively skewed (see Figure 4.2). This suggested that the plot contained an excess of residuals on the positive side; implying that the observed variance and covariance terms in the observed covariance matrix were typically underestimated by the derived model parameter estimates. A possible means of rectifying the situation would be to delete certain paths from the model. However, the slight skewness was not considered of too great a concern, and could be interpreted to further comment favourably on the model fit.

```
 -  3|0
 -  2|76
 -  2|443321110
 -  1|99888887766555
 -  1|444444444444333333333322222222222222221111111111111000000000
 -  0|999999999999999998888888888888877777777777777766666666666666666666666+21
 -  0|444444444444444444444444443333333333333333333333333333222222222222222221111+77
    0|11111111111111111111222222222222222222222222222233333333333333333333334444+14
    0|55555555555555555555555556666666666666666677777777777777777777888888888+32
    1|000000000011111111111112222222222333333333444444
    1|5555555566677788899
    2|01222334
    2|5677
    3|4
    3|
    4|3
```

Figure 4.2. Stem and leaf plot of the measurement model standardised residuals.

The Q-plot of the measurement model is depicted in Figure 4.3, and serves to plot the standardised residuals (horizontal axis) against the quintiles of the normal distribution (Diamantopoulos & Siguaw, 2000). The extent to which the data points lie on a 45-degree

reference line is a crucial determinant when interpreting a Q-plot. The extent to which data points fall on the reference line it is indicative of good model fit; the opposite of which also holds true (Jöreskog & Sörbom, 1996b). The Q-plot for the measurement model further suggested good fit as the standardised residuals did not deviate markedly from the reference line. These findings confirm the results as presented in Table 4.4 and Figure 4.2, where there were both positive and negative large residuals, but where positive residuals were more predominant.
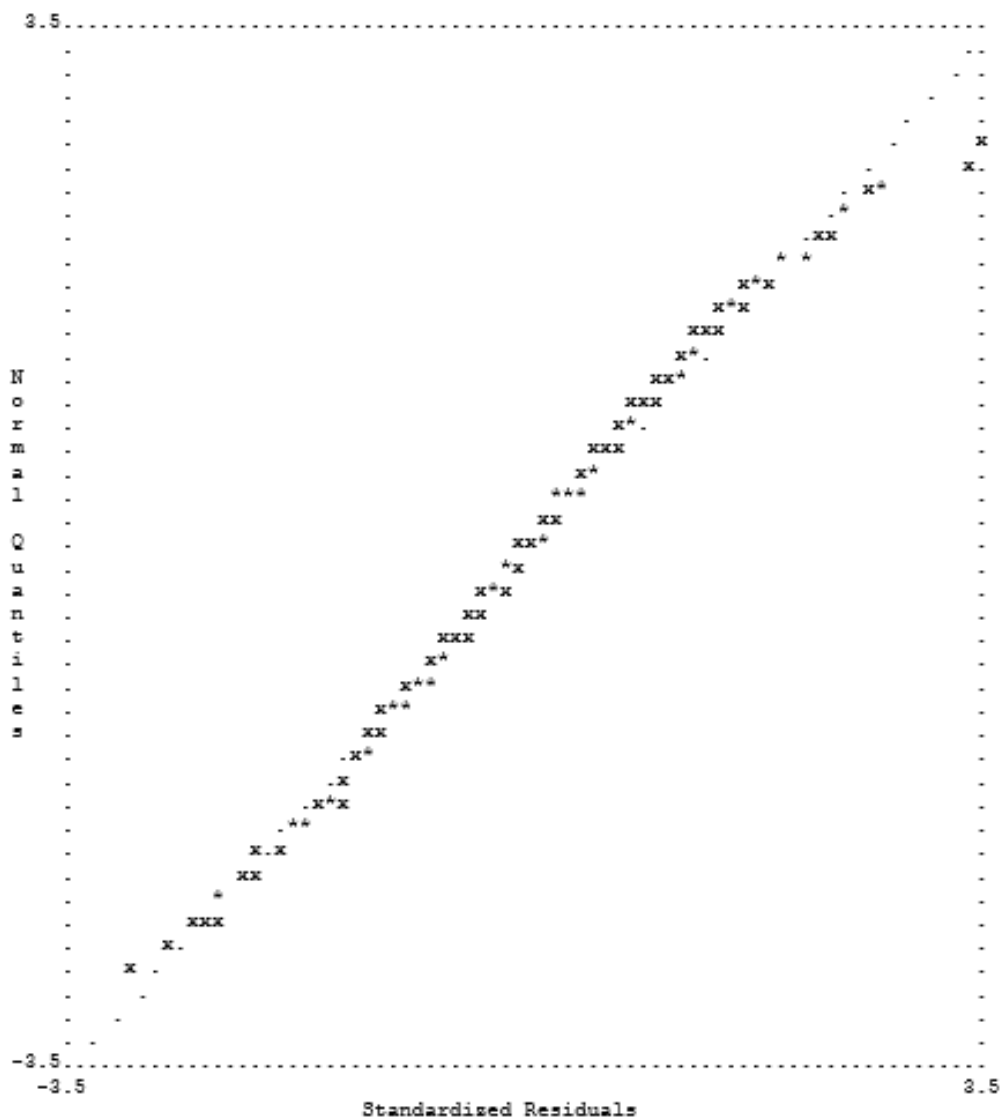
Figure 4.3. Q-plot of the measurement model standardised residuals

4.4.3.2 Modification indices

The item parcels were constructed from items designed with the intention to reflect respondents' standings on specific latent variables. Theoretically, therefore, the error terms of the parcels should not be correlated, due to each systematic measurement error component of the parcels not having a common source. The current measurement model reflected this intention. Resultantly, in Λ_x each item parcel was allowed to load onto one latent variable only, with all other loadings remaining fixed to zero.

Modification indices, according to Jöreskog and Sörbom (2000), indicate the extent to which the χ^2 fit statistic decreases if a currently fixed parameter is freed, and model fit is re-estimated. Large modification indices are considered to be those exceeding a value of 6.64, indicating currently fixed parameters, that if set free, would significantly improve model fit.

The focus of inspecting the lambda-X indices were to obtain further information commenting on the models' fit, as opposed to identifying paths to free, as a means of improving model fit. The results suggested that only one element in the matrix, if set free, would significantly have improved the fit of the model (p > .01) (i.e. one of the 238 possible ways in which the model could be improved, approximately 0.4% of the values, if set free, would significantly improve the fit of the model. This was considered small enough to comment positively on the model's fit.

The modification indices for the theta-delta matrix, presented in Table 4.6, revealed that only 45 covariance terms out of the possible 595 terms in the matrix were significant (> 6.64). This suggested that 8% of the values, if set free, would improve the fit of the model significantly (p < .01). Once again, this rather small percentage of large modification indices obtained for theta-delta, commented positively on the fit of the model.

Table 4.6.
Measurement model modification indices for theta delta

	I1	I2	I3	S_1	S_1	S_1
I1	- -					
I2	- -	- -				
I3	- -	- -	- -			
S_1	0.245	**6.733**	0.096	- -		
S_2	0.094	3.185	0.297	0.201	- -	

S_3	1.388	0.495	0.531	2.744	0.001	- -
S_4	2.485	1.637	0.214	2.012	1.468	**6.669**
S_5	6.255	1.922	2.999	**8.878**	0.882	0.160
S_6	2.810	0.005	0.398	- -	**6.642**	- -
S_7	3.339	0.002	2.343	**7.999**	**13.774**	0.492
S_8	1.252	3.736	0.005	**42.864**	3.244	1.676
A_1	- -	**7.936**	- -	2.487	1.696	1.286
A_2	- -	0.036	6.278	0.042	0.566	0.016
A_3	3.693	1.354	0.031	0.183	0.192	0.371
F_1	3.410	0.000	3.175	0.627	2.168	0.145
F_2	0.439	0.003	4.818	1.760	2.415	0.612
F_3	0.342	0.003	1.310	0.823	0.576	0.643
F_4	3.434	0.505	0.521	1.743	0.304	1.281
P_1	0.344	0.756	**10.255**	4.836	0.741	0.217
P_2	0.223	0.144	**15.739**	5.862	1.911	0.136
P_3	0.078	0.013	1.128	**8.881**	1.745	1.909
P_4	3.343	2.259	0.263	**26.870**	1.909	2.974
R2	1.070	0.055	0.420	3.384	0.000	1.093
R3	0.362	0.470	0.056	1.811	1.950	5.446
R4	1.216	0.079	0.085	**8.235**	0.002	0.421
R5	0.610	0.028	0.124	3.226	0.576	1.221
R6	1.226	0.368	1.450	5.577	0.241	2.349
R7NP	**15.904**	4.169	**25.933**	0.061	0.221	0.672
C_1	0.044	1.167	0.309	1.786	0.750	1.414
C_2	- -	1.866	- -	0.014	0.834	0.006
C_3	2.123	0.472	2.364	0.081	0.854	1.405
O_2	0.048	0.769	0.250	0.092	7.715	1.318
O_3	1.886	0.158	4.095	4.476	4.225	1.556
O_1A	1.210	0.030	0.342	0.994	**8.086**	1.691

	S_4	S_5	S_6	S_7	S_8	A_1
S_4	– –					
S_5	4.889	- -				
S_6	1.159	- -	- -			
S_7	1.406	0.391	3.018	- -		
S_8	1.944	0.526	- -	**11.923**	- -	

A_1	3.089	0.401	0.284	1.258	5.091	- -
A_2	1.364	3.689	- -	0.003	0.315	**41.236**
A_3	1.693	0.120	1.245	0.189	1.268	- -
F_1	1.915	**33.026**	2.982	**7.294**	0.866	0.102
F_2	5.780	**12.595**	1.966	3.484	0.841	0.548
F_3	1.541	0.969	3.099	5.538	0.233	0.331
F_4	0.111	3.302	3.117	0.822	2.805	0.144
P_1	0.434	**13.055**	0.104	1.048	0.134	1.070
P_2	0.281	**14.114**	1.958	0.174	0.002	0.017
P_3	2.884	**11.687**	2.057	7.941	0.777	0.464
P_4	1.745	1.015	**86.698**	5.147	**7.865**	4.298
R2	2.094	3.889	0.020	1.792	0.622	1.916
R3	4.880	1.859	2.102	1.175	1.195	0.432
R4	0.050	0.194	2.426	1.603	2.279	0.054
R5	1.587	1.539	3.331	**13.879**	1.516	0.339
R6	0.700	4.918	2.499	0.047	2.655	0.473
R7NP	4.463	**14.953**	- -	2.699	1.725	**26.139**
C_1	0.426	3.736	0.001	2.215	0.016	0.069
C_2	0.930	0.755	3.165	1.384	1.200	- -
C_3	1.325	0.004	3.945	**9.032**	0.318	2.911
O_2	0.065	5.294	0.235	0.366	2.692	0.406
O_3	5.606	0.067	0.079	1.290	0.000	**13.727**
O_1A	3.081	1.093	0.085	1.614	0.681	0.081

	A_2	A_3	F_1	F_2	F_3	F_4
A_2	– –					
A_3	– –	– –				
F_1	5.740	0.318	- -			
F_2	**39.440**	0.107	- -	- -		
F_3	0.469	2.876	- -	- -	- -	
F_4	0.328	1.132	- -	- -	- -	- -
P_1	0.010	0.020	0.458	0.024	1.441	4.734
P_2	1.584	0.271	4.723	0.578	9.793	6.305
P_3	3.470	0.305	1.773	1.012	4.735	0.776
P_4	5.297	0.021	2.089	0.660	0.049	0.707
R2	4.866	0.342	2.400	4.001	7.330	3.932

R3	1.332	0.110	1.913	1.742	0.163	2.539
R4	0.131	0.194	0.040	0.342	2.754	0.001
R5	0.259	0.001	1.859	2.307	0.040	0.248
R6	- -	0.972	0.914	3.396	4.103	1.051
R7NP	1.681	0.005	1.723	**8.747**	**17.978**	0.177
C_1	0.198	2.556	1.768	0.043	0.401	0.365
C_2	- -	3.394	- -	- -	- -	- -
C_3	0.451	0.107	0.000	1.196	0.556	1.668
O_2	2.514	0.591	0.003	0.224	3.030	0.222
O_3	3.676	0.032	0.002	0.758	**8.893**	5.277
O_1A	2.478	0.462	1.410	0.050	0.039	0.497

	P_1	P_2	P_3	P_4	R2	R3
P_1	– –					
P_2	– –	– –				
P_3	0.165	- -	- -			
P_4	**13.251**	5.657	- -	- -		
R2	2.150	0.324	0.150	0.328	- -	
R3	0.190	0.742	2.316	2.264	**19.579**	- -
R4	3.012	2.348	5.589	7.188	- -	- -
R5	0.798	0.101	0.006	0.098	- -	- -
R6	0.012	- -	3.037	0.010	- -	**8.567**
R7NP	0.447	**20.116**	1.404	0.937	0.063	- -
C_1	0.931	0.099	0.700	0.001	1.030	0.985
C_2	- -	- -	- -	**69.599**	0.156	0.081
C_3	0.561	3.120	0.022	1.114	0.029	0.029
O_2	**7.011**	5.144	0.244	0.242	0.198	0.001
O_3	1.647	1.609	5.209	1.443	0.137	0.100
O_1A	2.495	0.038	2.837	0.171	0.167	0.097

	R4	R5	R6	R7NP	C_1	C_2
R4	– –					
R5	– –	– –				
R6	– –	– –	– –			
R7NP	**18.794**	- -	- -	- -		

C_1	1.492	0.015	1.110	1.479	- -
C_2	0.069	0.337	3.529	- -	- -	- -
C_3	0.002	4.802	0.459	1.878	**47.592**	- -
O_2	3.006	4.098	3.637	1.009	0.303	- -
O_3	0.284	0.081	6.185	- -	0.371	- -
O_1A	0.631	5.593	**30.088**	**77.456**	0.183	- -

	C_3	O_2	O_3	O_1A
C_3	– –			
O_2	0.112	– –		
O_3	4.372	– –	– –	
O_1A	1.370	– –	– –	– –

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience; I1 = ITQ item 1; I2 = ITQ item 2; I3 = ITQ item 3; S_1 = Satisfaction parcel 1; S_2 = Satisfaction parcel 2; S_3 = Satisfaction parcel 3; S_4 = Satisfaction parcel 4; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_2 = Calling parcel 2; C_3 = Calling parcel 3; O_1A = Perceived organisational effectiveness parcel 1; O_2 = Perceived organisational effectiveness parcel 2; O_3 = Perceived organisational effectiveness parcel 3

In conclusion, the small percentage of large standardised residuals, together with the rather small percentage of large modification indices obtained for the lambda-X and theta-delta matrices, commented favourably on the model's fit. These results, together with the basket of goodness-of-fit statistics obtained for the measurement model, suggested good model fit. Therefore, the measurement model parameter estimates were considered plausible reproductions of the observed covariance matrix, and subsequent interpretation of the measurement model parameter estimates and squared multiple correlations were justified.

4.4.4 Measurement model parameter estimates and squared multiple correlations

Evaluating the size and statistical significance of the slope obtained by regressing the observed variable loadings onto their respective latent variables, provides information on the

validity of the measures incorporated in the measurement model. According to Diamantopoulos and Siguaw (200), for measures to provide a valid account of the variables they was designed to measure, it is essential for the regression slope of Xi on ξj to be significant. Presented in Table 4.7 is the unstandardized lambda-X matrix of the measurement model, displaying the regression coefficients of the observed variables on the latent variables. Regression coefficients were considered significant (p < .05) to the extent that the t-values exceeded the absolute value of |1.6449|.

Table 4.7
Measurement model unstandardized Lambda- X matrix

	C	S	A	F	P	O	I	R
I1	- -	- -	- -	- -	- -	- -	1.306	- -
I2	- -	- -	- -	- -	- -	- -	(0.077)	
I3	- -	- -	- -	- -	- -	- -	17.046	
S_1	- -	3.677	- -	- -	- -	- -	0.999	- -
		(0.455)					(0.103)	
		8.080					9.693	
S_2	- -	1.974	- -	- -	- -	- -	1.270	- -
		(0.487)					(0.085)	
		4.055					14.931	
S_3	- -	1.780	- -	- -	- -	- -	- -	- -
		(0.380)					- -	- -
		4.683					- -	- -
S_4	- -	1.320	- -	- -	- -	- -	- -	- -
		(0.480)					- -	- -
		2.753					- -	- -
S_5	- -	1.819	- -	- -	- -	- -	- -	- -
		(0.494)					- -	- -
		3.682					- -	- -
S_6	- -	3.085	- -	- -	- -	- -	- -	- -
		(0.359)					- -	- -
		8.584					- -	- -
S_7	- -	2.018	- -	- -	- -	- -	1.306	- -
		(0.330)					(0.077)	
		6.106					17.046	

	C	S	A	F	P	O	I	R
S_8	- -	2.613	- -	- -	- -	- -	0.999	- -
		(0.635)					(0.103)	
		4.117					9.693	
A_1	- -	- -	2.542	- -	- -	- -	1.270	- -
			(0.235)				(0.085)	
			10.816				14.931	
A_2	- -	- -	2.460	- -	- -	- -	- -	- -
			(0.187)				- -	- -
			13.188				- -	- -
A_3	- -	- -	0.859	- -	- -	- -	- -	- -
			(0.190)				- -	- -
			4.510				- -	- -
F_1	- -	- -	- -	3.590	- -	- -	- -	- -
				(0.295)			- -	- -
				12.183			- -	- -

	C	S	A	F	P	O	I	R
F_2	- -	- -	- -	2.854	- -	- -	- -	- -
				(0.209)			- -	- -
				13.677			- -	- -
F_3	- -	- -	- -	2.843	- -	- -	- -	- -
				(0.205)			- -	- -
				13.887			- -	- -
F_4	- -	- -	- -	3.557	- -	- -	- -	- -
				(0.301)			- -	- -
				11.829			- -	- -
P_1	- -	- -	- -	- -	2.692	- -	- -	- -
					(0.168)		- -	- -
					16.061		- -	- -
P_2	- -	- -	- -	- -	2.895	- -	- -	- -
					(0.155)		- -	- -
					18.681		- -	- -
P_3	- -	- -	- -	- -	2.401	- -	- -	- -
					(0.183)		- -	- -
					13.116		- -	- -
P_4	- -	- -	- -	- -	2.385	- -	- -	- -

	C	S	A	F	P	O	I	R
					(0.189)		--	--
					12.623		--	--
R2	--	--	--	--	--	--	--	0.386
								(0.139)
								2.779
R3	--	--	--	--	--	--	--	0.591
								(0.156)
								3.794
R4	--	--	--	--	--	--	--	0.642
								(0.218)
								2.947
R5	--	--	--	--	--	--	--	0.759
								(0.158)
								4.800
R6	--	--	--	--	--	--	--	0.725
								(0.111)
								6.541
R7NP	--	--	--	--	--		--	0.845
								(0.227)
								3.721
C_1	1.209	--	--	--	--	--	--	--
	(0.311)							
	3.889							

	C	S	A	F	P	O	I	R
C_2	1.363	--	--	--	--	--	--	--
	(0.314)							
	4.334							
C_3	0.830	--	--	--	--	--	--	--
	(0.161)							
	5.165							
O_2	--	--				1.929	--	--
						(0.244)		
						7.919		
O_3	--	--	--	--	--	1.142	--	--
						(0.099)		

						11.494		
O_1A	- -	- -	- -	- -	- -	1.496	- -	- -
						(0.151)		
						9.940		

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience; I1 = ITQ item 1; I2 = ITQ item 2; I3 = ITQ item 3; S_1 = Satisfaction parcel 1; S_2 = Satisfaction parcel 2; S_3 = Satisfaction parcel 3; S_4 = Satisfaction parcel 4; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_2 = Calling parcel 2; C_3 = Calling parcel 3; O_1A = Perceived organisational effectiveness parcel 1; O_2 = Perceived organisational effectiveness parcel 2; O_3 = Perceived organisational effectiveness parcel 3

All of the indicator variables loaded significantly onto their corresponding latent variables (Table 4.7). However, as argued by Diamantopoulos and Siguaw (2000), relying solely on unstandardized loadings and associated t-values, is insufficient for deriving inferences regarding indicator validity. Resultantly the completely standardised factor loadings were examined. The completely standardised factor loadings for the model are presented in Table 4.8.

The completely standardised factor loading solution matrix represents the average change in the indicator variables, given one standard deviation change in their corresponding latent variables; with all other effects remaining constant (Diamantopoulos & Siguaw, 2000). Completely standardised estimates exceeding the critical cut-off value of .71 are considered satisfactory (Hair et al., 2006) as this implies that at least 50% of the variance in the item parcels are explained by their respective latent variables.

Table 4.8
Measurement model Lambda-X completely standardised solution

	C	S	A	F	P	O	I	R
	--------	--------	--------	--------	--------	--------	--------	--------
I1	- -	- -	- -	- -	- -	- -	0.913	- -
I2	- -	- -	- -	- -	- -	- -	0.748	- -
I3	- -	- -	- -	- -	- -	- -	0.886	- -
S_1	- -	0.607	- -	- -	- -	- -	- -	- -

S_2	- -	0.382	- -	- -	- -	- -	- -	- -
S_3	- -	0.429	- -	- -	- -	- -	- -	- -
S_4	- -	0.268	- -	- -	- -	- -	- -	- -
S_5	- -	0.373	- -	- -	- -	- -	- -	- -
S_6	- -	0.699	- -	- -	- -	- -	- -	- -
S_7	- -	0.506	- -	- -	- -	- -	- -	- -
S_8	- -	0.419	- -	- -	- -	- -	- -	- -
A_1	- -	- -	0.887	- -	- -	- -	- -	- -
A_2	- -	- -	0.854	- -	- -	- -	- -	- -
A_3	- -	- -	0.446	- -	- -	- -	- -	- -
F_1	- -	- -	- -	0.883	- -	- -	- -	- -
F_2	- -	- -	- -	0.911	- -	- -	- -	- -
F_3	- -	- -	- -	0.915	- -	- -	- -	- -
F_4	- -	- -	- -	0.889	- -	- -	- -	- -
P_1	- -	- -	- -	- -	0.888	- -	- -	- -
P_2	- -	- -	- -	- -	0.887	- -	- -	- -
P_3	- -	- -	- -	- -	0.815	- -	- -	- -
P_4	- -	- -	- -	- -	0.812	- -	- -	- -
R2	- -	- -	- -	- -	- -	- -	- -	0.355
R3	- -	- -	- -	- -	- -	- -	- -	0.425
R4	- -	- -	- -	- -	- -	- -	- -	0.441
R5	- -	- -	- -	- -	- -	- -	- -	0.610
R6	- -	- -	- -	- -	- -	- -	- -	0.750
R7NP	- -	- -	- -	- -	- -	- -	- -	0.727
C_1	0.497	- -	- -	- -	- -	- -	- -	- -
C_2	0.843	- -	- -	- -	- -	- -	- -	- -
C_3	0.573	- -	- -	- -	- -	- -	- -	- -
O_2	- -	- -	- -	- -	- -	0.846	- -	- -
O_3	- -	- -	- -	- -	- -	0.880	- -	- -
O_1A	- -	- -	- -	- -	- -	0.914	- -	- -

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience; I1 = ITQ item 1; I2 = ITQ item 2; I3 = ITQ item 3; S_1 = Satisfaction parcel 1; S_2 = Satisfaction parcel 2; S_3 = Satisfaction parcel 3; S_4 = Satisfaction parcel 4; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_2 = Calling parcel 2; C_3 =

Calling parcel 3; O_1A = Perceived organisational effectiveness parcel 1; O_2 = Perceived organisational effectiveness parcel 2; O_3 = Perceived organisational effectiveness parcel 3

Of the 34 observed variables, 19 obtained factor loadings exceeding .71. The remaining 15 observed variables (S_1, S_2, S_3, S_4, S_5, S_6, S_7, S_8, A_3, R2, R3, R4, R5, C_1, C_3) obtaining values below the cut-off, were considered problematic (Table 4.8). However, of these 15, six factor loadings obtained values between .50 and .70, and were subsequently not regarded so low as to be seriously concerning. The remaining 10 (S_2, S_3, S_4, S_5, S_8, A_3, R2, R3, R4, C_1) obtaining factor loadings below .50 were essentially quite concerning.

The squared multiple correlations (R^2) for the observed variables on their corresponding latent variables were also examined (Table 4.9). Squared multiple correlations portray the proportion of variance each latent variable accounts for in their corresponding parcels/indicators (Prinsloo, 2013). High (R^2) values suggest high indicator reliability and are subsequently preferred.

Table 4.9
Squared multiple correlations for X variables

I1	I2	I3	S_1	S_2	S_3	S_4
--------	--------	--------	--------	--------	--------	--------
0.834	0.559	0.784	0.368	0.146	0.184	0.072

S_5	S_6	S_7	S_8	A_1	A_2	A_3
--------	--------	--------	--------	--------	--------	--------
0.139	0.488	0.256	0.175	0.787	0.729	0.199

F_1	F_2	F_3	F_4	P_1	P_2	P_3
--------	--------	--------	--------	--------	--------	--------
0.780	0.829	0.837	0.790	0.789	0.787	0.663

P_4	R2	R3	R4	R5	R6	R7NP
--------	--------	--------	--------	--------	--------	--------
0.659	0.126	0.180	0.194	0.372	0.562	0.529

C_1	C_2	C_3	O_2	O_3	O_1A
--------	--------	--------	--------	--------	--------

0.247	0.711	0.328	0.716	0.774	0.835

Note: I1 = ITQ item 1; I2 = ITQ item 2; I3 = ITQ item 3; S_1 = Satisfaction parcel 1; S_2 = Satisfaction parcel 2; S_3 = Satisfaction parcel 3; S_4 = Satisfaction parcel 4; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_2 = Calling parcel 2; C_3 = Calling parcel 3; O_1A = Perceived organisational effectiveness parcel 1; O_2 = Perceived organisational effectiveness parcel 2; O_3 = Perceived organisational effectiveness parcel 3

The critical cut-off value for the squared multiple correlations is .50 (Hair et al., 2006). Fifteen of the 34 observed variables, obtained values below the cut-off point. Values ranging between .30 and .49, although below the cut-off, did not raise serious concern. Raising serious concern however, were the values obtained by the S_4 (.07), R2 (.13), S_5 (.14), S_2 (.15), S_8 (.18), S_3 (.18), R3 (.18), R4 (.19), A_3 (.2), C_1 (.25) and S_7 (.26) observed variables, which were below .30. None of the R^2 values obtained were judged overtly high, although the extremely low R^2 values, to a certain extent undermined confidence in the measurement model, as well as the success of the operationalization of these latent variables.

The completely standardised measurement error variances, representing the proportion of item parcel variance due to systematic non-relevant variance and random error variance, are displayed in Table 4.10. Values lower than .50 indicate that less than 50% of the variance in the item parcels can be ascribed to measurement error variance, and are considered optimal. The results indicated that the same 15 observed variables obtained values below the cut-off value; further suggesting that the reliability and validity of the variables had been compromised. The S_4 observed variable[11], was particularly concerning, as an extremely large proportion of item parcel variance (93%) could be ascribed to systematic non-relevant variance and random error variance. S_2 (85%), S_3 (82%), S_5 (86%), S_8 (83%), A_3 (80%), R2 (87%), R3 (82%), and R4 (81%) also raised some concern. Values ranging between .50 and .70, though not ideal, were nonetheless considered acceptable. Eleven observed variables

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[11] The S_4 parcel reflected the patient care subscale of the NSS, which also performed somewhat poorly in the item analysis obtaining an alpha coefficient of .57, discussed in Section 3.11.8.1.

obtained values above .70, incidentally the same 11 variables identified as problematic in the squared multiple correlations. The results, once again to an extent, pointed out that the reliability and validity of these observed variables, may have been compromised.

Table 4.10
Measurement model Theta-Delta completely standardized solution

I1	I2	I3	S_1	S_2	S_3	S_4
0.166	0.441	0.216	0.632	0.854	0.816	0.928

S_5	S_6	S_7	S_8	A_1	A_2	A_3
0.861	0.512	0.744	0.825	0.213	0.271	0.801

F_1	F_2	F_3	F_4	P_1	P_2	P_3
0.220	0.171	0.163	0.210	0.211	0.213	0.337

P_4	R2	R3	R4	R5	R6	R7NP
0.341	0.874	0.820	0.806	0.628	0.438	0.471

C_1	C_2	C_3	O_2	O_3	O_1A	
0.753	0.289	0.672	0.284	0.226	0.165	

Note: I1 = ITQ item 1; I2 = ITQ item 2; I3 = ITQ item 3; S_1 = Satisfaction parcel 1; S_2 = Satisfaction parcel 2; S_3 = Satisfaction parcel 3; S_4 = Satisfaction parcel 4; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_2 = Calling parcel 2; C_3 = Calling parcel 3; O_1A = Perceived organisational effectiveness parcel 1; O_2 = Perceived organisational effectiveness parcel 2; O_3 = Perceived organisational effectiveness parcel 3

4.4.5 Discriminant validity

Displayed in Table 4.11 is the phi matrix, representing the inter-correlations between the latent variables in the measurement model. Phi matrices are used to determine discriminant validity, which is the extent to which variables are uncorrelated with variables from which they are supposed to differ. Where inter-correlations are considered sufficiently low (< .90),

discriminant validity is indicated. Inspection of the matrix indicated all inter-correlation values were sufficiently low (< .90) and resultantly it could be concluded that discriminant validity between all the latent variables included in the study, was achieved.

Table 4.11
Measurement model completely standardised phi solution

	C	S	A	F	P	O	I	R
	------	------	------	------	------	------	------	------
C	1.000							
S	0.198	1.000						
A	0.155	0.661	1.000					
F	0.019	0.548	0.476	1.000				
P	0.015	0.704	0.516	0.494	1.000			
O	0.147	0.484	0.318	0.282	0.342	1.000		
I	-0.051	-0.448	-0.535	-0.477	-0.349	-0.307	1.000	
R	0.247	0.032	0.058	0.024	0.007	0.132	-.119	1.000

Based on the totality of results presented in this section it was concluded that sufficient evidence in support of the reasonably successful operationalisation of the measurement model existed, despite some concerning results that emerged (Section 4.4.4). Hence it was concluded that a definite verdict on the fit of the structural model was still attainable, given that the concerning results were taken into account. Subsequently, the structural model was fitted to the data.

4.5 Structural Model

The ITQ conceptual model (Figure 3.1), presented in this study, is a graphic representation of the possible causal relationships between the numerous endogenous and exogenous latent variables included in this study. Two interaction effects that were included in the conceptual model (calling*PSC and resilience*POE), and initially tested with SEM according to the orthoganalising technique by Little et al. (2006), regrettably failed to be captured within the structural model. The analysis revealed that the inclusion of the interaction effects increased

the number of model parameters to be estimated, to more than that of the sample size (n = 184), and hence the model parameters could not be specified. Subsequently, the interaction effects had to be removed from the initial structural model, and was tested by means of moderated multiple regression. Therefore, a reduced structural model was constructed (Figure 3.2) and tested via structural equation modelling (SEM). The purpose of this analysis was to determine whether the hypothesised paths in the model, as presented in the literature review, were supported by the data.

4.5.1 Fitting the structural model

The reduced structural model was fitted by analysing the covariance matrix. LISREL 8.8 (Jöreskog & Sörbom, 2002) was utilised to conduct the SEM. RML estimation was employed to derive the model parameter estimates, as the null hypothesis of multivariate normality (Table 4.3) had to be rejected in the observed data (p < .05).

4.5.2 Interpretation of structural model fit and parameter estimates

The exact fit null hypothesis (H_{02a}), that the structural model provides a perfect account of the psychological processes underlying ITQ, was tested by means of the Satorra-Bentler chi square (χ^2) statistic (as RML estimation was employed). The probability of confirming this hypothesis is, however, very slim (Theron, 2015). It was expected that this hypothesis would be rejected. Resultantly, the close fit null hypothesis (H_{02b}) was tested by reviewing the likelihood of observing the sample estimate of the root mean square error of approximation (RMSEA).

Similar to the results for the measurement model, the magnitude and distribution of the standardised residuals, as well as the magnitude of the model modification indices calculated for gamma and beta, were considered. Standardised residuals surpassing or falling short of 2.58 and -2.58 respectively, were considered large. An excessive amount of positive residuals indicate the need to explore additional explanatory paths, whereas too many negative residuals are indicative of explanatory paths that need to be removed from the model.

To determine whether there existed any significant possibilities to improve the fit of the model, by adding additional structural paths, the gamma and beta modification matrices were

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inspected. Values of 6.64 or higher point to currently fixed parameters which, if set free, would significantly enhance model fit ($p < .01$).

The existence of multiple, large and significant modification indices would suggest that there are a number of ways in which the model could be enhanced, and evidently commented negatively on the fit of the model. Inspection of the modification indices in the current study, however, served the primary purpose of commenting on model fit (Diamantopoulos & Siguaw, 2000) as opposed to informing testing of empirically motivated model modifications. The possible modifications suggested by the current results are discussed in the final chapter of this study, and integrated into recommendations for future research, where justified.

If the model failed to obtain close fit, but at least reasonable fit was indicated based on the totality of goodness-of-fit statistics, the thirteen path specific hypotheses results, $H_{03} – H_{015}$, would be interpreted. This was interpreted by evaluating the magnitude and statistical significance of the path coefficients in the completely standardised gamma and beta matrices.

The squared multiple correlations (R^2), signifying the proportion of the variance in a specific indicator that is explained by its underlying latent variable, were calculated and interpreted for all of the indicators. Large (R^2) values were favoured.

In the final evaluation of the results, it was reasoned that the reduced structural model was considered acceptable to the extent that it met four conditions. These included that, a) the measurement model fitted the data well; b) the reduced structural model fitted the data well; c) the path coefficients for the hypothesised structural relations were significant; and d) the model explained a substantial proportion of the variance in each of the endogenous variables.

4.5.3 Evaluating the fit of the ITQ structural model

The fitted structural model is graphically represented in Figure 4.4. The corresponding goodness-of-fit statistics are presented in Table 4.12.

Table 4.12
ITQ structural model goodness of fit statistics

Model	ITQ
X2	959.21*
S-Bχ2	854.93*
df	514
S-Bχ2/ df	1.66
NNFI	.94
CFI	.94
RMR	.78
SRMR	.08
RMSEA	0.060
RMSEA (CI)	0.053 ; 0.067
P(close)	.01
ECVI	5.56
AIC	1016.93
CAIC	1358.34
CN	127.62
GFI	.76
AGFI	.73

Note: X2, Chi-square; S-BX2, Satorra-Bentler Scaled Chi-square; NNFI, non-normed fit index; CFI, comparative fit index; RMR, root mean square residuals; SRMR, standardised root mean residual; RMSEA, root mean square error of approximation *p < .05.; RMSEA (CI) root mean error of approximation confidence interval; df, degrees of freedom; ECVI, Expected cross validation index; AIC, Akaike's information criterion; CAIC, consistent Akaike's information criterion; CN, Critical N; GFI, goodness of fit index; AGFI, adjusted goodness of fit index

A Satorra Bentler Scaled chi-square value of 854.94 (p = .00) and 514 degrees of freedom was obtained. The exact fit null hypothesis (H_{02a}), was rejected (p < .05). The results further revealed that the close fit null hypothesis (H_{02b}) also had to be rejected (p < .05). Inspection of the rest of the fit indices, according to the cut-off's set by Hair et al. (2006), however, indicated that the model obtained good fit. Hair et al. (2006) suggested that for a model with more than 30 observed variables and sample size smaller than 250, an RMSEA of less than .08 indicated good model fit. Therefore, the current model's RMSEA of .060 suggested good model fit. The authors' cut-off's further advocate an SRMR value of .09 or lower, and a CFI of above .92 to achieve good model fit. Based on the current model's SRMR of .08 and CFI of .94, good model fit was concluded. The model's NNFI of .94 also exceeded the .92 or above cut-off, further corroborating good model fit.

The Model's ECVI (5.56) was smaller than both the independence model's ECVI (36.88), as well as the saturated model's (6.50). These results indicated that a model more closely resembling the fitted model seems to have a better chance of being replicated in a cross-validation sample than the independence model, but not the saturated model (Byrne, 2010). This chance was however only slightly better.

The fitted model's AIC (1016.93) provided a more parsimonious fit than both the independence (6748.53) and saturated (1190.00) models. Similarly the model CAIC (1358.34) obtained a value smaller than both the independence (6891.84) and saturated (3697.89) models. These results support good model fit.

The critical N (CN) is concerned with the adequacy of the sample size, of which the generally accepted standard is CN > 200. The current model's CN of 127.62, falls considerably below the standard. However, the CN > 200 standard has been contested in literature and many authors implore others to utilize it with caution (Diamantopoulos & Siguaw, 2000).

The goodness of fit index (GFI), together with the adjusted goodness of fit index (AGFI), are considered absolute fit indices. According to Byrne (2010), the computation of absolute fit indices does not depend on a relative comparison with a baseline model, as is the case with relative fit indices, and instead compares the hypothesised model with no model at all. The GFI provides an indication of how close the model comes to flawlessly reproducing the observed covariance matrix. The latter AGFI, differs from the GFI in that it adjusts for model degrees of freedom. Values surpassing .90 for these indices are indicative of good model fit (Diamantopoulos & Siguaw, 2000). The GFI (.76) and AGFI (.73), fell somewhat below the good model fit standard, but nonetheless pointed to reasonable model fit.

Based on the totality of goodness-of-fit statistics, it was concluded that the structural model obtained good fit, despite lack of close fit. It could, therefore, be concluded that the cumulative results appeared to indicate that the reduced structural model was able to reproduce the observed covariance matrix to a point that justified sufficient faith in the model and its derived parameter estimates.
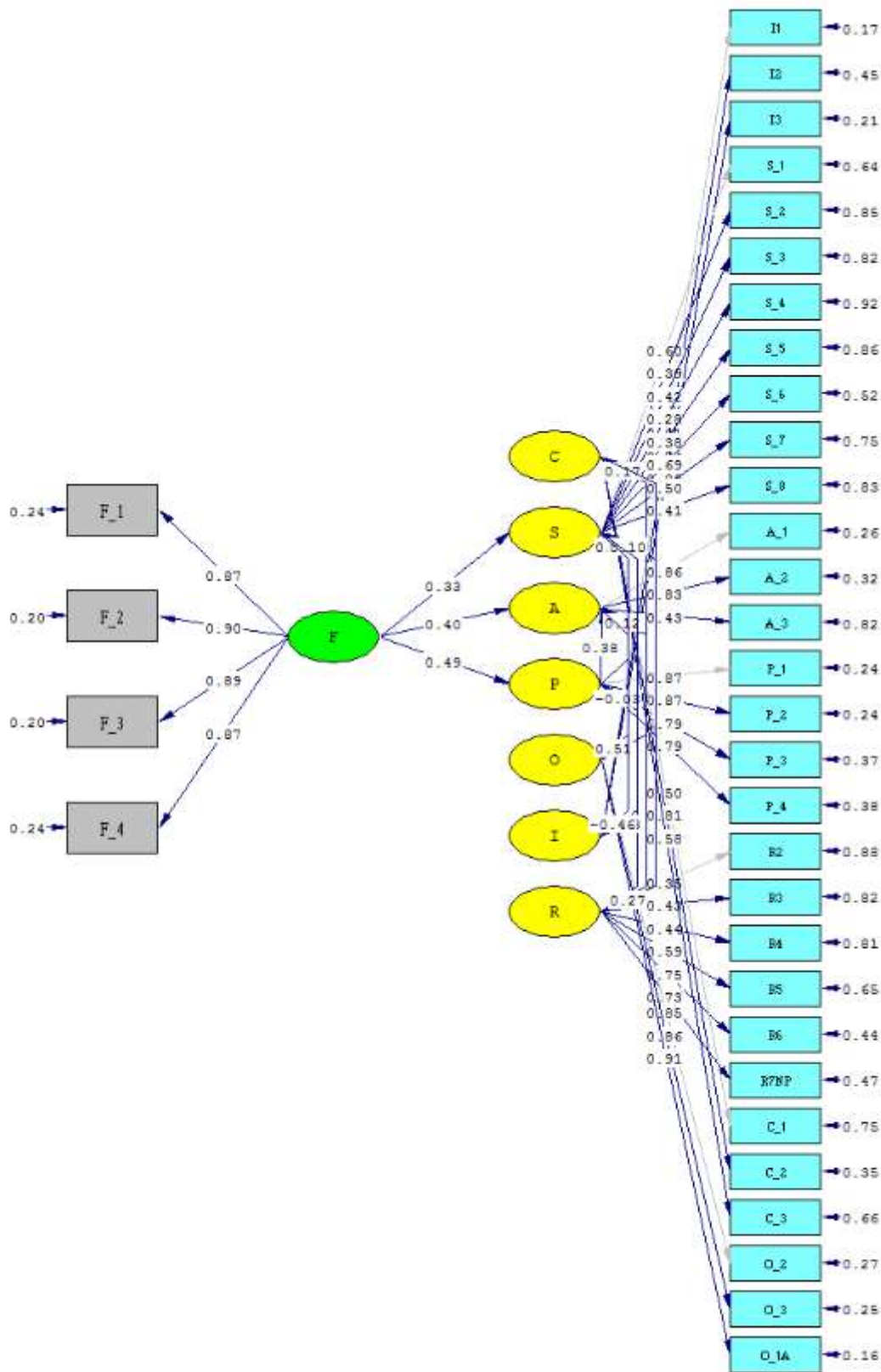
Chi-Square=848.01, df=514, P-value=0.00000, RMSEA=0.060

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Figure 4.4. Structural model

4.5.4 Interpretation of the structural model standardised residuals

Displayed in Table 4.13 is a summary of the standardised variance-covariance residuals, indicating 15 values smaller than -2.58 and 15 values larger than 2.58. These 30 large residuals comprised approximately only 5% (30/ 595 unique elements) of the total number of unique variance and covariance terms in the observed covariance matrix, which were inaccurately estimated. Though not ideal, the result is still satisfactory and further underscored the conclusion of good model fit.

Table 4.13
Summary statistics for the ITQ structural model standardised residuals

Description	Value
Smallest Standardized Residual	-7.358
Median Standardized Residual	0.000
Largest Standardized Residual	6.522
Largest Negative Standardized Residuals	
Residual for S_6 and I1	-2.585
Residual for P_2 and S_5	-3.005
Residual for P_2 and S_6	-7.358
Residual for P_3 and S_5	-3.001
Residual for P_3 and S_7	-3.316
Residual for P_4 and P_1	-3.651
Residual for R4 and S_1	-2.639
Residual for R5 and S_7	-3.096
Residual for R6 and R2	-4.715
Residual for R7NP and R4	-4.362
Residual for C_3 and C_1	-2.761
Residual for F_1 and I1	-3.223
Residual for F_2 and I1	-2.766
Residual for F_3 and I1	-2.605
Residual for F_4 and I1	-3.186
Largest Positive Standardized Residuals	
Residual for S_1 and I2	2.725

Residual for S_8 and S_1	2.663
Residual for A_1 and S_6	2.801
Residual for A_2 and S_6	3.024
Residual for A_3 and I1	2.585
Residual for A_3 and A_2	2.954
Residual for P_4 and S_1	4.290
Residual for P_4 and S_6	5.502
Residual for P_4 and P_3	6.522
Residual for R3 and R2	2.854
Residual for R7NP and S_5	3.550
Residual for C_3 and S_7	3.242
Residual for O_3 and R7NP	3.453
Residual for F_1 and S_5	3.150
Residual for F_2 and A_2	3.650

I1 = ITQ item 1; I2 = ITQ item 2; S_1 = Satisfaction parcel 1; S_3 = Satisfaction parcel 3; S_5 = Satisfaction parcel 5; S_6 = Satisfaction parcel 6; S_7 = Satisfaction parcel 7; S_8 = Satisfaction parcel 8; A_1 = Affective commitment parcel 1; A_2 = Affective commitment parcel 2; A_3 = Affective commitment parcel 3; F_1 = Family supportive supervisor behaviour parcel 1; F_2 = Family supportive supervisor behaviour parcel 2; F_3 = Family supportive supervisor behaviour parcel 3; F_4 = Family supportive supervisor behaviour parcel 4; P_1 = Psychosocial safety climate parcel 1; P_2 = Psychosocial safety climate parcel 2; P_3 = Psychosocial safety climate parcel 3; P_4 = Psychosocial safety climate parcel 4; R2 = Resilience item 1; R3 = Resilience item 2; R4 = Resilience item 3; R5 = Resilience item 4; R6 = Resilience item 5; R7NP = Resilience item 6; C_1 = Calling parcel 1; C_3 = Calling parcel 3; O_3 = Perceived organisational effectiveness parcel 3

Presented in Figure 4.5 is the stem an leaf plot, which allows for the standardised residuals to be investigated in totality (Diamantopolous & Siguaw, 2000). The plot appears to be very slightly negatively skewed, implying that the observed variance and covariance terms in the observed covariance matrix were slightly overestimated.

```
 - 7|4
 - 6|
 - 5|
 - 4|74
 - 3|7322100
 - 2|886665555433221111111100000
 - 1|9999888777777765555555555544444444444443333333333333333333333332222222222111+24
 - 0|999999999988888887777777777776666666666655555555555544444444444444443333+12
   0|1111111111222222222222222222222222222222223333333333333333444444444444444445555+67
   1|0000000001111111111112222222222222222222222333333333334444444444444445555555+20
   2|00000000000011111122222333334555556789
   3|0012566
   4|3
   5|5
   6|5
```

Figure 4.5. Stem and leaf plot of the measurement model standardised residuals.

The Q-plot of the structural model standardised residuals for the structural model portrayed in Figure 4.6, was also considered. The plot indicates that data point distribution around the 45 degree reference line was imperfect. This deviation commented negatively on the fit of the model, but was not considered severe enough to warrant serious concern.
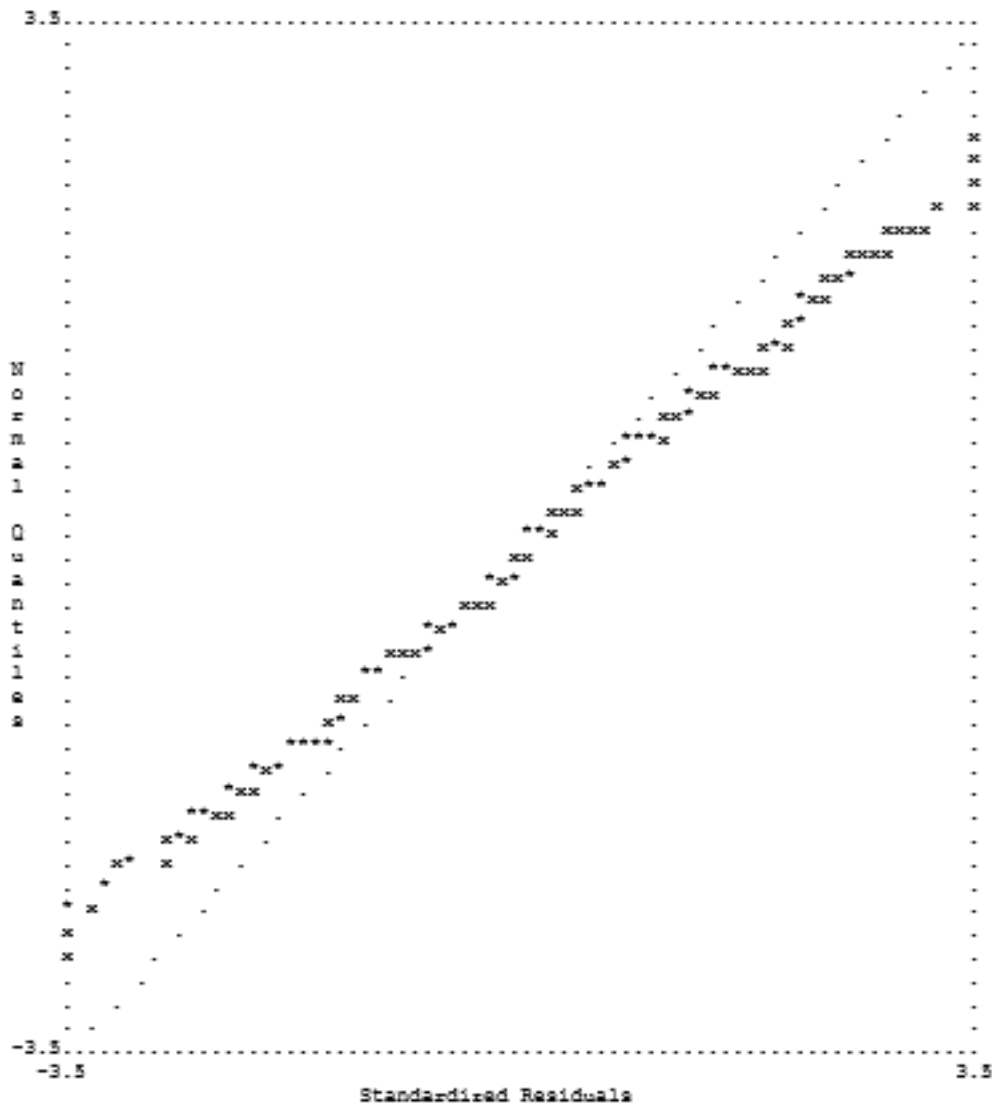

Figure 4.6. Q-plot of the structural model standardised residuals

4.5.5 Structural model modification indices

The structural model modification indices were investigated for the primary purpose of commenting on model fit. Values exceeding the 6.64 critical chi-square cut-off value, indicate

parameters that, if set free, would improve model fit significantly (p < .01). This information was used to argue suggestions for future research on possible model modifications (included in chapter 5). No model modifications were empirically tested in this study. The modification indices calculated for the fixed gamma parameters are displayed in Table 4. 14. The results indicate that only one of the four possible additional paths, if set free, would significantly improve model fit (p < .01); namely the addition of a path allowing FSSB to exert a direct influence on intention to quit.

Table 4.14
Structural model modification indices for gamma

	F
C	0.000
R	0.483
O	0.163
P	- -
A	- -
S	- -
I	**10.178**

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience

The modification indices calculated for the fixed beta parameters are presented in Table 4.15. The results indicated that only two of the 29 possible additional paths, if set free, would significantly improve model fit (p < .01). More specifically, the results suggested the addition of a path allowing affective commitment to exert a positive influence on job satisfaction, as well as for job satisfaction to exert a positive influence on affective commitment. Once again, the absence of many large modification indices for the beta and gamma matrices further commented positively on the model fit of the structural model.

Table 4.15
Structural model modification indices for beta

	C	R	O	P	A	S	I
C	- -	0.017	- -	0.007	1.563	0.801	0.004
R	- -	- -	1.193	0.423	0.049	0.236	1.400
O	0.360	0.816	- -	- -	0.193	- -	1.764
P	0.013	- -	0.040	- -	- -	- -	2.239
A	3.237	- -	1.425	- -	- -	**16.303**	0.532
S	2.745	- -	0.182	- -	**23.351**	- -	1.279
I	0.860	0.909	1.529	0.242	- -	- -	- -

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience

4.5.6 Structural model parameter estimates and squared multiple correlations

Next, the empirical evidence concerning the relations between the various exogenous (ξ) and endogenous (η) variables, were considered in order to determine whether any of the hypothesised relationships (H_{03} – H_{15}), were supported by the data. Diamantopoulos and Siguaw (2000) advise that four sequential components be evaluated when assessing structural model relations. As a first step the statistical significance ($p < .05$) of the parameter estimates must be inspected. If these are found to be significant, the second step would be to consider the magnitude of the parameter estimates, in order to determine the strength of the various relationships. The third step would entail examining the signs of the parameters representing the paths between the latent variables and the nature of the causal effects hypothesised between the latent variables (i.e. directionality of the path). The final step requires that the squared multiple correlation (R^2) for each endogenous latent variable in the model be considered; where (R^2) represents the amount of variance in each variable explained by other variables causally related to it.

The parameters in question refer to the freed elements reported in the beta, gamma and psi matrices. Each of the unstandardised matrices consist of three important values namely, the unstandardised parameter estimates, standard error terms and t-values. These estimates

represent the average change in an endogenous latent variable, given one unit change in a corresponding exogenous or endogenous latent variable, all other variables being fixed.

The unstandardised gamma matrix, presented in Table 4.16, was interpreted to assess the significance of the estimated path coefficients γ_{ij}, expressing the strength of the influence of Ksi (ξ_j) on Eta (η_i). T-values exceeding $|1.64|$ indicate unstandardised estimates that are statistically significant ($p < .05$) (Diamantopoulos & Siguaw, 2000).

Table 4.16

Structural model unstandardised gamma matrix

	F
C	- -
R	- -
O	- -
P	0.495
	(0.080)
	6.158
A	0.336
	(0.080)
	4.178
S	0.247
	(0.081)
	3.064
I	- -

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = Family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

The completely standardised gamma matrix in turn, allows structural equations to be compared, as estimates are unaltered by variance in the measuring unit of the variables (Diamantopoulos & Siguaw, 2000). The completely standardised gamma parameter estimates are presented in Table 4.17, and provide additional insights into the strength of the structural relationships.

Table 4.17
Structural model completely standardised gamma matrix

	F
C	- -
R	- -
O	- -
P	**0.495**
A	**0.336**
S	**0.247**
I	- -

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = Family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

From Table 4.16, it is clear that all the t-values in the unstandardised gamma matrix exceeded the cut-off values and were statistically significant. These findings were interpreted in terms of the statistical hypotheses formulated in chapter 3 (Table 3.1).

Hypothesis 5: FSSB (ξ_1) has a significant positive linear relationship with job satisfaction (η_6).

The results in Tables 4.16 and 4.17 indicate that the hypothesised path from FSSB to job satisfaction was supported (SEM path coefficient = .25). The sign of the parameter estimate corresponded with the direction of theorised path. It could, therefore, be concluded that FSSB (ξ_1) had a significant positive linear relationship with job satisfaction (η_6). Hence, H_{05}: $\gamma_{61} = 0$ could be rejected in favour of Ha_5: $\gamma_{61} > 0$.

Hypothesis 6: FSSB (ξ_1) has a significant positive linear relationship with affective commitment (η_5).

Presented in Tables 4.16 and 4.17, the results confirmed the significance and directionality of the hypothesised path from FSSB to affective commitment (SEM path coefficient = .34). It was, therefore, concluded that FSSB (ξ_1) had a significant positive linear relationship with affective commitment (η_5). Therefore H_{06}: $\gamma_{51} = 0$ was rejected in favour of Ha_6: $\gamma_{51} > 0$.

Hypothesis 7: FSSB (ξ_1) has a significant positive linear relationship with PSC (η_4).

The hypothesised positive relationship between FSSB (ξ_1) and PSC (η_4) (SEM path coefficient = .49) was found to be statistically significant. Therefore, H_{07}: $\gamma_{41} = 0$ could be rejected in favour of Ha_7: $\gamma_{41} > 0$.

Expressing the strength of the influence of ηj on ηi, the unstandardised beta matrix, presented in Table 4.18, was investigated to determine the significance of the estimated path coefficients βij. βij estimates are statistically significant ($p < .05$) if the corresponding t-value is greater that $|1.64|$ (Diamantopoulos & Siguaw, 2000).

Table 4.18
Structural model unstandardised beta matrix

	C	R	O	P	A	S	I
C	- -	- -	0.076 (0.064) 1.183	- -	- -	- -	- -
R	0.174 (0.090) **1.946**	- -	- -	- -	- -	- -	- -
O	- -	- -	- -	- -	- -	0.462 (0.103) **4.492**	- -
P	- -	-0.016 (0.074) -0.210	- -	- -	- -	- -	- -
A	- -	0.063 (0.077) 0.807	- -	0.374 (0.097) **3.856**	- -	- -	- -
S	- -	0.010	- -	0.594	- -	- -	- -

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	(0.081)			(0.098)			
	0.129			**6.068**			
I	- -	- -	- -	- -	-0.488	-0.175	- -
					(0.094)	(0.081)	
					-5.204	**-2.166**	

Note: C = Calling; S = Satisfaction; A = Affective commitment; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

Table 4.19 contains the completely standardised beta parameter estimates, utilized to provide additional information on the strength and direction of the hypothesised relationships.

Table 4.19
Structural model completely standardised gamma matrix

	C	R	O	P	A	S	I
C	- -	- -	0.076	- -	- -	- -	- -
R	**0.174**	- -	- -	- -	- -	- -	- -
O	- -	- -	- -	- -	- -	**0.462**	- -
P	- -	-0.016	- -	- -	- -	- -	- -
A	- -	0.063	- -	**0.374**	- -	- -	- -
S	- -	0.010	- -	**0.594**	- -	- -	- -
I	- -	- -	- -	- -	`-0.488	-0.175	- -

Note: C = Calling; S = Satisfaction; A = Affective commitment; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

Based on the results presented in Table 4.19, six of the ten freed beta parameter estimates in the structural model obtained a t-value greater than |1.64|, and resultantly the following six null hypotheses could be rejected: H_{03}: $\beta_{76} = 0$; H_{04}: $\beta_{75} = 0$; H_{08}: $\beta_{64} = 0$; H_{09}: $\beta_{54} = 0$; H_{013}: $\beta_{21} = 0$; H_{014}: $\beta_{36} = 0$.

Hypothesis 3: Job satisfaction (η_6) has a significant negative linear relationship with ITQ (η_7).

The results revealed (Tables 4.18 and 4.19) that job satisfaction (η_6) has a significant negative linear relationship with ITQ (η_7) (SEM path coefficient = -.18). The theorised direction of the hypothesised influence was corroborated by the results. Therefore, H_{03}: $\beta_{76} = 0$ could be rejected in favour of Ha_3: $\beta_{76} < 0$.

Hypothesis 4: Affective commitment (η_5) has a significant negative linear relationship with ITQ (η_7).

The results in Tables 4.18 and 4.19 indicate that the hypothesised path from affective commitment (η_5) to ITQ (η_7) was supported (SEM path coefficient = -.49). The sign of the parameter estimate corresponded with the direction of the theorised path. It could therefore be concluded that affective commitment (η_5) had a significant negative linear relationship with ITQ (η_7). Therefore, H_{04}: β_{75} = 0 could be rejected in favour of Ha_4: β_{75} < 0.

Hypothesis 8: PSC (η_4) has a significant positive linear relationship with job satisfaction (η_6)

The hypothesised positive relationship between PSC (η_4) and job satisfaction (η_6) (SEM path coefficient = .59) was found to be statistically significant. Therefore, H_{08}: β_{64} = 0 could be rejected in favour of Ha_8: β_{64} > 0.

Hypothesis 9: PSC (η_4) has a significant positive linear relationship with affective commitment (η_5).

Presented in Tables 4.18 and 4.19, the results confirmed the hypothesised path and directionality of the relationship between PSC (η_4) and affective commitment (η_5) (SEM path coefficient = .37). It was, therefore, concluded that PSC had a significant positive linear relationship with affective commitment. Therefore H_{09}: β_{54} = 0 could be rejected in favour of Ha_9: β_{54} > 0.

Hypothesis 13: Calling (η_1) has a significant positive linear relationship with resilience (η_2).

As indicated by Tables 4.18 and 4.19, the results revealed that calling (η_1) has a significant positive linear relationship with resilience (η_2) (SEM path coefficient = .17). The hypothesised

direction of the influence was corroborated by the results. Resultantly H_{013}: β_{21}= 0 could be rejected in favour of Ha_{13}: $\beta_{21} > 0$.

Hypothesis 14: Job satisfaction (η_6) has a significant positive linear relationship with POE (η_3).

The results in Table 4.18 and 4.19 show that job satisfaction (η_6) has a significant positive linear relationship with POE (η_3) (SEM path coefficient = .46). The theorised direction of the influence was supported by the results. Therefore H_{014}: $\beta_{36} = 0$ was rejected in favour of Ha_{14}: $\beta_{36} > 0$.

The results contained in the beta matrix further revealed that there were four path coefficients with t-values less than |1.64|, which could resultantly not be rejected. The four hypotheses that were not corroborated included the following: H_{010}: $\beta_{62} = 0$; H_{011}: β_{52}= 0; H_{012}: $\beta_{42} = 0$; H_{015}: $\beta_{13} = 0$.

Hypothesis 10: Resilience has a significant positive linear relationship with job satisfaction

Hypothesis 11: Resilience has a significant positive linear relationship with Affective commitment.

Hypothesis 12: Resilience has a significant positive linear relationship with PSC.

Hypothesis 15: POE has a significant positive linear relationship with calling.

The evidence suggested that none of the hypothesised positive relationships between resilience and job satisfaction, resilience and affective commitment or resilience and PSC were statistically significant. As a result none of the null hypotheses could be rejected in favour of the alternative hypotheses (H_{010}: $\beta_{62} = 0$ could not be rejected in favour of Ha_{10}: $\beta_{62} > 0$; H_{011}: β_{52}= 0 could not be rejected in favour of Ha_{11}: $\beta_{52} > 0$; H_{012}: $\beta_{42} = 0$ could not be rejected in favour of Ha_{12}: $\beta_{42} > 0$). In addition, the results indicated that the hypothesised relationship between POE and calling was not statistically significant. Resultantly, H_{015}: $\beta_{13} =$ could not be rejected in favour of Ha_{15}: $\beta_{13} > 0$.

In conclusion, the completely standardised parameter estimates revealed that of all the significant path coefficients contained in the structural model, the influence of PSC on job satisfaction (.59) was the most pronounced. This was followed by the influence of FSSB on PSC (.50), affective commitment on ITQ (-.49), job satisfaction on POE (0.46), PSC on affective commitment (.37), FSSB on affective commitment (.34), FSSB on job satisfaction (.25), job satisfaction on ITQ (-.18), and finally calling on resilience (.17).

The psi matrices, reported in Tables 4.20 and 4.21, represent the variances in the structural error terms. The unstandardised psi matrix (Table 4.21) displays the error variance estimates, standard errors and z-values for the residual terms of the structural model. The completely standardised psi matrix (Table 4.22) depicts the magnitude of the variance coefficients in the structural error terms.

Table 4.20
Structural model unstandardised psi matrix

C	R	O	P	A	S	I
0.994	0.970	0.786	0.755	0.620	0.440	0.654
(0.407)	(0.469)	(0.145)	(0.108)	(0.125)	(0.117)	(0.104)
2.444	2.069	5.408	6.981	4.953	3.754	6.283

Note: C = Calling; S = Satisfaction; A = Affective commitment; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

Table 4.21
Structural model completely standardised psi matrix

C	R	O	P	A	S	I
0.994	0.970	0.786	0.755	0.620	0.440	0.654

Note: C = Calling; S = Satisfaction; A = Affective commitment; P = Psychosocial safety climate; O = Perceived organisational effectiveness ;I = Intention to quit; R = Resilience

The results indicate that a statistically significant proportion of the variance in all of the endogenous variables were not accounted for by the model (t-values > |1.64|). Considering that the model cannot be regarded as having achieved perfect fit, these results are not surprising. It should however be noted that the magnitude of these structural error variances are somewhat disappointing (Table 4.21).

The squared multiple correlations (R^2) displayed in table 4.22, explain the proportion of variance in each endogenous variable, accounted for by the weighted linear composite of effects linked to it, in the model (Diamantopoulos & Siguaw, 2000).

Table 4.22
Squared multiple correlations for structural equations

C	R	O	P	A	S	I
0.006	0.030	0.214	0.245	0.380	0.560	0.346

Note: C = Calling; S = Satisfaction; A = Affective commitment; F = family supportive supervisor behaviour; P = Psychosocial safety climate; O = Perceived organisational effectiveness; I = Intention to quit; R = Resilience

From the results, it is apparent that the model managed to explain a mere 35% of variance in intention to quit. The model, consequently, presented a somewhat unsatisfying attempt to explain variance in the latent variable of interest.

The parameter estimates for all the hypothesised paths in the final version of the reduced structural model, fitted to the data, is displayed in Figure 4.7. Of the 13 hypothesised paths in the model, nine proved to be significant (indicated in red). In totality the study comprised of 17 hypotheses. With relation to the reduced structural model, two (H_{01} and H_{02}) concerned the exact, and close fit null hypotheses for the measurement and structural models respectively. Thirteen hypotheses (H_{03} – H_{015}) reflected the beta and gamma path specific hypotheses in the reduced structural model. Another two (hypotheses 16 and 17) captured the interaction effects depicted in the conceptual model. Therefore, only 13 paths are indicated in Figure 4.7, of which nine were found to be statistically significant. These paths are indicated in red in Figure 4.7)
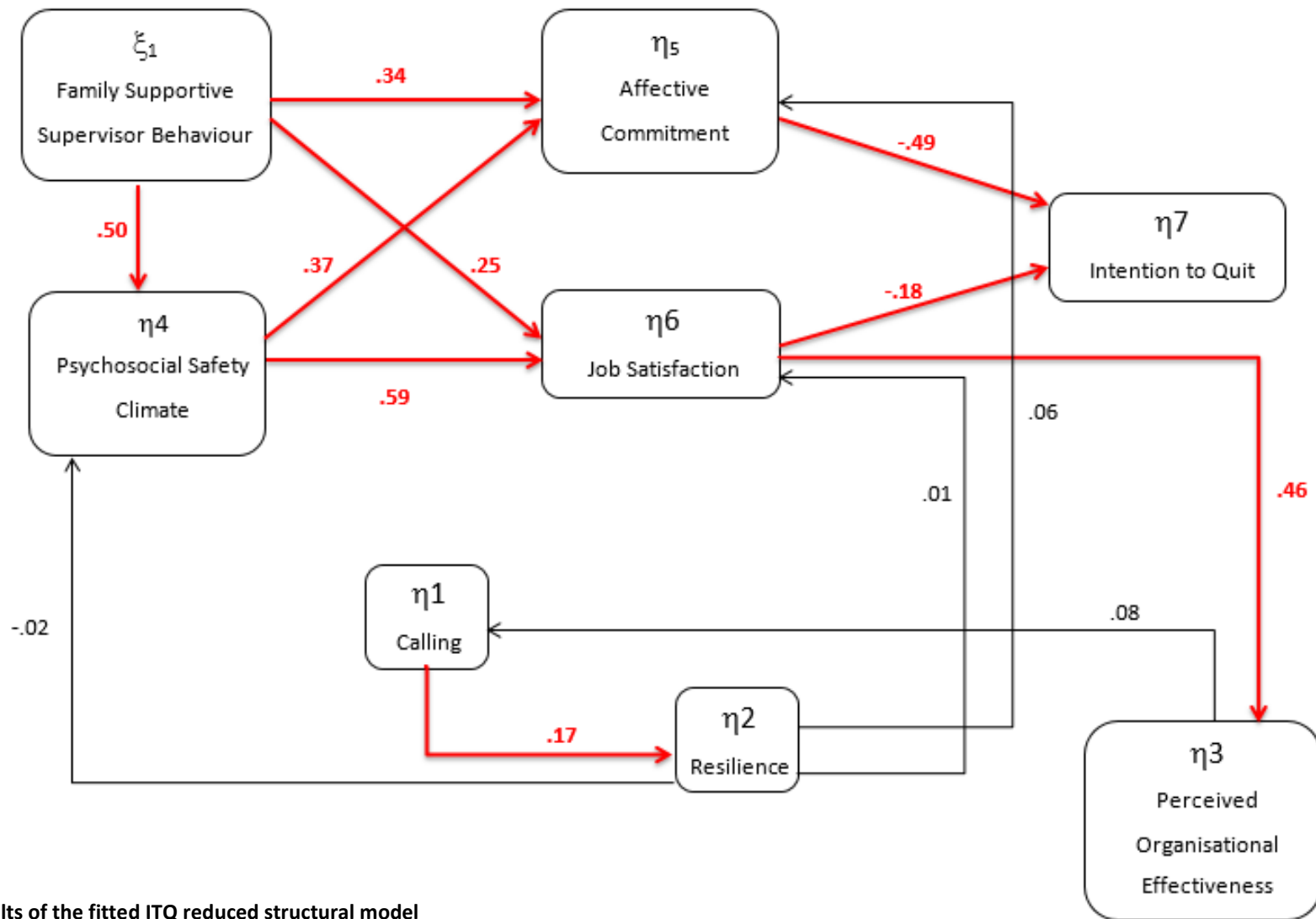
Figure 4.7. **Results of the fitted ITQ reduced structural model**

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4.6 Moderating Effects

Sharma, Durand, and Gur-Arie (1981, p. 1) define moderator variables as those "which systematically modifies either the form and/ or strength of the relationship between a predictor and a criterion variable". Thus, a moderating or interaction effect will exist if a particular variable alters the magnitude or direction of the relationship between two variables. The slope of the regression of the dependent variable on the independent variable will then differ in terms of direction and/or magnitude depending on the levels of the moderator variable.

In order to investigate whether calling and resilience acted as moderators in the relationships between PSC and job satisfaction, and POE and calling respectively, two moderated multiple regression analyses were conducted. However, an often encountered problem in testing moderating effects is excessively high collinearity (Dalal & Zickar, 2012). The presence of which, according to Little et al. (2006), could potentially lead to problems when estimating regression coefficients, and subsequently affect the statistical support for these moderating effects. This problem can be overcome through the use of mean centring, before calculating product terms. Consequently, mean centring was employed in this study to test the two hypothesised interaction effects.

To calculate the mean centered interaction effect, the means for each of the two variables (i.e. the independent variable, POE, hypothesised to have a main effect on the dependent variable, and the variable hypothesised to moderate this relationship, resilience) are determined and subtracted from the original variables. For example the mean of POE is subtracted from the POE total score, and the mean of resilience is subtracted from the resilience total score, resulting in two mean centered values (e.g. mean centered interaction effect = [POE – mean of POE] * [resilience – mean of resilience]). The product term of these two mean centered values is then entered as the POE*Resilience interaction variable in the regression analysis, together with the original independent (POE) and dependent (calling) variables.

The same procedure was followed to calculate the interaction effect between calling and PSC on job satisfaction, starting with mean centering the variables (e.g Mean centered interaction

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effect = [PSC – mean of PSC] * [Calling – mean of calling]). The product term of these two mean centered values were entered as the PSC*calling interaction variable in the regression analysis, together with the original independent (PSC) and dependent (job Satisfaction) variables. The results are discussed in the following sections.

4.6.1 Resilience as a moderator

In the first moderated regression, calling was entered as the dependent variable. The independent variables included were POE and the product term created for the proposed interaction between resilience and POE. The following hypothesis was tested:

Hypothesis 16: Resilience moderates the relationship between POE and calling

The results, presented in Table 4.23, show that the model was not significant (.277, $p > .05$), rendering further interpretation inadmissible.

Table 4.23
Model summary: Resilience as moderator (mean centring)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.119[a]	.014	.003	4.24	1.29	.277[b]

a. Predictors: (Constant), R_MCxPOE_MC, OT
b. Dependent Variable: C_T

Note: R_MC = Resilience mean centered; POE_MC = POE mean centered; OT = POE total; C_T = Calling total

Table 4.24
Moderated regression analysis with mean centring for resilience

Model		Standardised Coefficients Beta	t	Sig
1.	(Constant)		18.861	.000
	R_MCxPOE_MC	.030	.401	.689
	OT	.117	1.584	.115

Note: R_MC = Resilience mean centered; POE_MC = POE mean centered; OT = POE total; C_T = Calling total

The model as a whole and therefore the interaction effect was non significant, and therefore Hypotheses 16 was not supported. The inclusion of the resilience*POE interaction effect in the regression model did not explain any unique variance in calling, not already explained by the other variables.

4.6.1 Calling as a moderator

For the second moderated regression, job satisfaction was entered as the dependent variable. The independent variables included were PSC and the product term created for the proposed interaction effect (PSC*calling). The following hypothesis was tested:

Hypothesis 17: Calling moderates the relationship between PSC and job Satisfaction

The results revealed (Table 4.25) that the model was significant (.000, $p < .05$), and accounted for 30% of the variance in job satisfaction.

Table 4.25
Model summary: Calling as moderator (mean centring)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.
1	.551[a]	.303	.296	18.64828	39.431	.000[b]

a. Dependent Variable: S_T[a]
b. Predictors: (Constant), P_T, C_MCxPSC_MC[b]

Note: S_T = Job satisfaction total; P_T = POE total; C_MC = Calling mean centered; PSC_MC = PSC mean centered

Table 4.26
Moderated regression analysis with mean centring for Calling

Model		Standardised Coefficients Beta	t	Sig
1.	(Constant)		16.782	.000
	C_MCxPSC_MC	-.118	-1.830	.069
	P_T	.570	8.866	.000

Note: S_T = Job satisfaction total; P_T = POE total; C_MC = Calling mean centered; PSC_MC = PSC mean centered

The results obtained from the moderated regression, Table 4.26, indicate that no support was found for the interaction effect at the $p < .05$ significance level. However, the interaction effect proved to be significant at the $p < .1$ significance level ($p = .069$; $p < .1$). This can be interpreted as weak evidence for the existence of the interaction effect.

Hence, weak evidence exist that the inclusion of the calling X PSC interaction effect in the regression model does explain some unique variance in job satisfaction, not already explained

by the other variables. The final ITQ conceptual model is presented in Figure 4.8. Significant pathways are indicated in red.
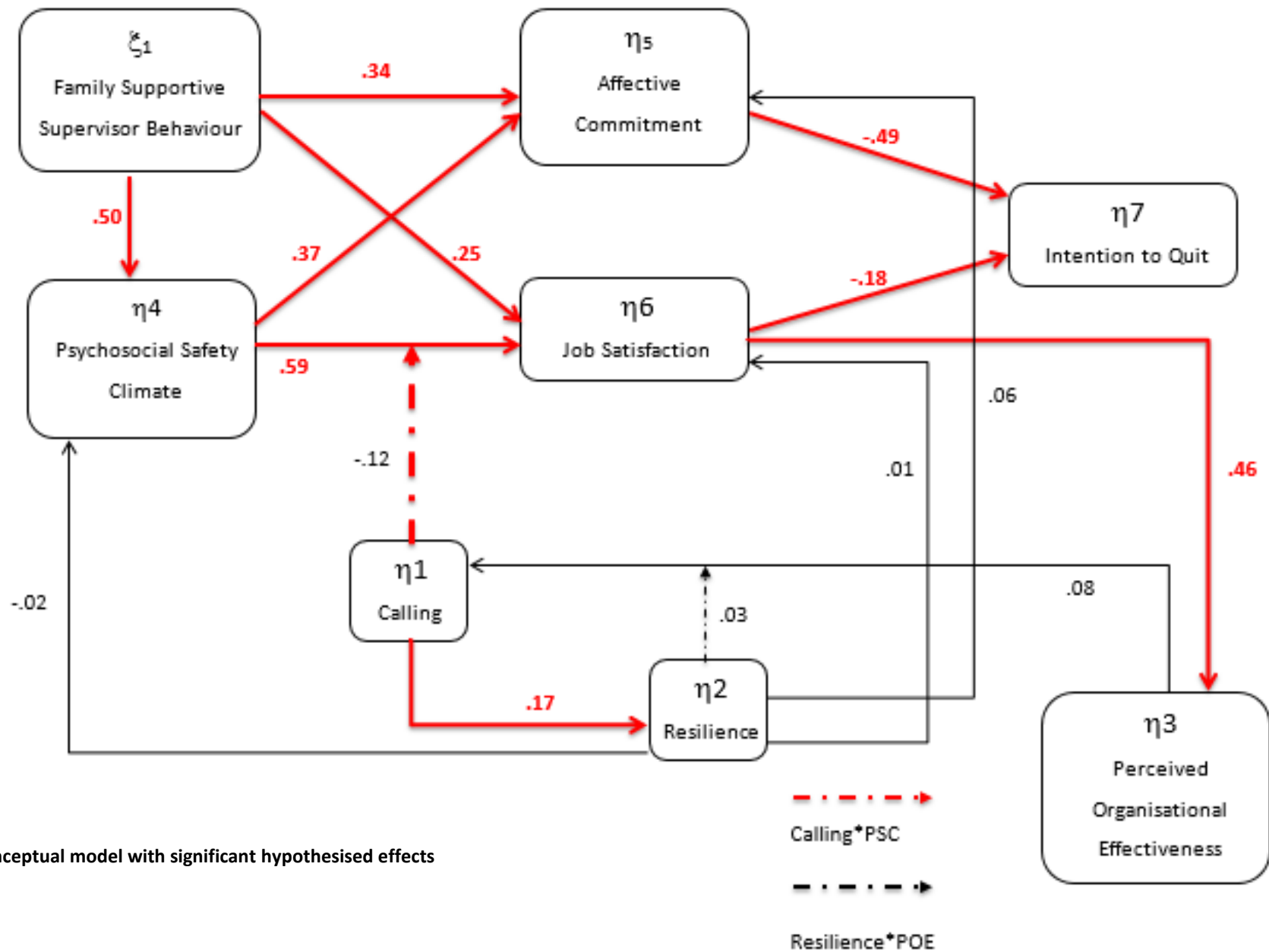
Figure 4.8. ITQ conceptual model with significant hypothesised effects

4.7 Summary

The current chapter reported the research results obtained from the data analyses with regards to the measurement and structural model fit. The chapter also reported on the statistical significance of the two interaction effects contained in the conceptual model. The following, and final chapter of this dissertation, will discuss in depth the research results, with particular focus on the structural model modifications and suggestions for future research. Consideration will also be given to methodological, as well as practical limitations of the study and recommendations for future research.

CHAPTER 5

DISCUSSION

5.1 Introduction

It is no longer a secret that nurses have particularly high turnover rates as compared to other occupations (van der Heijden et al., 2009), and that numerous factors inherent to the nature of the job are likely causes of this. Despite knowing what causes turnover, it nonetheless remains a problem for organisations such as hospitals, which necessitates continued research in this domain. Reduced nursing staff significantly affects organisational performance as well as the quality and nature of care received by patients (Pillay, 2009). What is more, thousands of Rands are invested every year in nurse training, and subsequently wasted, once nurses exit the profession (Pillay, 2009). A significant impact on organizations is the cost of re-advertising positions, and having to go through the entire recruitment, selection and induction processes.

In an attempt to better understand the ITQ of nurses, this study argued that studying nurse calling within this context, may provide a unique perspective on nurses' intentions to remain employed at care institutions, such as public hospitals. Hence, the calling construct was introduced into the study. The construct was hypothesised to be one of the main factors differentiating between nurses who intend to quit and those who don't; as the construct has been linked to numerous positive outcomes including engagement, commitment and more importantly less turnover intent (Steger et al., 2013).

In this study the research initiating question pondered the causes of variance in ITQ amongst nurses in the South African public sector, with specific reference to both individual and organisational variables functioning as demands and/or resources, with particular emphasis placed on the influence of calling orientations on ITQ. Subsequently a research objective of the study was to put forward a possible nomological network of factors influencing nurse ITQ as a means to better understand and conceptualise the psychological processes underlying nurse ITQ. Further emphasis was placed on locating the calling orientation construct within said network of individual and organisational resources, as well as to understand its influence on ITQ. Calling, as an individual resource, was conceptualised to have direct and indirect influences on variables such as resilience, psychosocial safety climate,

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perceived organizational effectiveness, affective commitment and job satisfaction. In addition, family supportive supervisor behaviour as an important organisational resource was also included in the model – although not directly being influenced by calling.

A comprehensive literature review (Chapter 2), consisting of plausible and systematic arguments, resulting from theorising in response to the research initiating question, was presented. An answer to the research initiating question ultimately resulted in the form of an nurse ITQ conceptual model (Figure 3.1). Chapter 3 delineated the required methodological approach used to empirically verify the newly generated conceptual model (empirically tested in two phases: SEM on the reduced structural model, and moderated regression for the interaction effects). Chapter 4 presented the results of the numerous statistical analyses performed to test the reduced structural model and interaction effects.

This chapter concludes and discusses the results derived for this study. This section also considers various inferences concerning the extent to which the theorising resulted in a credible account of the psychological processes underlying ITQ of nursing staff. The current chapter also reflects on the study's inherent limitations and implications for future research. The final section of this chapter considers the various practical/managerial implications, based on the structural model, informing implementation of interventions aimed at altering the behaviour of nurses in public hospitals. These managerial implications have been written to specifically inform recommendations to reduce the occurrence of ITQ, and ultimately turnover, of nurses in public hospitals in South Africa.

5.2 Results

The comprehensive results of the total body of statistical analyses performed to test the proposed conceptual model was presented in Chapter 4. The current section summarises both the measurement and structural model fit results, as well as the interaction effects, and is followed by a discussion interpreting the study results.

5.2.1 Evaluation of the nurse ITQ measurement model results

The measurement model goodness-of-fit statistics, namely the RMSEA, NNFI, CFI, and SRMR, indicated that the model obtained good fit (although no evidence of statistical close fit was

obtained). Overall, these results were interpreted to imply that the measurement model fitted the data well.

All of the indicators loaded significantly (p < .05) on the latent variables they were tasked to reflect. Of the 34 indicator variables, 19 returned high lambda-x parameter estimates, low measurement error parameter estimates and high R^2 values. Of the remaining 15 indicator variables, 10 (S_2, S_3, S_4, S_5, S_8, A_3, R2, R3, R4, C_1) returned lambda-x parameter estimates below .50 warranting concern. It is pertinent to note here that three of the six Resilience items, included as observed variables in the measurement model, emerged as less satisfactory indicators of the latent trait, resilience. This implies that half of the operationalization of the resilience construct was not as strong, and it is argued here that this could have influenced the reduced structural model results, related to this construct. Moreover, five of the eight Satisfaction parcels were also revealed as less successful operationalisations of the latent trait, Satisfaction. However, in this case the remaining indicators were parcels with relatively high loadings on the satisfaction trait and hence the lack of sufficient operationalization in this case may have not influenced the reduced structural model results as much, as may have been the case with the resilience variable. In general it was concluded that the majority of the indictor variables produced a reasonably uncontaminated reflection of the latent variables they were assigned to represent, rendering their operationalization, reasonably successful.

The final judgement on the fit of the measurement model, all preceding statistics considered, was that the measurement model obtained moderately good fit; rendering an unambiguous verdict on the fit of the structural model plausible. Evidently, the reduced structural model (Figure 3.2) was tested via SEM.

5.2.2 Evaluation of the nurse ITQ structural model results

Based on the reduced structural model goodness-of-fit statistics, namely the RMSEA, NNFI, CFI, and SRMR, the model achieved good fit (although not attaining statistical evidence of close fit). The model's EVCI and AIC also indicated good fit, while the CN, GFI and AGFI pointed to reasonable fit only. Taken together the totality of fit statistics was interpreted to suggest good model fit.

The gamma matrix indicated that all three hypothesised relationships between the one exogenous and various endogenous latent variables were statistically significant (p < .05). Support was therefore concluded for the influence of FSSB on PSC, FSSB on job satisfaction and FSSB on affective commitment.

Inspection of the beta matrix revealed six of the 10 hypothesised relationships between endogenous latent variables to be statistically significant (p < .05). Indicating that support was obtained for the influence of PSC on affective commitment, PSC on job satisfaction, affective commitment on ITQ, job satisfaction on ITQ, job satisfaction on POE, and calling on resilience. The influence of resilience on PSC, resilience on job satisfaction and resilience on affective commitment was not supported. However, it is argued there that a contributing factor to this result may have been the possible effect of the less successful operationalization of resilience construct, as discussed in the previous section. There was also a lack of support for the influence of POE on calling.

The results subsequently indicated that the structural model explained a mere 34.6% of the variance in ITQ (Table 4.23). The model, consequently, presented a somewhat unsatisfying attempt to explain variance in the latent variable of interest. To attain an improved conceptualization of the psychological processes underlying ITQ, the nomological network of factors influencing ITQ should be further explored for additional factors resulting in variance in ITQ. This implies a need for further research to elaborate on the structural model developed in this study. Such recommendations will be discussed in Section 5.4.

5.2.3 Evaluation of the moderated multiple regression results

As a means to investigate the two moderating effects contained within the conceptual model, two moderated multiple regression analyses, with mean centering, was performed. The first interaction effect concerned whether calling moderated the relationship between PSC and job satisfaction. It was argued that the underlying rationale for this interaction effect could be that nurses with calling orientations may experience higher levels of job satisfaction, despite reporting low PSC scores. The presence of calling would safeguard against low PSC scores, because the calling facilitates a type of career resilience and perseverance even in challenging career contexts, such as when lowered psychological safety is perceived to be

experienced. The implication is that low PSC scores do not necessarily imply low job satisfaction scores, given a certain standing on calling.

The second interaction effect concerned resilience as a moderator in the relationship between POE and calling. It was argued that resilient nurses would still perceive their callings being realised, despite experiencing their organizations as ineffective vehicles for giving effect to their callings. It was argued, therefore, that Resilience could operate as a buffer against low POE scores, in that low POE scores does not necessarily imply low calling scores. The opposite may also be true. That is, if nurses constantly perceive their organizations as ineffective in helping them realise their calling, the calling might diminish, even more so if they do not have that resilience capacity to bounce back or remain strong in the face of adversity.

The results of the moderated regressions revealed that only weak evidence (at the p < .1 significance level) in support of one of the interaction effects could be concluded. Resultantly no support was obtained for the proposed interaction effect represented by hypotheses 16; and only weak evidence in support of hypothesis 17 was obtained.

5.3 Interpretation of the Results

Nursing staff shortages is a well-known South African reality (Mokok, Oosthuizen & Ehlers, 2010), with an estimated 40% of professional nursing posts vacant in 2008 (Matala & van der Westhuizen, 2012). The cause of this is, according to Tshitangano (2013), significantly high nurse turnover. The adverse effects of high turnover and subsequent staff shortages are manifold, seemingly the most apparent including the nature of care received by patients. Cited as the most immediate predictor of actual turnover (Rhéaume et al., 2011), studying the antecedents and psychological processes underlying ITQ, could yield valuable insights into this phenomena.

ITQ is influenced by numerous individual and/or organisational factors, either serving to heighten or lower the turnover intent. In the introduction of this study, the Job Demands-Resources model (Bakker & Demerouti, 2007) was introduced to account for ITQ, as an extension of burnout, when demands outweigh resources (Görgens-Ekermans & Brand, 2012). Factors serving to lower the turnover intent were regarded as resources, and those

accounting for the opposite, considered demands. Resultantly, the nurse ITQ structural model results will be discussed at the hand of the Job Demands-Resources model, as well as the Broaden and Build theory, applied to resources instead of emotions. According to the Broaden and Build theory, positivity breeds positivity, in that the more positive emotions an individual experiences, the more they want to experience, thereby becoming healthier and happier (Frederickson & Joiner, 2002). Each nurse is argued to have a vocabulary like collection of resources, which with the addition of each new resource, becomes more than the sum of its parts. This includes the addition of resources, positive affect and/or attitudes. The more resources acquired, the more engaged the nurse will be. The opposite is also argued to hold true in that fewer resources, resulting in more demands, leads to less positive attitudes about work (e.g. affective commitment) and ultimately increased ITQ.

The resources included in the study were both personal (resilience, calling orientation) and organisational (FSSB, PSC) in nature. The demands on the other hand, although not explicitly tested in this study, were those considered inherent to the nursing occupation (e.g. unit size, shift work, workplace location, workload, work schedule, stress, management style). The resource factors included in the study aimed at gathering unique insights into the psychological processes affecting nurse ITQ, above the already well-known effects of job demands in this respect. The effect of these personal and organisational resources on ITQ were examined indirectly through their hypothesised influence on job related attitudes, such as job satisfaction and affective commitment. Job satisfaction and affective commitment were included in the structural model as mediators through which ITQ would be affected, based on a comprehensive body of literature linking the two variables to ITQ (Bobbio & Manganelli, 2015; Crede et al., 2007; Delobelle et al., 2010; De Gieter, Hofmans & Pepermans, 2011; Firth et al., 2004; Fisher, 2010; Lu et al., 2012; van der Heijden et al., 2009).

It was proposed that ITQ would be influenced indirectly by the resource variables (resilience, calling orientation, FSSB, and PSC) through job satisfaction and affective commitment. Partial support was found for this proposition as support was obtained for nine of the 15 hypotheses.

More specifically, the relationship between *job satisfaction* and ITQ (H_{03}) was found to be statistically significant with a path coefficient of -.18. It was argued that higher job satisfaction might reduce ITQ, due to a positive attitude towards the job, causing an individual to not want

to resign. Currie and Hill (2012) argued a similar point stating that when individuals are highly satisfied with their jobs, the job has a retaining power, causing the individual to remain in the organization. The findings of this study corroborated previous research by Crede et al., (2007), Delobelle et al., (2010), De Gieter, Hofmans and Pepermans, (2011), Fisher, (2010) and Lu et al., (2012), who all found evidence of the negative relationship between job satisfaction and ITQ.

The hypothesised relationship between affective commitment and ITQ (H_{04}) was supported, obtaining a path coefficient of -.49. Affective commitment per definition indicates an individual is attached to, and identifies with their organization. This provided support for the argument that affectively committed nurses will have lower ITQ (Bobbio & Manganelli, 2015). The reason for this strong association is the increased retention power of the organisation when employees are affectively committed to it.

FSSB, as an organisational resource factor, was argued to positively influence both job satisfaction (H_{05}) and affective commitment (H_{06}). It was argued that especially female nurses with family responsibilities, experience increased tension between balancing work and family duties. If nurses, however, experience their supervisors as caring about their family needs, they may develop additional positive perceptions about the work environment, manifested in the form of job satisfaction. Moreover, the experience of FSSB could trigger affective commitment from nurses, in that the employee reciprocates the commitment perceived from the organization or line manager, in accordance with SET (Cropanzano & Mitchell, 2005), based on the FSSB. Both relationships were found to be statistically significant, with a path coefficient of .25 between FSSB and satisfaction, and a coefficient of .34 between FSSB and affective commitment. This is in line with research from Wayne et al. (2013) that reported support for the proposition that supportive supervision related positively to employee's perception of support for family responsibilities, whilst also increasing satisfaction and commitment, and decreasing ITQ.

As hypothesised, PSC, an organisational resource, emerged as a statistically significant predictor of both job satisfaction (H_{08}) and affective commitment (H_{09}), providing support for the theoretical arguments put forward in the literature study of this thesis. For example, regarding job satisfaction it was argued that PSC as a resource provided by management,

leads to the creation of other resources for employees. According to Bakker and Demerouti (2007) sufficient resources result in engagement and positive work outcomes, one of which Dollard (2012) confirmed to be job satisfaction. The current study supported this relationship with a path coefficient of .59. In terms of affective commitment, it was argued that when employees perceive their organisational climate as psychosocially safe, they are also more likely to perceive that the organization is committed to, and cares for, their well-being. This in turn causes a reciprocal reaction whereby the employee feels committed to the organization. The current study supported this hypothesis with a path coefficient of .37.

A statistically significant relationship was also found between FSSB and PSC (H_{07}) with a path coefficient of .50. This result corroborated the arguments put forward in this study about the nature of the association between these two constructs. It was argued that a) FSSB, as a specific type of management support, relates closely to the senior management support and commitment dimension of PSC, and b) the experience of FSSB cause employees to feel supported, thereby perceiving themselves as operating in a safe work environment, stimulating PSC.

The resilience construct, as an individual factor, is considered a positive psychological resource capacity, operating as a buffer against negative workplace events, climates or attitudes. Based on this it was argued that resilience might potentially safeguard against low job satisfaction (H_{010}) and affective commitment (H_{011}) scores, and in that manner potentially result in less ITQ. However, both relationships were found to be insignificant. This outcome however, could potentially be attributed to the rather problematic measurement of the resilience construct, in the study, as discussed in Section 3.11.7. Incidentally the resilience and optimism subscales of the PCQ-24 has been shown to be less internally consistent than the other subscales (Avey, Luthans & Youssef, 2010; Luthans, Avolio, Avey & Norman, 2007). Similar results were obtained in another South African study, by Görgens-Ekermans and Herbert (2013), where the resilience subscale also performed poorly. Another alternative explanation for the two hypotheses being rejected could be that the relationships between the variables were oversimplified. Section 5.4 discusses various recommendations for future research, related to the measurement of resilience as well as the location of the construct in the structural model.

A subsequent argument concerning resilience was formulated in relation to PSC. Here it was hypothesised (H_{012}) that for resilient employees, well-being interventions of lesser intensity and/ or frequency would foster PSC. The reason underlying this assumption was that resilient employees would more easily perceive a climate as psychosocially safe because they are less severely affected by negative workplace events. However, with an insignificant path coefficient, this relationship was not supported by the data in this study.

The only significant relationship concerning resilience was found in relation to the calling construct, where calling was hypothesised to positively influence resilience (H_{013}). It was argued that employees pursuing callings will remain motivated despite adverse work environments, because calling orientations facilitate career resilience. Bakker and Demerouti (2007) ascribe this effect to dedication and perseverance, by-products of engagement, as a result of experiencing meaningful work i.e. a calling. With a path coefficient of .17, this hypothesis was supported.

The POE construct was introduced as a subjective feedback mechanism, assessing the degree to which nurses perceive their organisation as successful in helping them realise their callings. POE was hypothesised (H_{012}) to influence calling orientation in the sense that it forms part of the continuous re-evaluation process, inherent in calling orientations. It was argued that if nurses perceive their organisation as an effective health care provider, they in turn would consider themselves as effective in realising their callings. Unfortunately, no empirical support for this relationship emerged from the data.

The final hypothesis (H_{013}) included in the model, concerned the relationship between satisfaction and POE. According to Lu et al. (2005), job satisfaction also depends on whether expectations about the job are met. Therefore, it was argued that if a nurse pursuing a calling expects the job to be meaningful, and meaningfulness is experienced, that nurse will be satisfied, not only with the job but also because the calling is being realised. What is more, because the calling is experienced as being realised, the nurse considers the organisation as effective. With a path coefficient of .46, this relationship was found to be statistically significant.

5.3.1 Moderating effects

The conceptual model included two interaction/moderating effects, assessed by means of moderated multiple regression analyses with mean centering.

Resilience was hypothesised (H_{014}) to moderate the relationship between POE and calling. It was argued that resilient nurses would continue experiencing their callings as being realised, despite experiencing their organizations as ineffective means for realising the calling. Resilience, as a psychological resource capacity, would act as a protecting buffer, in that low POE scores do not necessarily imply low calling scores. With $p > .05$ (table 4.24) the model was not significant, and subsequently, Hypothesis 14 had to be rejected.

Hypothesis 15 postulated that calling would moderate the relationship between PSC and job satisfaction. It was argued that nurses with a calling orientation, could still experience and report higher levels of job satisfaction, despite reporting low PSC. Henceforth, it is argued that calling orientation would safeguard an employee against low POE scores in that low POE scores do not necessarily imply low satisfaction, because callings play an important role in career pursuit, especially within challenging career contexts – such as nurses generally experience. The interaction effect was not supported at the $p < .05$ significance level. The effect, however, proved to be significant at the $p < .1$ significance level ($p = .069$; $p < .1$). Resultantly, weak evidence in support of H_{015} was concluded.

5.4 Recommendations for Future Research

The ITQ structural and conceptual models were developed with the aim of improving our understanding of the complex nomological network of factors underlying the psychological processes that regulate the ITQ of nursing staff. However, the nurse ITQ model can at best only be considered one approximation of the nomological factor structure underlying the phenomena. An important point to consider, in the evaluation of the study, is the degree to which the model may have been designated incorrectly. The empirical evidence, situated in the model modification indices for the reduced structural model, could shed valuable insight into the possibility that a) certain variables and/or pathways in the model should not have been included, and b) that other meaningful paths/variables should have been included. Both these categories of modifications have the potential to account for additional variance in the

latent variable of interest (ITQ), not accounted for by the current results. The current section considers recommendations for future research based on the findings of this study, concerning the addition or removal of certain paths; based on sound theoretical reasons underlying such modifications.

According to Van Heerden (2013) deciding on the removal of insignificant pathways depend on how convincing/strong the supporting theoretical argument is. The SEM results revealed that four path coefficient estimates in the structural model were statistically insignificant ($p < .05$).

Three of the four insignificant paths were associated with the influence of resilience on other variables. It is argued here that because inclusion of the paths were based on sound theoretically supported arguments, the insignificance of the pathways could be due to the instrument utilised to measure resilience. As discussed in Section 5.3 the resilience subscale of the PCQ-24 has been known to lead to sometimes lead to questionable results. Upon inspection of the instrument, in this study, one of the items (R2) did not fare well in the item analysis, and the resilience measurement model did not fit the data well. Based on this it is argued that eliminating these pathways would be a premature action. A more reasonable point of departure would be to retest these pathways employing a different instrument in future studies. Another possibility could include examining how resilience, as a personal resource, influences the perception of organisational resources such as FSSB and PSC. Perhaps reconceptualising resilience as a moderator in the relationships between job satisfaction and affective commitment and ITQ respectively, would prove more fruitful.

A lack of support was also found for the relationship between POE and calling. This result was perplexing for a number of reasons, namely: a) theoretically POE speaks to the continuous evaluation process inherent in calling orientations, b) inclusion of POE in the model stemmed from the defining characteristics of calling orientation definitions, and c) prior to eliminating item O7 (Section 3.11.10.3) the nurse ITQ reduced structural model was fitted with SEM (and all nine initial POE items were included in item parcels) and the results of this analysis showed that the relationship between POE and calling was significant. However, after removing item O7 in fitting the final structural model, the pathway ceased to be significant. Based on the above it is argued that the pathway should be retained and retested in subsequent studies.

The preceding recommendations resulted from the statistical findings concerning the hypothesised paths included in the reduced nurse ITQ structural model. Additionally, commenting on paths, that if included would improve model fit, is also needed.

The modification indices for the gamma matrix (table 4.15) indicated that one additional path between exogenous and endogenous latent variables, not currently included, would improve the fit of the model. This includes a direct path from FSSB to ITQ. FSSB was initially formulated to influence ITQ by means of job satisfaction and commitment; which was confirmed. However, the relationship appears to be so significant that an indirect relationship alone is not sufficient to account for the influence of FSSB on one of the main study variables. FSSB is arguably such a strong predictor of ITQ that it directly influences nurses' decisions regarding termination of employment, as suggested by the modification index. The reason for this could potentially be the unique make-up of the nursing sample (mainly female) and that many experience work-family conflict on a daily basis, as approximately 89% of the sample reported having at least one or more dependents.

The modification indices for the beta matrix (table 4.16) indicated that the addition of two paths between endogenous latent variables, not currently included, would improve the fit of the model. These included reciprocal pathways from a) affective commitment to satisfaction and from b) satisfaction to affective commitment.

Based on this it is possible to comprehend how the variables, both defined to some extent as affective attitudinal states, would be related in some or other way. For example, job satisfaction is defined by Lu et al. (2012) as an affective association towards one's work/ job, whilst affective commitment is defined as an individual's affective association towards one's workplace/ organization (Allen & Mayer, 1990). It seems unlikely that a highly satisfied employee would want to exit the organization, because the job satisfaction transforms into job retention power, translating to affective commitment to the organization. In support of this, DeConick and Bachmann (2011) found job satisfaction to account for organization commitment. Similarly job satisfaction results from numerous factors, be it either the nature of, aspects of, expectations of or attitudes towards the job. Based on this, it seems reasonable to assume that if an employee is highly committed to the organization, be it in total or affectively, that employee will also be satisfied, in totality, or with certain job aspects. The

relationship between job satisfaction and organisational commitment has long been debated in literature, with specific reference to reciprocity (Lance, 1991; Mathieu, 1991; Farkas &Tetrick, 1989) and origin. Some authors are of the opinion that commitment stems from satisfaction (Wallace, 1995; Lincoln & Kalleberg, 1990; Mowday et al., 1982).

This reciprocal relationship found between the two variables, in the current study, could subsequently have been expected, and makes theoretical sense. The relationship is also a useful example of how positive attitudinal states lead to additional positive outcomes, based on the Broaden and Build theory. For example, the employee who is satisfied, enjoys their work, and experiences positive attitudinal states in relation to the job (be it specific aspects or the job as a whole) will be a "happy" employee. This happiness will then begin to be associated not only with the work itself but with the organization, co-workers, and/or a supervisor. As a result of the employee being satisfied with the above, they will begin to foster commitment, more specifically affective commitment, based on the numerous positive affective attitudes towards the work and the organization. Additionally the satisfaction, together with the affective commitment could in turn result in engagement.

5.5 Study Limitations

The first major limitation was the exclusive use of self-report instruments. Self-report measures are those that require a subject to "report or describe his or her feelings, attitudes, beliefs, values, opinions, or physical or mental state" (Murphy & Davidshofer, 2005, p.7). While useful, self-report instruments do have disadvantages including, but not limited to, social desirability, extreme responding and acquiescent responding (Paulhus & Vazire, 2007). Social desirability refers to responding in a manner in which the respondent feels is acceptable to other people (Bless, Higson-Smith & Sithole, 2013). According to Paulhus and Vazire (2007) social desirability can take place consciously through impression management, or unconsciously through self-deception. On the other hand, acquiescent responders are those that show a tendency to agree with statements, while not regarding the content of the statements; whereas extreme responders are those that show a tendency to pick the extreme choice on rating scales (Paulhus & Vazire, 2007). The problem with these types of responses

is that they are a form of response bias, which interferes with the validity of the given response.

The second limitation of the study could be the issue of common method variance (CMV) that influence the results. According to Reio (2010, p. 406) CMV refers to "variance attributable to measurement method rather than to the construct or constructs purportedly represented by the measures". The author further states that CMV is of concern as it may increase or decrease correlations among the variables in a study, due to the common method used for data collection. CMV then is a potential source of measurement error, which poses a threat to validity.

The structural model was developed for the purpose of explaining variance in ITQ of nursing staff in the South African public health care sector. The model was, however, tested on a non-probability, convenience sample of public sector nurses employed in two public hospitals, in the Northern and Western Cape provinces. Resultantly, the study cannot be regarded as representative of South African public health sector nurses. Therefore generalising the study findings to the target population should be done with reservation.

Another limitation pertaining to the study sample, concerns the sample size. Due to a very low response rate of 55%, only 184 valid response were obtained. The use of SEM requires large sample sizes to produce reliable estimates according to Hair et al. (2006). Sample sizes of N ≥ 200 is typically satisfactory for the purpose of performing SEM, so as to ensure that the model parameters to be estimated does not exceed sample size (Babbie & Mouton, 2001; Hair et al., 2006). Based on these guidelines, the current sample size could be considered a limitation of the study.

Another possible limitation of the study concerns the demographics of the sample, and the questionnaire characteristics. All questionnaires were presented in English, resulting in the majority of the sample (81.5%) having to complete questionnaires in their second language. The implication is that second language proficiency could potentially have negatively affected the completion of the questionnaires. Limited proficiency in English, as the second language, could have caused participants to struggle with completing some questions and or questionnaire sections, thereby potentially affecting response format and actual ratings. According to Foxcroft (2004) when material is administered to participants in a language in

which they are not competent, it is difficult to determine whether the outcome of the questionnaire is a result of language difficulties or actual levels of the construct being assessed.

5.6 Practical Implications

The current study investigated the influence of various individual and organisational factors on reducing turnover intent, as an extension of burnout, when demands outweigh resources, in public sector nursing staff in South Africa. Evidently the South African public health sector is plagued by a number of challenges, of which perhaps the most prominent a lack of funding (Chopra et al., 2009; Coovaida et al., 2009). Based on this the dilemma is clear: retaining nurses by acquiring more resources with limited financial investment. The following section will subsequently explore some managerial implications, based on the results of the current study.

Of the four resources introduced (FSSB, PSC, calling and resilience), only FSSB and PSC emerged as significantly related to lowering nurse ITQ through their influence on job satisfaction and affective commitment. Based on this it is argued that public hospitals could implement interventions aimed at increasing these organisational resources

FSSB is defined as behaviours exhibited by supervisors that are supportive of employees' family responsibilities (which may or may not cause conflict between the work and family domains) and consists of the dimensions of emotional support, instrumental support, role-modeling behaviours and creative work-family management (Hammer at al., 2007). The first dimension, emotional support, is exhibited when supervisors listen to employee concerns and show care. Interventions aimed at assisting supervisors in acquiring active listening skills and displaying empathy could be implemented. Another dimension of FSSB, role modelling behaviours, concern supervisors role modelling effective behaviours related to integrating work and family. Here management can encourage supervisors to actively talk about and demonstrate behaviours useful in attaining positive work-family outcomes. More specifically, demonstrating how work-family issues can be dealt with constructively, exactly because it is such a prominent dilemma facing nursing staff.

According to Straub (2012) the following are all examples of FSSB that can be exhibited by management: eliminating negative career consequences associated with devoting time to family related needs; promoting the availability of benefits and raising work–life balance issues in internal meetings; encouraging employees to use work–family practices and actively judging employee performance on the basis of output; and not making long hours or unrealistic work schedules a prerequisite for promotion.

PSC is defined as policies, practices and procedures for the protection of worker psychological health and safety, and relates to exemption from psychological and social risk or harm (Dollard & Bakker, 2010). Interventions aimed at increasing PSC should focus on communicating to employees that their psychological health and safety are management priorities. Annual psychological safety information sessions, as well as during induction, may increase PSC perceptions amongst staff. This can also be substantiated by EAP posters in nursing commons as well as regular discussions on the topic during shift handovers by supervisors. Regular communication about issues affecting psychological safety should also be implemented, to raise not only awareness of the issues, but also awareness amongst employees that management is paying attention. Finally as far as possible, employee focus groups should engage on the topic of improving psychological health, and findings should be reported to management.

It is important to note that implementing these interventions on supervisory levels only, will be less successful. Especially concerning policy and procedural decisions which have to be implemented correctly, and need to be prioritised at hospital management levels. It is crucial that these interventions do not come across as just another trend management wants to implement, but that buy-in is obtained on all organisational levels; so that the entire organization can collectively be moved in a direction where health and well-being becomes an important and present element in the organisational culture. One of the more beneficial aspects of these interventions are that they can be implemented with relatively little, to no financial investment, on the part of management.

5.7 Conclusion

The purpose of the study was to put forward a possible nomological network of factors influencing nurse ITQ as a means to better understand and conceptualise the psychological processes underlying nurse ITQ. Further emphasis was placed on locating the calling orientation construct within said network of individual and organisational resources, as well as to understand its influence on ITQ. Calling, as an individual resource, was conceptualised to have direct and indirect influences on variables such as resilience, psychosocial safety climate, perceived organizational effectiveness, affective commitment and job satisfaction. In addition, family supportive supervisor behaviour as an important organisational resource was also included in the model – although not directly being influenced by calling.

The underlying theoretical framework for the study was the Job Demands Resources model, highlighting the dynamic interplay between demands and resources. The factors included in the study were chosen based on their conceptualisation as both individual and organisational resources.

PSC and FSSB were the only factors found to play a significant role in reducing nurse ITQ through their influence on job satisfaction and affective commitment. Additionally, although only weak evidence in support of the relationship was obtained, calling emerged as a moderator in the relationship between PSC on job satisfaction and in turn ITQ.

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APPENDIX A

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
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Approval Notice

New Application

29-Mar-2016
Du Plessis, Mienke M

Proposal #: SU-HSD-001917
Title: Developing a structural model of intention to quit for nurses in the public sector in South Africa

Dear Miss Mienke Du Plessis,

Your **New Application** received on **03-Mar-2016**, was reviewed
Please note the following information about your approved research proposal:

Proposal Approval Period: **24-Mar-2016 -23-Mar-2017**

General comments:
The researcher is reminded to forward copies of proof of permission from participating institutions to the REC once obtained.

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number (SU-HSD-001917**) on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032. We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 218089183.

Included Documents:
DESC Report
REC: Humanities New Application

Sincerely,

Clarissa Graham
REC Coordinator
Research Ethics Committee: Human Research (Humanities)

APPENDIX B

ORGANISATIONAL CONSENT FORM

Hereby I, _____ (*State position in organisation*) give

<u>Mienke du Plessis</u> (Master's student at the University of Stellenbosch) permission to

distribute questionnaires comprising the relevant measures for the purpose of generating

data for her master's thesis (*Developing a structural model of intention to quit for nurses in*

the public sector in South Africa) within _____. The purpose of the

study has been explained as well as the manner in which the data generated will be used.

Ms / Mr _____NA_____ (employee at _____NA_____) will be assisting in terms of

the handing out of the questionnaires. A coding system will be used to ensure the anonymity

of the participants, and to allow the researcher the opportunity to extend second or third

invitations for participation (to possible respondents that did not respond in the first round).

Participating nurses will be completing the following 8 surveys:

1. CVQ Calling and Vocation Questionnaire
2. ACS Affective Commitment Scale
3. Family Supportive Supervisor Behaviour Scale
4. PSC-12 Psychosocial Safety Climate
5. PCQ-24 Resilience
6. NSS Nurse Satisfaction Scale
7. ITQ Intention to Quit
8. Perceived Organisational Effectiveness Questionnaire

Signed (please print name and sign): _____

Position in the participating organisation:_____

Date: _____

APPENDIX C

Participant number

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Project: Investigating the mediating and moderating factors of the relationship between calling orientations and intention to quit amongst public health sector nurses.

You are asked to participate in a research study conducted by Mienke du Plessis (Masters student, Mcom) and Prof. Gina Gorgens-Ekermans, from the Department of Industrial Psychology at Stellenbosch University. The results of this study will contribute to the thesis of Mienke du Plessis. You were selected as a possible participant in this study because you are a registered nurse employed in the public health sector i.e. state hospital.

1. PURPOSE OF THE STUDY

The aim of the study is to get a better understanding of the various factors that cause nurses with calling orientations, working in the public health sector in South Africa, to want to quit their jobs. The aim is to understand these factors and how they influence intention to quit, so as so possibly design intervention strategies directed at helping both the nurse and the hospital by lowering intention to quit rates.

2. PROCEDURES

If you volunteer to participate in this study, we will ask you to complete a composite questionnaire that would take approximately 30 – 45 minutes to complete. The results of the questionnaires will serve as the data for the study from which the structural model will be tested.

3. POTENTIAL RISKS AND DISCOMFORTS

Given that you (the nurse) will rate your own intention to quit, perception of family supportive supervisor behaviour and perceived organisational effectiveness, there is a slight risk of discomfort to you due to the self-reflection that might take place during completion of the questionnaire. In addition, your satisfaction with the support you receive from supervisors and your feelings of wanting to quit your job may be reflected in your ratings of family supportive supervisor behaviour and intention to quit. However, please note that these ratings will be completely confidential and anonymous (a coding system will be used to protect your identity) and no information will be shared with any decision makers in the participating company. The data will only be utilised for research purposes and will not in any way inform any performance management decisions related to yourself or your manager / supervisor.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

Participation in this study will not amount to any direct benefits to you. However, the development of the intention to quit structural model may result in the development of interventions aimed at improving certain working conditions. Thus, this research could potentially be very valuable for your occupational category.

5. PAYMENT FOR PARTICIPATION

Neither you or your place of employment will receive any payment for participating in this research study. However, a small token of appreciation will be provided if you complete the questionnaire. This will be in the form of an airtime voucher of approximately R30. If you wish to receive such a voucher as a token of our appreciation, you will have to provide your cellphone number and network provider name to us.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by restricting access to the data to the researchers (Mienke du Plessis and Prof. Gina Görgens-Ekermans), by storing the data on a password protected computer, and by only reporting aggregate statistics of the sample. The results of the study will be distributed in an unrestricted thesis. A summary of the findings (if of value) will be presented to management of all the participant hospitals. Nowhere during the reporting of results will the identity of participants be made known.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact Mienke du Plessis (email: 15699420@sun.ac.za ; cell: 072 269 4433) or Prof Gina Görgens-Ekermans (ekermans@sun.ac.za).

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, Stellenbosch University.

CONSENT FORM (please tick the appropriate boxes):

I hereby consent to voluntarily participate in this study. I agree that my data may be integrated into a summary of the results of all the questionnaires without identifying me personally.

I don't want to participate in this study.

I consent to give my cell phone number and name of my network provider in order to receive the R30 airtime voucher as a token of appreciation for my participation.

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Cell nr

Cell phone network

156

APPENDIX D

POE questionnaire

|	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree
1. I think the hospital unit I work for provides successful health care to patients.	1	2	3	4	5
2. I think the hospital unit I work for helps make the world a better place by successfully helping patients in need.	1	2	3	4	5
3. The hospital unit I work for serves the community well, and makes a difference.	1	2	3	4	5
4. I feel the hospital unit I work for helps me provide quality care to patients.	1	2	3	4	5
5. In the hospital unit I work for I think patients with a good chance of survival often don't die due to the good care received from hospital staff.	1	2	3	4	5
6. In the hospital unit I work for, patients usually recover more quickly than they should, due to the good quality care they receive.	1	2	3	4	5
7. I think my work contributes to the overall success of the hospital unit I work for.	1	2	3	4	5
8. I feel the work I do has an impact on the overall success of the hospital unit I work for.	1	2	3	4	5
9. At the end of my workday, I feel satisfied that I helped someone.	1	2	3	4	5

APPENDIX E
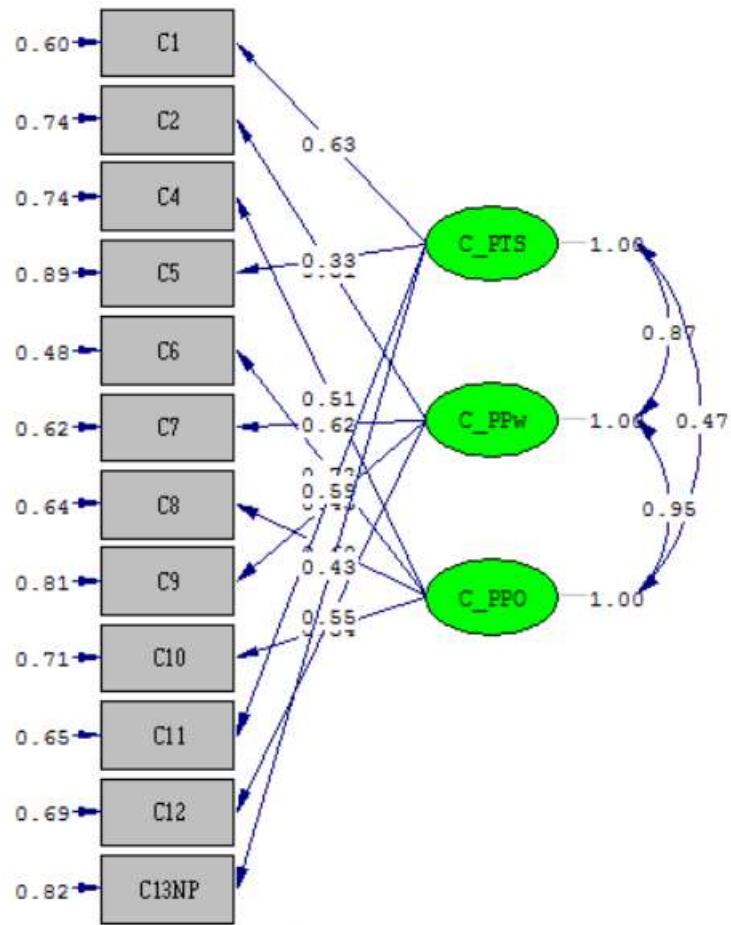
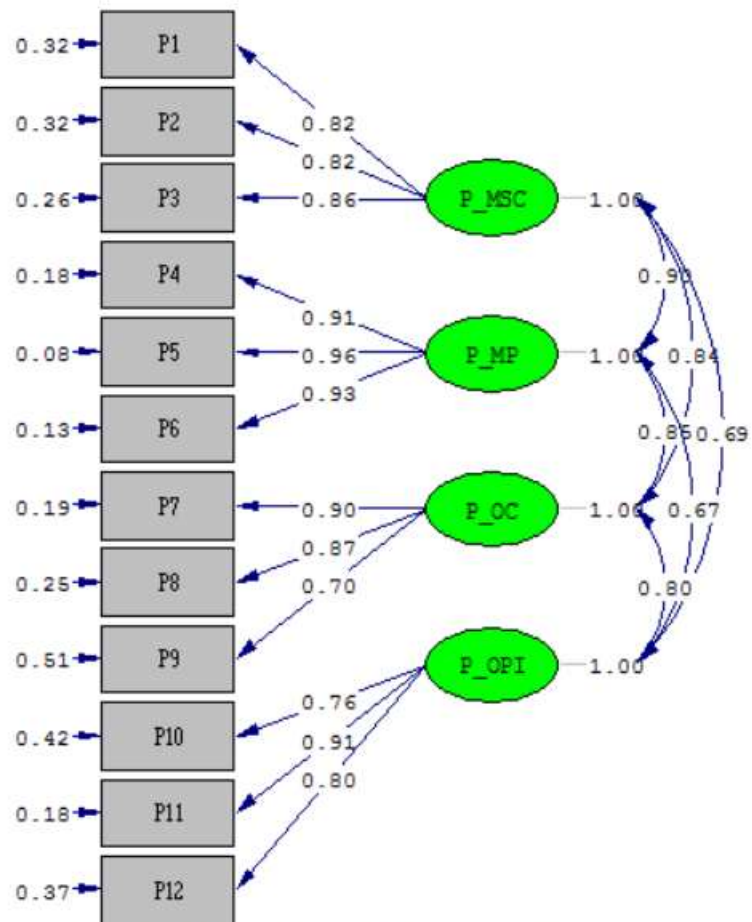Chi-Square=95.96, df=51, P-value=0.00014, RMSEA=0.069

APPENDIX F

159
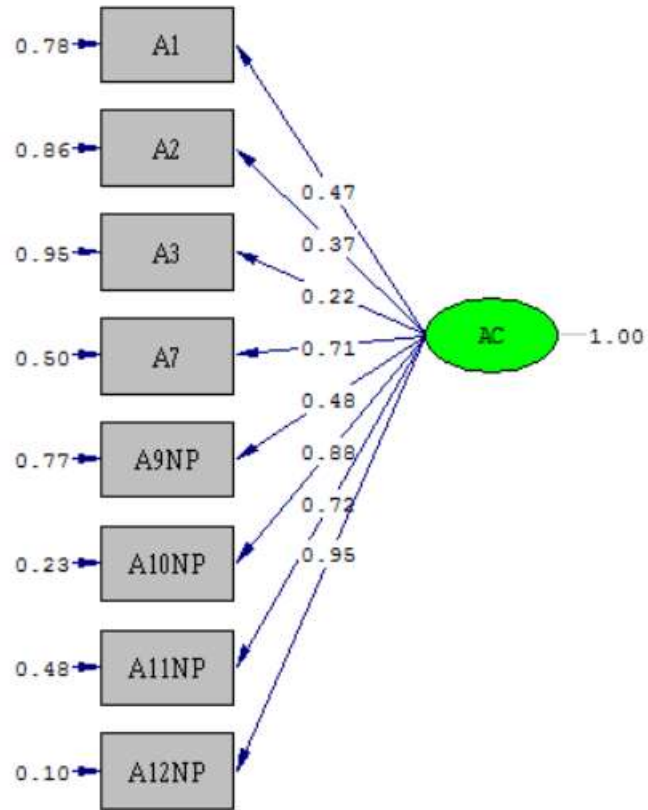
Chi-Square=49.04, df=20, P-value=0.00030, RMSEA=0.089
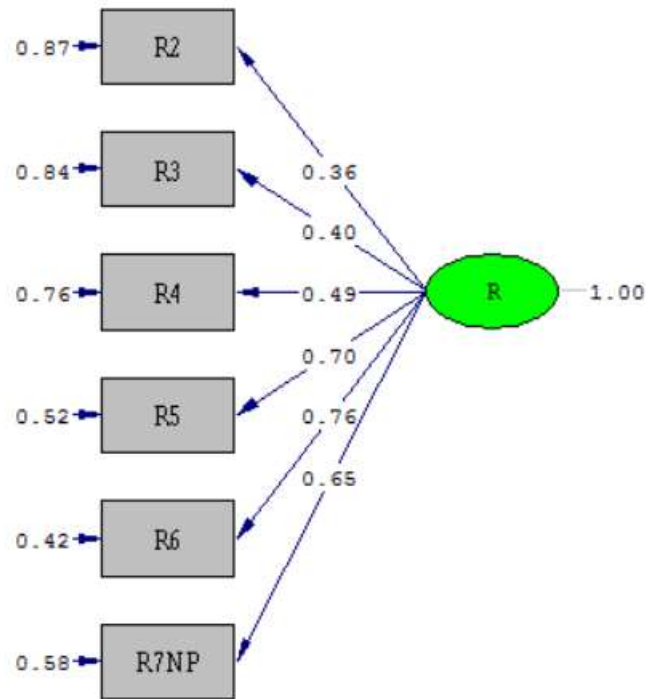
APPENDIX G
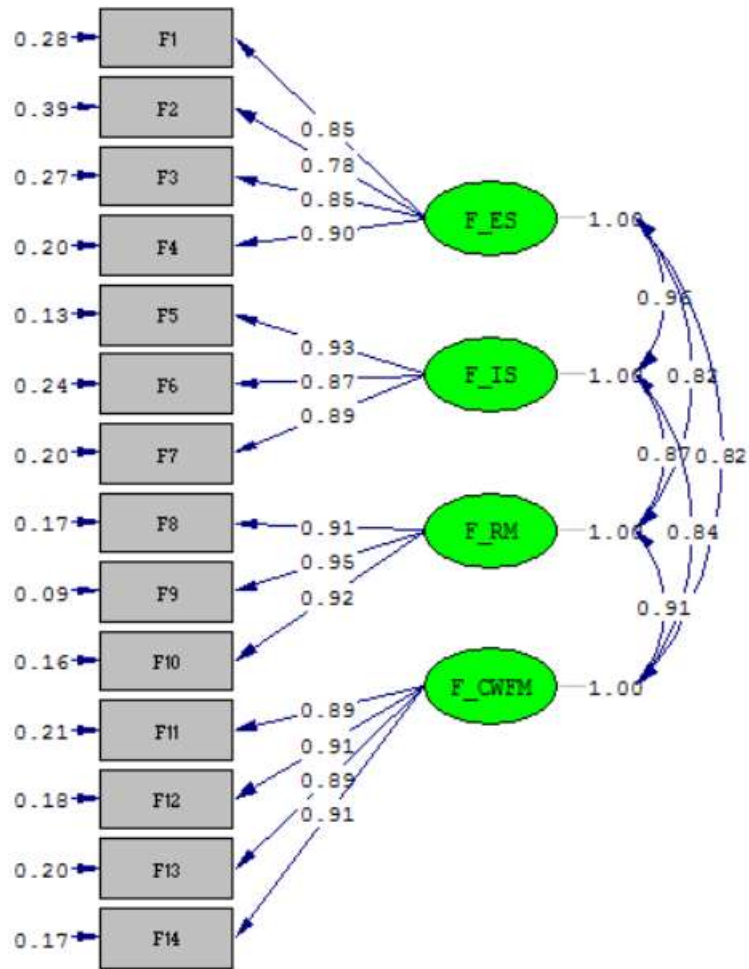
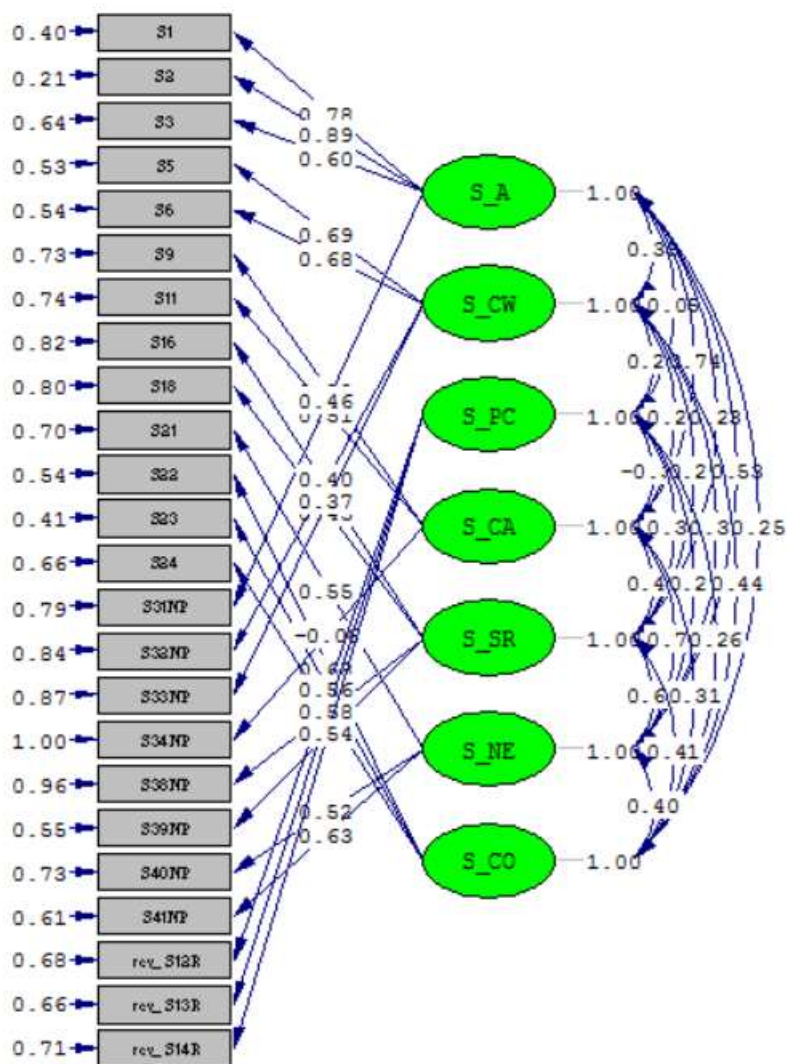Chi-Square=148.61, df=71, P-value=0.00000, RMSEA=0.077

APPENDIX H

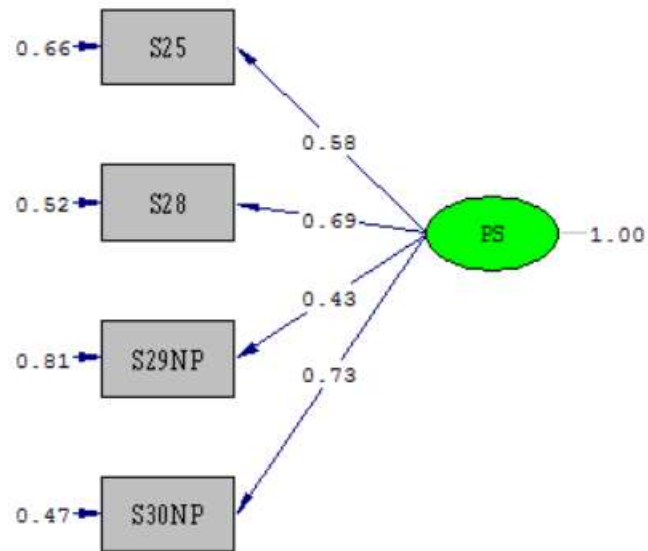Chi-Square=129.80, df=48, P-value=0.00000, RMSEA=0.096

APPENDIX I

Chi-Square=26.27, df=9, P-value=0.00185, RMSEA=0.102
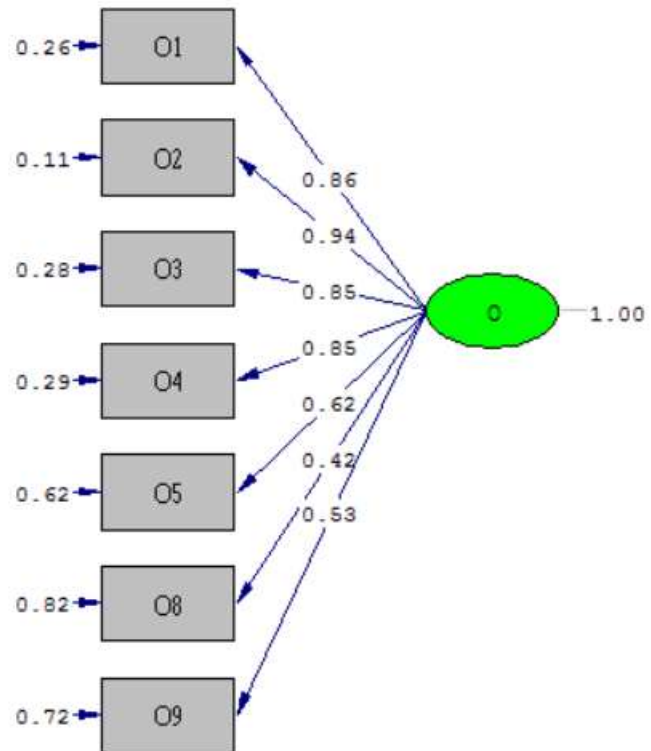
APPENDIX J

163

Chi-Square=327.06, df=231, P-value=0.00003, RMSEA=0.048

APPENDIX K

Chi-Square=6.08, df=2, P-value=0.04776, RMSEA=0.106

APPENDIX L

Chi-Square=21.55, df=14, P-value=0.08826, RMSEA=0.054