CONFIRMATORY FACTOR ANALYSIS OF THE PSYCHOLOGICAL OWNERSHIP QUESTIONNAIRE FOR THE SOUTH AFRICAN CONTEXT

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DECLARATION

I, Carina Alberts, declare that “Confirmatory Factor Analysis of the Psychological Ownership Questionnaire for the South African Context”, which I hereby submit for the Masters Degree in Human Resource Management at the University of Pretoria is my own work and that the relevant references are shown in the reference list. This study has also not been submitted by me for a degree at this or any other tertiary institution.

I further declare that this thesis has been language edited by Leandri van der Elst who is an approved language editor.

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Carina Alberts Date

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ABSTRACT

Feelings of possession and ownership are part of the natural human condition. The self includes everything that a person can call his/her own, both material and non-material. Feelings of ownership influence a person's attitudes, motivation and behaviour. Both ownership and psychological ownership are rooted in a person's feelings of possession. There are many results from managing psychological ownership, but two specific ones are organizational effectiveness and positive behavioural effects.

The purpose of this study was to investigate the construct validity of the psychological ownership questionnaire within the South African context. If psychological ownership can be measured, it will assist in the process of managing organisational change and commitment. The psychological ownership questionnaire was applied to a group of randomly selected employees to determine construct validity. This questionnaire assesses promotive and preventative psychological ownership – two theoretically derived forms of psychological ownership. These two forms of ownership have five factors namely territoriality, efficacy, accountability, belongingness and self-identity. The questionnaire was validated using data from a professional, skilled and semi-skilled sample (n=145) in order to prove construct validity trough confirmatory factor analysis. This study confirmed the 5-factor model by means of factor analysis. However, the correlation between self-identity and belongingness was extremely high and these two factors were merged to produce a 4-factor model. It is recommended that psychological ownership in the South African context is measured using the 5-factor model. Although construct validity was proven in this study, further research of construct validation in different contexts is encouraged to strengthen the current theory.

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

Academics, ranging from psychologists and philosophers to child development specialists, are of opinion that feelings of possession and ownership are part of the natural human condition (Pierce, O'Driscoll & Coghlan, 2004, p. 508). Van Dyne and Pierce (2004, p. 440) argue that feelings of ownership have an influence on a person's attitudes, motivation and behaviour. Psychological ownership explains work related attitudes and behaviours and is invaluable to the industrial psychologist, who has to align the employee and the organisation.

Psychological ownership has attracted scholars from various disciplines to investigate the origin of possessive tendencies in psychology (Pierce, Kostova & Dirks, 2001, p. 2). Fredrickson and Hobfoll in (Pierce et al., 2001, p.2) are of the opinion that the emergence of psychological ownership can be attributed to genetic factors. Other scholars explain this behaviour as a product of socialisation practices of a specific society. There are also some scholars who combine these two perspectives and believe that both biological tendencies and social practices contribute to the state of psychological ownership (Pierce et al., 2001, p. 2). Thus, literature presents various understandings of psychological ownership, and these are used and integrated to develop a conceptual perspective on psychological ownership.

Pierce et al. (2001, p. 2) start by defining the construct of psychological ownership as the emotions commonly associated with a sense of ownership. Psychological ownership centres around what the individual feels is theirs and, thus, the conceptual core is the sense of possession experienced by the individual. This sense of possession is reflected in a relationship between the individual and the object, whether the object is material or non-material in nature. The relationship is established through the close connection between the individual and the object.

The state of psychological ownership is complex in nature and comprises an emotional as well as a cognitive core that must be understood and integrated (Pierce et al., 2001, p. 2).

Pierce (cited VandeWalle, Van Dyne & Kostova, 1995, p. 211) suggested that psychological ownership can be associated with higher levels of performance but also included the performance of extra-role behaviour. Extra-role behaviour is described by VandeWalle et al. (1995, p. 212) as discretionary behaviour of an employee which is not formally rewarded by the organisation as opposed to in-role behaviour, which is influenced by standard operating procedures and group norms. VandeWalle et al. (1995, p. 212) explained the positive relationship between job satisfaction and extra-role behaviour. Psychological ownership also has a positive effect on organisational change (Pierce et al., 2001) and organisational commitment (Van Dyne et al., 2004) which emphasises the importance of measuring this construct. O'Driscoll, Pierce and Coghlan (2006) indicated the positive influence of psychological ownership on the transfer of quality management practices within the setting of multinational organisations.

Through construct exploration, Pierce et al., (2003) recognised the need for an instrument to measure psychological ownership. The psychological ownership questionnaire was developed by James Avey and Bruce Avolio (2009) to assess promotive and preventative psychological ownership.

The aim of this study is to explore the construct validity of the psychological ownership questionnaire within the setting of the South African context.

1.2 PROBLEM STATEMENT

It has become common practice for industrial psychologists to attempt to predict and explain human behaviour. An increasing number of scholars and practitioners emphasise the importance of 'feelings of ownership' of the organisation because of the direct effect it has on employee productivity.

The Psychological Ownership Questionnaire (POQ) was developed in the United States of America by James Avey and Bruce Avolio in 2007. America's population is less diverse than the population in South Africa. The aim of this study is to test the construct validity of the POQ within the South African context.

South African legislation regulates the possession, control, classification and use of psychological tests related to employment (Olckers, Buys & Grobler, 2010, p. 3). Only scientifically validated tools are allowed to test and assess individuals in the workplace. These tools must also be fair as any prejudice or bias will disqualify the instrument based on the Employment Equity Act (Olckers et al., 2010, p. 3).

Because of the stipulations within the Employment Equity Act, there is a significant gap in the development of psychological testing across cultural boundaries. This will have a tremendous impact in the construction of psychological evaluation instruments as the cultural and social diversity in both the historical and the contemporary political and social-economic environment should be considered (Olckers et al., 2010, p. 3).

Determining the construct validity of the POQ will be done in an effort to contribute to and elaborate on existing literature.

1.3 PURPOSE OF THIS STUDY

The purpose of this study is to determine the construct validity of the POQ for the South African context.

1.4 RESEARCH OBJECTIVES

The primary objective of this study is to determine the construct validity of the POQ within the South African context.

The secondary objectives of this study are as follows:

- To determine what is meant by psychological ownership.
- To determine what constructs form part of psychological ownership.
- To evaluate the POQ as a valid and reliable instrument to use within the South African context.

1.5 POTENTIAL VALUE ADD

This study strives to make a contribution towards the validation of the POQ within the South African context. Validation studies proved the POQ to be very successful in America, where the questionnaire was developed. However, the POQ has never been introduced in South Africa and is yet to be proven valid and reliable in the South African context (Pierce et al., 2001, p.290).

The area of contribution of this study is to assess the two forms of psychological ownership, namely promotive and preventative ownership. The relationship between individual employees and the organisation is greatly influenced by the psychology of possession (O'Driscoll et al., 2006, p. 388).

The importance of the validation of the POQ lies therein that it will assist industrial psychologists to encourage promotive ownership and eliminate preventative ownership within the workplace (O'Driscoll et al., 2006, p. 388).

1.5.1 Theoretical contributions

In order to predict and understand outcomes in research, Colquitt and Zapata-Phelan (2007, p. 1281) emphasised the fundamental role that theory plays in a scientific endeavour. Theory is usually defined in terms of the relationship that exists between a dependent and an independent variable, and more specifically how these variables are interrelated and why. The conditions under which these variables should relate or not relate are also important in the definition of theory (Colquitt & Zapata-Phelan, 2007, p. 1281). Researchers are challenged to make theoretical contributions to the management theory by means of empirical articles.

- **Theory testing**

Colquitt and Zapata-Phelan (2007, p. 1282) stated that empirical articles can make a theoretical contribution by testing a theory through formulating a hypothesis and testing it using observations. Without theory testing, newly introduced theories are not supported by empirical research and, thus, no contribution can be made.

- **Theory building**

Empirical articles can also make a theoretical contribution by means of theory building. The first way to build theory is through inductive empirical articles. Irrespective of the method used, these articles usually conclude with a set of propositions that summarise the resulting theory. The second way to build theory is through hypothetico-empirical articles. Initially, the theory is tested by establishing the validity of its core propositions. Thereafter, the mediators that explain the core relationships are explored. Finally, the testing is continued in order to expand the theory by incorporating antecedents that were not part of the original formulation. This results in mature and more comprehensive theorising (Colquitt & Zapata-Phelan, 2007, p. 1282).

Colquitt and Zapata-Phelan (2007, p. 1282) introduced a taxonomy that combines theory testing and theory building. Colquitt and Zapata-Phelan argued that an empirical article can be strong in both theory building and theory testing. These two components are also used by Colquitt and Zapata-Phelan to classify empirical articles into various categories.

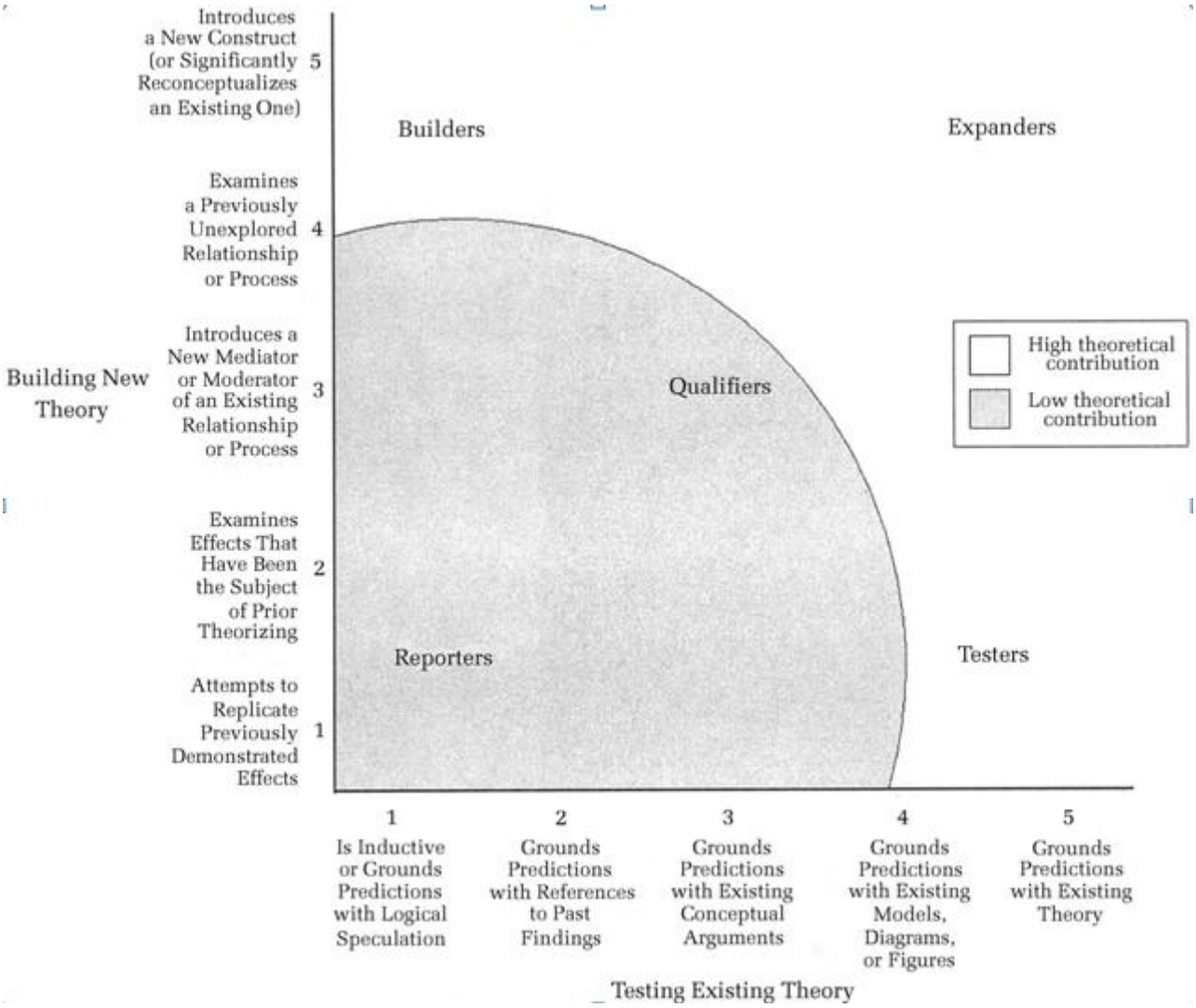

Figure 1 Taxonomy of theoretical contributions of empirical articles

Colquitt and Zapata-Phelan (2007, p. 1282) explained the five different types of articles that are evident from the taxonomy, namely, reporters, testers, qualifiers, builders and expanders.

Reporters are described as articles that are low in theory testing and theory building. Usually this type of article would be a constructive replication of previous research. *Testers* are articles that are high in theory testing but low in theory building. *Qualifiers* are articles with moderate levels of theory testing and theory building as these articles qualify previously established relationships by making conceptual arguments that is rooted in extant literature. *Builders* are articles that are high on theory building but low on theory testing and include inductive studies that focus on new constructs and new relationships. This will examine a

relationship that has not been theorised before and also have not previously formed part of empirical research. *Expanders* are articles that are high in theory testing and theory building and focus on constructs and relationships that have not been subject to previous theorising but this is done while testing existing theory. Thus given literature is expanded.

In terms of the taxonomy discussed above, this study falls in the *tester* category and is considered to have a high contribution of theory testing but a low contribution in new theory building. This is because this study aims is to administer the POQ within the South African context. This study will contribute greatly towards the testing of the theory of psychological ownership within the South African context as it is the first validation study of this instrument.

1.6 DELIMITATIONS AND ASSUMPTIONS

1.6.1 Delimitations

This study includes randomly selected South African participants. The sample consists of professional, skilled and semi-skilled individuals. The construct of psychological ownership is limited to the interpretation of the population. Legal (financial) ownership does not form part of the research as psychological ownership can exist in the absence of legal ownership.

The aim of this study is to determine the construct validity of the POQ within the South African context.

1.6.2 Assumptions

This study is based on the following assumptions:

- The participants are honest and frank in the completion of the questionnaire.
- The participants are able to communicate in English.
- The statistical program used to interpret data is accurate.

- The chosen sample is representative of the South African population.
- The literature used is accurate and valid.

1.7 CHAPTER OUTLINE

In **Chapter 2**, the existing literature regarding psychological ownership is discussed and the different facets of the relationship between the employee and the organisation are indicated. **Chapter 3** focuses on the methodology used to investigate the validity and reliability of the POQ and the results obtained by the POQ are summarised in **Chapter 4**. A discussion of the results together with recommendations are presented in **Chapter 5.**

1.8 DEFINITION OF KEY TERMS

Psychological ownership: a psychologically experienced phenomenon whereby an employee develops possessive feelings for a target (Van Dyne & Pierce, 2004, p. 440).

Legal ownership: a social construct, but characteristically more static and more or less intentionally developed and maintained by society (Van Dyne & Pierce, 2004, p. 439).

Possession: When an individual develops possessive feelings towards a target (Hou, Hsu & Wu, 2009, p. 232).

Several abbreviations used in this study and their meanings are listed in Table1.

Table 1 Abbreviations of Key Terms

Abbreviation	Meaning
POQ	Psychological Ownership Questionnaire
CFA	Confirmatory Factor Analysis
EFA	Exploratory Factor Analysis
SEM	Structural Equation Modelling
PCA	Principal Component Analysis
EV	Eigenvalue
AVE	Average variance extracted
RMSEA	Root Mean Square Error of Approximation
SRMR	Standardised Root Mean Square Residual

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

Insights into psychological ownership can be gained from literature in philosophy, sociology, psychology and also human development (Pierce et al., 2001, p. 299).

In order to understand the concept of psychological ownership, the term 'ownership' should first be investigated and explored. Psychologists such as Jon L. Pierce consider 'ownership' and 'possession' to be synonymous and therefore both these concepts are explored in this chapter. Both legal and psychological ownership are defined, and the routes, roots and emergence of psychological ownership are explored. Finally, the effects of psychological ownership are explored to gain understanding into the application of the construct.

2.2 DEFINITION OF OWNERSHIP AND PROPERTY

Avey, Avolio, Crossley and Luthans (2009, p. 174) described ownership as "the state of being an owner and having the right of possession" and also added that a sense of ownership is found in nearly all societies. Etzioni (1991, p. 465) highlighted that the social philosophy of a specific society determines how ownership is defined and recognised. Property is also rather regarded as a matter of orientation than material objects (Etzioni, 1991, p. 465). Whenever a physical object is encountered, it might not be clear who is in control of or owns the object, but it is instinctively know that the object does have an owner (Etzioni, 1991, p. 465). Van Dyne and Pierce (2004, p. 439) argued that everyday associations with property and possessions are consistent with the core meaning of psychological ownership. Etzioni (1991, p. 465) suggested that property should be seen as a dual creation consisting of part attitude and part object, which is partly in the mind and partly real. Pierce et al. (2001, p. 299) explained that ownership is when an

individual feel as though the target of ownership belongs to him/her and it is his/hers.

Etzioni (1991, p. 466) also explained that almost all property is marked and defined by scarcity. Two individuals cannot have ownership of exactly the same piece of property. If the property is shared, each individual owns a piece of the property, but neither has the same piece. This exclusionary rule only applies to objects. It differs for symbols, as Etzioni (1991, p. 466) explained, as symbols can be shared by millions and still be available to many others. The reason for this is that the value lies in the symbolic arrangement and not, as in the case of physical objects, in the object-based carriers (Etzioni, 1991, p. 466). This acquisition of objects, materials and relationships ties back to psychological ownership in terms of how these objects are perceived – as either promotive or territorial.

2.3 POSSESSION – THE CONCEPTUAL CORE OF PSYCHOLOGICAL OWNERSHIP

Possession, which is the core of psychological ownership, is described by Hou et al. (2009, p. 232) as "a psychologically experienced phenomenon where an individual develops possessive feelings for some target such as an organisation".

The feeling of ‘possession’ psychologically ties an individual to an object and, thus, lies at the centre of psychological ownership (Pierce et al., 2001, p. 299). Van Dyne and Pierce (2004, p. 440) also suggested that possession lies at the very core of psychological ownership in an organisational context.

The state of psychological ownership emerges in the extended self where individuals experience feelings of possession. The object or target becomes part of the individual’s identity as it is psychologically grounded within the individual (Pierce et al., 2001, p. 299).

The importance of these possessions stems from the dominant role it has in the owner’s identity. The possession becomes part of the owner’s extended self

(Pierce et al., 2001, p. 299). Thus, an individual's work may be seen as part of the extended self which is fuelled by feelings of possession.

From the earliest literature (Litwinski 1947, p. 240) it has been suggested that "the self envelops all that a man can call his own". The research of Van Dyne and Pierce (2004, p. 442) concurred with Litwinski and stated that the self of an individual is "the sum total of all that he CAN call his, not only his body and his psychic powers, but his wife and children his ancestors and friends, his reputation". Van Dyne and Pierce (2004, p. 444) also suggested that feelings of possession are connected to feelings of ownership.

2.4 LEGAL OWNERSHIP

Van Dyne and Pierce (2004, p. 440) stated that psychological ownership can emerge based on legal ownership. Legal (formal) ownership aims to improve employee benefits and also to motivate employees to advance their financial interests resulting in higher organisational performance (Wagner, Parker & Christiansen, 2003, p. 847). Van Dyne and Pierce (2004, p. 443) stated that psychological ownership can also occur in the absence of legal ownership. For the purpose of this study, the focus is on psychological ownership and therefore legal/financial ownership is not explored.

2.5 DEFINITION OF PSYCHOLOGICAL OWNERSHIP

Organisational behaviour scholars invest a great deal of time in research on psychological ownership as it could be an important predictor of individual attitudes and work-related behaviour.

According to Van Dyne and Pierce (2004, p. 440), psychological ownership is simply defined as a psychologically experienced phenomenon whereby an employee develops possessive feelings for a target. Wang, Battocci, Grazoila, Pianesi and Tomasini (2006, p. 226) argued that the definition of psychological ownership is applicable not only to physical but also to non-physical objects. Thus,

an individual can have feelings of ownership towards physical objects, such as an office, or non-physical objects, such as ideas, knowledge and even other people.

According to Litwinski (1947, p. 241), an individual can acquire, protect, transfer and abandon both ideas and objects. However, Litwinski approached psychological ownership in his study on personality and did not focus on the organisational aspect.

Lee & Chan (2012, p270) suggest that psychological ownership is also experienced in virtual worlds where physical objects is not present and a methaph of a place is used. Virtual world users have a great tendency to control the space thus having psychological ownership. Thus psychological ownership can be experienced without physical objects as a virtual space is depicted as a real space. Folse, Moulard & Raggio (2012, p. 291) explained that consumers may experience a feeling of ownership over something even when they do not hold legal title to it.

2.6 ROOTS OF PSYCHOLOGICAL OWNERSHIP

In order to understand *what* psychological ownership is and what it entails, it must first be determined *why* psychological ownership exists. In other words, what motivates an individual to have feelings of possession. This section gives insight into the motives for psychological ownership. The three basic needs of humans (that is, 'having a place', 'efficacy and effectance', and 'self-identity') as identified by Van Dyne et al. (2004, p. 442) are satisfied by experiencing psychological ownership (Van Dyne & Pierce, 2004, p. 442).

2.6.1 'Having a place'

The first human need is to have a sense of belonging and this is achieved by having a place or a home. It has been argued that a possession such as a home provide people with a sense of place. This is in line with what the philosopher Simone Weil (cited in Van Dyne & Pierce, 2004, p. 442) postulated, namely that

having a home is "an important need of the human soul". The reason for this is because "the soul will feel isolated and lost, when it is not delimited by objects which seem to it like an extension of the bodily members" (Van Dyne & Pierce, 2004, p. 443).

Pierce et al. (2001, p. 300) stated that ownership as well as the associated psychological state can be understood and also explained by the individual's need to possess territory or space. Heidegger (cited in Pierce et al., 2001, p. 300) stated that "when we inhabit something, it is no longer an object for us, but becomes part of us". The reason individuals spend their resources and energy on targets that could possibly become their home can be linked to an individual's needs and the mere possibility to satisfy it (Pierce et al., 2001, p. 300).

Van Dyne and Pierce (2004, p. 442) argued that the concept of 'home' is not limited to four walls, but can also include a neighbourhood. Thus the 'home' encompasses a context where comfort, pleasure and security are experienced (Van Dyne and Pierce, 2004, p. 442).

2.6.2 'Efficacy and effectance'

Van Dyne and Pierce (2004, p. 443) stated that the need to feel capable and proficient in particular areas is a general human need that have to be satisfied. The motivation for effectance is unique for every individual as it is not found in the same places. It can be the need to experience a sense of capability or interacting effectively within a setting (Van Dyne & Pierce, 2004, p. 443). It is argued by Van Dyne and Pierce that effectance can also be achieved through the feeling that one can cause things to happen. Thus, possession and control have a direct relationship and also have an influence over both tangible and intangible items (Van Dyne & Pierce, 2004, p. 443).

As mentioned earlier, the individual's ability to control the target underlies the motive for possession (Pierce et al., 2004, p. 299). Thus, ownership enables individuals to explore and also alter the environment they find their ownership in

and thereby satisfying the need to be efficacious (Pierce et al., 2004, p. 299). The extrinsic satisfaction the individual derives from the experience of efficacy leads to attempts by the individual to take possession over targets, which in turn lead to the emergence of feelings of ownership (Pierce et al., 2004, p. 299).

2.6.3 'Self-identity'

Pierce et al. (2001, p. 300) stated that possessions are symbolic expressions of the individual's self, self-identity and also individuality. Pierce et al. (2001, p. 300) also indicated that "people use ownership for the purpose of defining themselves, expressing their self-identity to others, and ensuring the continuity of the self across time". The individual's sense of identity as well as self-definitions are established, maintained and transformed by the way the individual interacts with possessions as well as the reflection on their meaning (Pierce et al., 2001, p. 300).

Thus, self-identity is necessary for a clear sense of self (Van Dyne & Pierce, 2004, p. 443). Possessions together with the sense of 'mine' assist individuals in discovering the self and illustrate core values together with individuality (Van Dyne & Pierce, 2004, p. 443).

The three motives mentioned above are the reasons for psychological ownership. However, each of these three motives supports the development of psychological ownership and does not cause it directly.

Several academics (Belk, Dittmar & Cram in Pierce et al., 2001, p. 175) believe that it is natural for people to need to possess something (Pierce et al., 2001, p. 299). Therefore, it is human nature to 'want and own', meaning it is mere instinct to collect objects (Pierce et al., 2001, p. 299). The debate continues on whether an individual has an innate ownership instinct or if it is acquired in the early development process (Pierce et al., 2001, p. 299), but the assumption can be made that both generic factors (instinct) and experiences are important in creating psychological ownership. Therefore, objects that can be controlled become part of

the individual's self, and objects that cannot be controlled falls into the non-self domain.

2.7 ROUTES TO PSYCHOLOGICAL OWNERSHIP

It is possible to investigate how individuals of an organisation come to experience feelings of ownership. How psychological ownership emerges is explored by looking into the three main routes, namely controlling the target, coming to intimately know the target and investing oneself in the target. Pierce et al. (2001, p. 300) suggested that these are the three main routes through which feelings of ownership manifests within an organisation. O'Driscoll et al. (2006, p. 389) added that the degree to which ownership is experienced with regard to the individual's psychological relationship with the organisation, varies upon organisational design.

2.7.1 'Controlling the target'

According to Barry (cited in Pierce et al., 2001, p. 301), ownership is the individual's ability to control the use of an object. This control that the individual exercises over an object gives rise to feelings of ownership toward that specific object (Pierce et al., 2001, p. 300). Furthermore, to support this statement, McClelland (cited in Pierce et al., 2001, p. 301) suggested that similarly the parts of the human body (objects) that is within the control of the individual forms part of the self. Ellwood, Furby and Prelingerin (cited in Pierce et al., 2001, p. 301) added to McClelland's theory by suggesting that the greater the control that the individual has over the object, the greater the experience of the object as part of the self.

2.7.2 'Coming to intimately know the target'

Association and ownership have a perpetual bond and ownership is often mistaken for association (Pierce et al., 2004, p. 301). Sartre (cited in Pierce et al., 2004, p. 301) argued that the individual's mere association with an object leads to a feeling of ownership. Beaglehole (cited in Pierce et al., 2004, p. 301) suggested that a fusion between an individual and the object takes place as soon as the

individual has intimate knowledge of the object. Weil (cited in Pierce et al., 2004, p. 301) contributed by giving an example of a gardener, implying that after a period of time, the gardener feels that the garden belongs to him. The role of association in ownership leads the person to obtain information regarding the object and thereby coming to know it intimately (Pierce et al., 2004, p. 301). The more information the individual gathers, the deeper the relationship between the individual and the object, and so the feeling of ownership increases.

Organisations should grant employees the opportunity to gather information regarding their targets in order to increase their sense of ownership; this could include information on the actual work, team members, mission and vision of the organisation (Pierce et al., 2004, p. 301). As a result, Pierce et al. (2001, p. 301) argued, the employees will have feelings of ownership towards the organisation which in turn, according to Van Dyne and Pierce (2004, p. 443), can change employee attitudes and behaviours.

2.7.3 'Investing the self in the target'

Locke (cited Pierce et al., 2004, p. 302) argued that there is a distinct relationship between work and psychological ownership, and explained that individuals own their labour and therefore feel that what they create is their own. Marx (cited Pierce et al., 2004, p. 302) agreed with Locke and further argued that an individual invests psychic energy into the product/work through labour, turning the product/work into a representation of the individual's self. Feelings of psychological ownership emerges when an individual invests time, effort and also attention in the target (Pierce et al., 2004, p. 302).

Because psychological ownership manifests in all aspects of life, Pierce et al. (2001, p. 300) proposed that it can be facilitated and developed within organisations. Empirical evidence, according to Pierce et al., revealed that individuals showed feelings of ownership toward their work, organisation and the products they created. If an organisation gives an employee the opportunity to invest energy, time, effort and attention in work/projects/assignments, that

employee will feel strong feelings of ownership towards the product of labour (Pierce et al., 2004, p. 302). The individual's 'investment of the self' can come in many forms such as time, skills, ideas, and psychological, intellectual and also physical energy (Pierce et al., 2004, p. 302). The extent to which individuals invest themselves in the target may vary and, therefore, the levels of ownership may also vary (Pierce et al., 2004, p. 302). For example, the more complex a certain task is, the more individuals will be inclined to invest themselves through specific knowledge, personal style and, ultimately, their own identity and values as they create something (Pierce et al., 2004, p. 302).

2.8 EMERGENCE OF PSYCHOLOGICAL OWNERSHIP

Pierce et al. (2001, p. 6) proposed that the emergence of psychological ownership resides in not only the target but also the individual and that the emergence is strongly influenced by situational forces.

The close relationship between feelings of ownership and possession can either be directed towards the organisation as a whole or only at certain aspects such as the group, job or machinery (Van Dyne & Pierce, 2004, p. 443). However, it is possible that the targets of ownership can vary depending on both the individual and the situation (Van Dyne & Pierce, 2004, p. 443). Factors that may have an influence on psychological ownership are technology, autonomy and decision-making.

2.8.1 Technology

O'Driscoll et al. (2006, p. 390) found that technology effects psychological ownership. Routine and system-controlled production technologies usually lead to lower levels of job satisfaction, greater absenteeism and lower levels of worker integration.

A technology–satisfaction relationship was investigated and yielded positive results regarding non-routine technology. Where low levels of routinisation were present, high levels of employee satisfaction, effort and performance were observed and reported by supervisors (O'Driscoll et al., 2006, p. 390). O'Driscoll et al. concluded that outcomes were more favourable when associated with low levels of technological routinisation. The individual's motivation lies in the increased challenge associated with unprogrammed technology and being in control. Thus, O'Driscoll et al. suggested that enough evidence exist to indicate that routine, system-controlled technologies have a negative effect on the individual. O'Driscoll et al. (2006, p. 391) further explained that psychological ownership is a dual creation of the relationship between the individual and the target and, therefore, a close connection between the two is needed. Routinisation does not contribute to this connection and in turn does not create psychological ownership.

2.8.2 Autonomy (Job design)

Ryan and Deci (2006; cited in Olckers & Du Plessis 2012, p. 2025) explained that autonomy refers to the regulation of the self. When individuals act in accordance with their true interests, they are independent (Olckers & Du Plessis, 2012, p. 2025). Hackman and Oldham (cited in O'Driscoll et al., 2006, p. 354) theorised the positive relationship between autonomy and intrinsic work motivation, job satisfaction and performance. Olckers and Du Plessis (2012, p. 2025) also explained that the individual's perceived level of control is a key determinant of work involvement, organisational commitment and job satisfaction. O'Driscoll et al. (2006, p. 354) mentioned that there exists a negative relationship between autonomy, and turnover and absenteeism. The above mentioned literature confirmed the existence of a positive relationship between autonomy at work and the positive attitudes and behaviours of employees. O'Driscoll et al. (2006, p. 554) considered that this positive relationship is due to the sense of control the individual derives from job autonomy.

O'Driscoll et al. (2006, p. 389) argued that an employee's feelings of ownership are affected by changes in organisational design. Olckers and Du Plessis (2012, p. 2025) also explained that the high correlation between job design and autonomy is because of the influence of control. According to O'Driscoll et al. (2006, p. 389), when an employee's work environment allows control and involvement, more positive results were produced as opposed to highly structured environments which produced negative results in psychological ownership.

An unstructured work environment results in a more intimate association with both the work and the organisation because the employee is not instructed on exactly how and when to perform. The employee has to critically evaluate and explore his or her options before acting which results in a detailed understanding of the job and increased levels of ownership as the employee is called to invest more of him- or herself in the job (O'Driscoll et al., 2006, p. 390).

It can then be concluded that whenever employees are encouraged to invest their personal resources, time and energy in a job, feelings of ownership will emerge. These feelings are then associated with a greater commitment to the organisation.

2.8.3 Participative decision-making

Pierce and Jussila (2009, p. 181) explained participative decision-making as the sharing of authority in the decision-making process, involving the employees. Review of literature in O'Driscoll et al. (2006) proved that there exists a positive link between participative decision-making and job satisfaction and, in a lesser manner, job performance. O'Driscoll et al. (2006, p. 392) argued that participation in decision-making processes provides individuals with more opportunities to exercise control and voice their opinions and concerns. O'Driscoll et al. (2006, p. 390) explained that a positive relationship was found between ratings of supervisors on employee participation in decisions regarding the job and the perceived control of employees.

Moreover, Pierce and Jussila (2009, p. 182) concluded that the individual's control over a decision has a positive influence on the individual's experienced ownership of the work and the organisation. O'Driscoll et al. (2006, p. 392) argued that if work environment structures keep the individual informed, it would encourage the individual to invest the self in the organisation, allowing for increased control over the work activities which then leads to feelings of possession/ownership concerning the work and the organisation.

2.9 EFFECTS FROM FEELINGS OF PSYCHOLOGICAL OWNERSHIP

The importance of the understanding of psychological ownership lies in the fact that feelings of psychological ownership have psychological and behavioural effects. The feeling of ownership sparks emotion that has behavioural, psychological and emotional consequences (Pierce et al., 2001, p. 298).

It is possible for psychological ownership to manifest itself if there is no possibility of actual ownership over an object in the future such as social issues (Folse et al., 2012, p 295).

The promotion of psychological ownership results in the promotion of as well as the resistance to organisational change, experienced responsibility, the employees' willingness to make a personal sacrifice and take personal risk, and organisational performance (O'Driscoll et al., 2006, p. 394). Whenever an individual experiences feelings of ownership towards the organisation, O'Driscoll et al. (2006, p. 394) argued, that individual's behaviour will be both positive and voluntary in nature and will also contribute to the organisations wellbeing. This facilitates the individual's satisfaction of the self-identity motive which is one of the core roots of psychological ownership (O'Driscoll et al., 2006, p. 394).

Pierce, Kostova and Dirks (cited in O'Driscoll et al., 2006, p. 394) argued that individuals derive pleasure from feelings of ownership and consequently aim to maintain this relationship with whatever produces the positive effect. Employees

also increase their integration into the organisation as they aim to maintain these positive feelings; this integration results in a greater attachment to the organisation and the employee strives to maintain this relationship (O'Driscoll et al., 2006, p. 394).

It is of utmost importance to differentiate psychological ownership from other work-related attitudes such as organisational commitment, job involvement and job satisfaction in order to avoid construct proliferation (Van Dyne & Pierce, 2004, p. 443). The focus of each of these work-related attitudes are different. The focus of psychological ownership is on the extent to which the individual experiences the organisation as their own, opposed to the focus of organisational commitment on the duration of the individuals' membership at the organisation (Van Dyne & Pierce, 2004, p. 443). Psychological ownership differs from other work-related attitudes because its conceptual core is feelings of possession which triggers affect-driven behaviours (Van Dyne & Pierce, 2004, p. 442).

These feelings of ownership have certain effects on the individual which can be either positive or negative in nature.

2.9.1 Positive psychological ownership

Feelings of psychological ownership can lead to constructive behaviour. The following aspects have been proven to influence the individual's affective, motivational and behavioural responses positively and favourably toward the organisation (Pierce et al., 2004, p. 302).

- **Expected rights and presumed responsibilities**

Pierce et al. (2004, p. 302) stated that ownership can be experienced as a 'bundle' of rights. A right that was recently identified, in addition to the individual's right to information regarding the target, was a right to be part of decision-making if it concerns the target (Pierce et al., 2004, p. 303). Rodgers (cited in Pierce et al., 2004, p. 302) argued that the organisation should ensure a sense of responsibility

from participation in decision-making to ensure a strong ownership culture. This feeling of responsibility includes the responsibility to invest time and energy in order to benefit the organisation. Thus, feelings of possession create a sense of responsibility which in turn influence behaviour (Pierce et al., 2004, p. 445).

- **Organisational change**

According to Dirks (cited in Pierce et al., 2001, p. 304), psychological ownership provides insight into the conditions under which individuals decide to promote and resist change. Pierce et al. (2001, p. 304) argued that this depends on the type of change involved. Individuals promote change if they feel ownership when the change is initiated. The reason for this is because it reinforces the individuals' need for control and efficacy. However, individuals resist change when the change is imposed because the individuals perceive this as threatening and loss of control (Pierce et al., 2001, p. 304).

- **Organisational commitment**

Van Dyne and Pierce (2004, p. 445) explained that organisational commitment is the psychological attachment an individual feel for the particular organisation. Individuals with strong organisational commitment want to keep their affiliation with the organisation. Van Dyne and Pierce (2004, p. 446) mentioned affective commitment, which is the strength of the emotional attachment the individual has towards the organisation. The psychology of possession illustrates that possessions give individuals a sense of place and, consequently, belonging. This feeling of ownership satisfies the basic need for belonging. Pierce et al. (2004, p. 445) explained that this sense of belonging is the essence of organisational commitment and that it is reasonable to predict a positive relationship between psychological ownership and organisational commitment.

Pierce et al. (cited in O'Driscoll et al., 2006, p. 394) stated that feelings of ownership is often associated with pleasure and the individual will aim to maintain the relationship that has produced these feelings. This means that organisational commitment is positively influenced by psychological ownership as the individual

becomes more integrated into the organisation (O'Driscoll et al., 2006, p. 394). This integration can occur through the individual's attachment to the organisation.

Psychological ownership results in a form of organisational commitment based on the individual's sense of identity within a specific organisation, encompassing its goals and values (O'Driscoll et al., 2006, p. 394). A feeling of belongingness is reflected and the individual's attachment to the organisation will increase (O'Driscoll et al., 2006, p. 394).

2.9.2 Negative effects of psychological ownership

Although most of the literature focuses on the positive and constructive effects of psychological ownership, there are also negative effects. Individuals may be reluctant to share the target of ownership and they may feel that they need to regain control over the target which will hinder cooperation. Pierce et al. (2001, p. 30) explained that individuals may become preoccupied and obsessed with enhancing their possessions at the cost of their family or the organisation.

Pierce et al. (2001) also suggest that psychological ownership may lead to deviant behaviour that violate group norms and even threaten the wellbeing of the group and its members. This type of behaviour occur when the individual is separated from that for which they feel strong ownership, against their will. This separation could lead do detrimental acts such as sabotage and destruction, instead of allowing others to control and get to know the target of ownership. Pierce et al. (2001, p. 32) further explained that psychological ownership only leads to dysfunctional effects when certain conditions are in place. These conditions are related to personality characteristics such as a high need for personal control and authority together with particular motives and routes that result in the feelings of ownership towards a target. The full exploration of these moderating conditions is beyond the purpose of this study.

2.9.3 Territoriality and accountability

Avey et al. (2009, p. 176) stated that territoriality and accountability is regarded as additional aspects of psychological ownership.

Territoriality is classified as a preventative form of psychological ownership because it is natural for individuals to protect what is perceived as an extension of themselves, thus protecting themselves (Pierce et al., 2004). This preventative form of psychological ownership can be felt for both material and non-material objects and the individuals mark such objects as belonging exclusively to themselves. Individuals may even go further by reacting to any perceived intrusion or infringement upon the target with protective territorial behaviour. The stronger the psychological ownership, the more territorial the individual acts towards the object (Pierce & Jussila, 2009, p. 176).

Accountability is recognised in sport teams and economic systems as a source of psychological ownership. Coaches hold players responsible for performance, and the players, the coach and the fans expect accountability (Pierce & Jussila, 2009, p. 176). Accountability especially comes into play where the rights and responsibilities of psychological ownership, as discussed earlier in this chapter, are concerned (Pierce et al., 2004). When the target of ownership is viewed as an extension of the self, accountability is developed for what happens to that target.

2.10 SHARED PSYCHOLOGICAL OWNERSHIP

According to Wagner et al. (2003, p. 850), psychological ownership can be experienced on both individual and group level. Wagner et al. argued that psychological ownership has been conceptualised as a state of mind that can be shared by members of a certain work group and organisation. Psychological ownership is experienced as a shared mental model that involves a collective belief that all work-group members are part-owners (Wagner et al., 2003, p. 849). As part-owners, individuals have the authority as well as the responsibility to act in a certain manner to promote favourable outcomes for the organisation.

2.11 CONCLUSION

This chapter was devoted to the concept of psychological ownership and aimed to explain the phenomenon from the definition of the term through to its emergence and consequences. Psychological ownership was explained as the basic feeling of ownership that an individual develops towards material and non-material objects. This chapter was committed towards the better understanding of the history and the concept of psychological ownership. The next chapter is dedicated towards the proposed methodology to prove construct validity for the Psychological Ownership Questionnaire.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

Social research is based on the interaction between a researcher's ideas and the evidence – ideas inspire evidence and evidence in turn extend, test and revise ideas (Ragin, 1994, p. 3). Ragin (1994, p. 5) further argued that the aim of social research is to create and ultimately validate different theories by means of data collection and analysis with the end-goal being exploration. The aim of this chapter is to discuss the research methodology and strategy followed in this study to prove the construct validity of the psychological ownership questionnaire. The research methodology will be will be explained in terms of the paradigm and then the design and sampling will be discussed. Thereafter, the data collection and analysis will be discussed after which the quality and rigour of the research design will be investigated. The chapter concludes with research ethics.

3.2 RESEARCH PARADIGM/PHILOSOPHY/EPISTEMOLOGY

In order to explain why a particular approach was chosen for this study, an overview of the various philosophical worldviews must first be given. These worldviews (paradigms) explain the basic set of beliefs that guides the action of the researcher (Creswell, 2009, p. 6).

Creswell (2009, p. 6) explained that there are four basic paradigms held by researchers, namely post-positivism, constructivism, advocacy/participatory and pragmatism. These paradigms are summarised in Table 2.

Table 2 Philosophical worldviews (Cresswell, 2009, p. 6)

Post-positivism	**Constructivism**
• Determination	• Understanding
• Reductionism	• Multiple participant meanings
• Empirical observation and measurement	• Social and historical construction
• Theory verification	• Theory generation
Advocacy/Participatory	**Pragmatism**
• Political	• Consequences of actions
• Empowerment issue-oriented	• Problem-centred
• Collaborative	• Pluralistic
• Change-oriented	• Real-world practice oriented

3.2.1 Post-positivist paradigm

This paradigm is also referred to as the scientific method and represents the traditional form of research. The researcher functions within this paradigm and the reasons for choosing this approach are discussed in detail below (Creswell, 2009, p. 7).

Post-positivism challenges the traditional method of doing research and disagrees with the belief of absolute truth of knowledge. Post-positivism states that researchers cannot be 'positive' regarding their knowledge gained in the study of human behaviour and actions (Creswell, 2009, p. 7). According to Creswell (2009, p. 6), the problem studied by the post-positivist researcher reflects the need to identify the possible causes that will in turn influence the outcomes. Post-positivism is also known to be reductionistic in approach by reducing the construct into smaller sets of ideas to test. These sets of ideas comprise variables which include hypotheses and research questions. Creswell (2009, p. 7) notes that post-positivists start with an initial theory and then collect data that either supports or refutes the initial theory. Thereafter, the necessary revisions are made before additional tests are done.

Post-positivists assume that absolute truth can never be found. Research is also based on certain claims and the process involves refining or abandoning some of these claims, that is testing the theory. The researcher collects information and data using instruments that are based on measures completed either by the participants or by the researcher through observations. The research process aims to develop relevant and true statements which can explain and describe the situation and relationships of interest. Finally, objectivity is of utmost importance and a researcher must also be able to examine methods and conclusions for bias.

3.3 DESCRIPTION OF INQUIRY STRATEGY AND BROAD RESEARCH DESIGN

Creswell (2009, p. 4) described quantitative research as the testing of objective theories through the examination of relationships among variables. This is done by measuring the variables on instruments in order to obtain numbered data that is in turn analysed by statistical procedures.

A survey design provides a quantitative description of trends of a chosen population.

Neuman (2000, p. 34) explained that the survey research technique is regularly used in descriptive or explanatory research. The survey research technique entails that the researcher gathers data by means of a standard written questionnaire or an interview. The gathered data is then summarised in tables and graphs, giving the researcher a clear idea of what the people think. Neuman (2000, p. 34) further explained that the survey researcher uses a small sample and ultimately generalises the results to the larger group or population (Neuman, 2000, p. 34). This study is cross-sectional which involved observations of the specific sample at one point in time.

3.3.1 Characteristics of quantitative research

Maree (2007, p. 145) defined quantitative research as a systematic process which is objective in using numerical data from a specific population in order to generalise the findings. Babbie (2008, p. 443) describes quantification as the process where the researcher converts the data to a numerical format. Maree (2007, p. 145) also mentions that the three key elements that are vital in quantitative research are numerical data, objectivity and generalisability.

When a researcher makes use of quantitative research there are a few assumptions that have to be met in the study. First, the researcher remained unbiased during the course of the research. Second, the researcher controlled the data for alternative explanations and third, the researcher generalised the data and replicated the findings (Creswell, 2009, p. 4).

The research process aimed to develop relevant and true statements which can explain and describe the situation and relationships of interest. Objectivity is of utmost importance and the researcher needed to be able to examine the methods and conclusions for bias. For these reasons, a quantitative research method was used to investigate the construct validity of the POQ. Data was gathered by means of the electronic distribution of questionnaires.

3.4 SAMPLING

Because of the fact that everyone in the population cannot be tested for the purpose of this study, the researcher had to select a sample frame of the population. This sample had to be representative of the population to allow the researcher to generalise the results.

- **Unit of analysis**

Babbie (2008, p. 104) noted that the units of analysis, the ‘what’ or whom of the study, is virtually limitless in social research. The unit of analysis in this research

was professional, skilled and semi-skilled individuals from both the public and private sector in South Africa. Random snowball sampling was used on a referral/forwarding basis. Participant's contact details were obtained from a database with a 50 percent response rate.

- **Sampling frame**

Babbie (2008, p. 221) described a sampling frame as a quasi-list of the sampling units composing a population from where the sample is selected. The sample should be representative of the population as far as possible and in order to achieve this, the researcher should include as many members of the population as possible. The sampling frame in this study was based on referral using snowball sampling. An email with the consent form, questionnaire and general information attached was sent to participants for completion. The researcher was able to use 145 of the returned questionnaires and this sample size was sufficient for the purpose of descriptive and exploratory research. Lacobucci (2009, p. 92) explained that a sample of 100 is sufficient for convergence but a sample of 150 is sufficient for a proper and convergent solution.

- **Sampling strategy**

Babbie (2008, p. 200) described sampling as the process of selecting observations for the research in order to generalise results from a sample to a greater population. Babbie (2008, p. 200) referred to this as probability sampling which is based on the idea of random selection, which is at the core of social research as we know it today.

Babbie (2008, p. 212) mentioned that the advantage of random selection methods is that it eliminates conscious or unconscious bias on the part of the researcher.

The sample yielded 145 usable questionnaires which can comfortably be used for generalising and statistical analysis.

3.5 DISCUSSION OF THE SAMPLE

To prove construct validity, a sufficient sample was needed.. Participants had to have a minimum qualification of matric. The participants' biographical information varied in terms of age, race and industry.

The Psychological Ownership Questionnaire (POQ) together with a cover letter and consent form explaining the purpose of the study was sent via email to various participants.

The participants participated in the research by completing the POQ developed by Avey et al. (2007). The purpose of the questionnaire is to investigate the components of psychological ownership. Literature suggests that there are two unique forms of psychological ownership, namely promotive and preventative ownership. The POQ measures these two forms by means of 16 questions rated on a 6-point rating scale. The POQ can be used for research purposes in human resource development and also for organisational development. A detailed discussion of the instrument will follow later in this chapter.

3.6 BIOGRAPHICAL INFORMATION OF PARTICIPANTS

Biographical data was obtained by means of a categorical response format. Participants chose only one answer for variables pertaining to biographical data.

Participants were required to supply the following information:

- Age
- Gender
- Home language
- Ethnic group
- Education level
- Industry
- Tenure (years of service) in organisation and in the current job

Detailed information about the demographic characteristics of the sample is presented in Table 3.

Table 3 Biographical Information on the participants

Biographical Information (N = 145)				
Variable	**Category**	**Frequency**	**Percentage**	**Cumulative Percentage**
Age	20–30 yrs	96	66.22	66.21
	31–40 yrs	26	17.94	84.16
	41–50 yrs	12	8.28	92.44
	50+ yrs	11	7.56	100
Gender	Male	51	35.17	35.17
	Female	94	64.83	100
Language	Afrikaans	122	84.14	84.14
	English	18	12.41	96.55
	African Languages	3	2.07	98.62
	Other	2	1.38	100
Ethnic group	White	134	92.41	92.41
	Non-white	11	7.59	100
Qualification	Grade 12	25	17.24	17.24
	Diploma	24	16.55	33.79
	Undergraduate Degree	26	17.93	51.72
	Honour's Degree	49	33.79	85.52
	Master's Degree	17	11.72	97.24
	Doctoral Degree	4	2.76	100
Industry	Financing, insurance, real estate & business services	77	53.1	53.1
	Educational services	22	15.17	68.27
	Medical, dental & other health & veterinary	21	14.48	82.75

	services			
	Other	25	17.25	100
Tenure at the organisation	0 - 5 yrs	100	68.97	68.97
	6 - 10 yrs	29	20.00	88.97
	10 + yrs	16	11.03	100
Tenure in current position	0 - 5 yrs	103	71.03	71.03
	6 - 10 yrs	27	18.62	89.65
	10 yrs	15	10.34	100

From Table 3, it is evident that the age of the population varied between 22 and 62 with the majority of participants in the age group 20–30 years (66.22% of the sample; n=96). The second largest represented group is between the ages of 31 and 40 (17.94% of the sample; n=26). Participants between the ages of 41 and 50 represented 8.28% of the sample (n=12). The rest of the participants were over the age of 50 years (7.59% of the sample; n=11).

Table 3 also indicate that roughly a third of the participants (n=51) were male and two-thirds (n=94) were female.

The majority of the participants were Afrikaans speaking (84.14% of the sample; n=122). English-speaking participants represented 12.41% of the sample (n=18) with the rest of the African languages represented by only 3.45% of the sample (n=2).

The majority of the participants were white (92.41% of the sample; n=134). The rest of the sample was non-white, which includes coloured, Indian and black race groups (7.58% of the sample; n=11).

It is evident that most participants (82.75% of the sample; n=120) have a tertiary education differentiated into a diploma (16.55% of the sample; n=24) and a three-

year university degree at minimum (66.2% of the sample; n=96). A mere 17.24% (n=25) of the sample has only Grade 12 or an equivalent qualification.

The majority of the participants appear to be in the financing and business services industry (53.1% of the sample; n=77). Educational services (15.17% of the sample; (n=22) and the medical industry (14.48% of the sample; n=21) have the second and third largest representation respectively. The rest of the participants was spread between 11 industries (including, for example, production, wholesale and engineering) and made up a collective 17.25% of the sample (n=25).

Regarding the tenure of employees, it appears that most employees have been at their current organisation for less than 5 years (68.97% of the sample; n=100). A mere 20% (n=20) of the sample has been at their current organisation for between 6 and 10 years while 11.04% (n=16) of the sample has been at their organisation for more than 10 years.

Similarly, it appears that most of the participants (71.04% of the sample; n=103) have been in their current position for less than 5 years. Participants who have been in their current position between 6 and 10 years made up 18.63% (n=27) of the sample while 10.35% (n=15) of the sample was in their current position for more than 10 years.

3.7 DATA COLLECTION

Data was collected with the Psychological Ownership Questionnaire (POQ), developed by Avey et al. (2009), which is a self-report questionnaire. The POQ contains the constructs of psychological ownership as it was specifically developed for the purpose of assessing an individual's psychological ownership towards an organisation. Participation in the survey was purely voluntary and informed consent was obtained from the participants. Participants completed the questionnaire anonymously to enhance the level of honesty of their responses.

The researcher distributed the questionnaire electronically based on a snowball random sampling. The items of the questionnaire were close-ended questions with a six-point likert scale where the participants had to choose from 'strongly agree' to 'strongly disagree'.

3.7.1 Measurement instrument

Avey et al. (2009) suggested that psychological ownership is a psychological resource that can be measured, developed and also managed to have an impact on both performance and competitive advantage.

- **History of the POQ**

The POQ was developed by James Avey and Bruce Avolio (2009). Literature suggests that there are two unique forms of psychological ownership, namely promotive and preventative.

Promotive psychological ownership comprises self-efficacy, a sense of belongingness, self-identity and accountability. Preventative psychological ownership is characterised by territoriality (Avey et al., 2009). The POQ measures these two forms using 16 questions rated on a six-point likert scale. The POQ can be used for research purposes in human resource development as well as organisational development.

Avey et al. (2009, p. 299) stated that psychological ownership is a relatively new concept and researchers are still exploring relationships between psychological ownership and other organisational behaviours. They also mentioned that further theory development and empirical research is needed to increase the current knowledge and understanding of the psychological ownership construct.

- **Description of the POQ**

The questionnaire consists of 16 items, three (3) items for each of the four (4) components which measure promotive psychological ownership (self-efficacy, accountability, sense of belongingness and self-identity). The remaining four (4) items measure preventative psychological ownership (territoriality). The responses are captured on a six-point likert scale, ranging from 1=strongly disagree to 6=strongly agree.

- **Administration**

The participants were required to complete the questionnaire by evaluating each of the 16 statements and transferring their responses to the six-point likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree).

- **Reliability and validity of the Instrument**

  - **Reliability of the POQ**

Avey et al. (2009, p. 180) reported internal reliabilities for the components as follows: self-efficacy α=.90; accountability α=.91; sense of belongingness α=.92; self-identity α=.73; and territoriality α=.84. It is suggested that reliability is acceptable between the values of .7 to .8 (Garson, 2009, p. 37).

  - **Validity of the POQ**

To ensure that the items captured the breadth of the content domain as well as face validity, Avey and Avolio sent the 16 selected components to a group of doctoral students from various majors at the Midwestern University in the United States of America for review. They agreed that the selected items were the best choices in terms of capturing the breadth of the construct as well as having high face validity.

The 16-item measure was subjected to a CFA and to completing model comparisons. Maximum likelihood estimation techniques were used to determine item loadings on respective facets. This model produced a CFI of .96, RMSEA of .07 and a SRMR of .06. All items significantly loaded on their respective components greater than .60 (p>.01). In order to determine confirmatory factor analytic fit for the feelings of territoriality scale, each item was loaded on a single order latent factor of territoriality and a very strong fit was apparent with data (CFI=1.00, RMSEA=0.01, SRMR=0.01); and all items loaded at .7 or greater. These findings suggest that this form of psychological ownership represented a distinct aspect in line with its more preventative focus.

3.8 DATA ANALYSIS

The following steps were followed to determine the construct validity of the POQ within the South African context.

1. Complete the descriptive statistics
2. Fit the model to the data by means of maximum likelihood estimation
3. Evaluate the model adequacy by means of goodness of fit measures
    a. Chi-square
    b. Normed fit index (NFI)
    c. Comparative fit index (CFI)
    d. Root mean square error of approximation (RMSEA)
    e. Goodness of fit index (GFI)

3.8.1 Descriptive statistics

Descriptive statistics for the POQ were computed to describe the data. These statistics included a descriptive analysis of the biographical data and also the standard deviation, the variability of the mean, the kurtosis, and ultimately the skewness. These statistics explain the responses of the participants to each item of the questionnaire.

In order to analyse the data statistically, the Statistical Package for the Social Sciences (SPSS version 20) as well as EQS (version 6.2) were used for this purpose.

3.8.2 Factor analysis

Henson and Roberts (2006, p. 394) stated that the "Modern conceptualizations of factor analysis include both exploratory and confirmatory methods, as well as hybrids invoking exploratory factor extraction followed by confirmatory rotation." In this research only Confirmatory Factor Analysis (CFA) was used to confirm the factors of the POQ.

Henson and Roberts (2006, p. 394) explained that factor analysis is closely involved with validity. Factor analysis is also fundamental in the measurement of the integrity of a test and guides further theory development and refinement (Henson and Roberts, 2006, p. 395).

Factor analysis is typically used for the following purposes (Garson, 2009):

- To enable the researcher to determine the factors for modelling purposes by reducing a large number of variables. Factor analysis is thus integrated in Structural Equation Modelling (SEM) of which the aim is to confirm the latent variables modelled by SEM.
- To establish that the same factor is measured by multiple tests, thus justifying the administration of fewer tests.
- To validate an index or scale by the demonstration that the constituent items load on the same factor.
- To identify outliers and clusters.

3.8.3 Confirmatory Factor Analysis

Henson and Roberts (2006, p. 395) described CFA as the method used to test the theory regarding the underlying factor structure. It is important for the researcher to have some understanding of what factors may be present in the data set and also which variables could define each factor. CFA tests a specific hypothesis

regarding the nature of the factor (Henson & Roberts, 2006, p. 395). Hayes, Slater and Snyder (2008, p. 200) describes CFA as offering a theoretical model which allows researchers to associate between one or more latent variables and a set of observable variables. By using such a model, latent variables and associations between latent variables and observable variables are reflected, grounded in theory as well as past empirical evidence (Hayes et al., 2008, p. 188). By conducting a CFA the relationships between latent constructs can be established (Hayes et al., 2008, p. 200).

The following are rules for conducting a CFA (Hayes et al., 2008, p. 199):

- The researcher must have a strong theoretical rationale for the specific latent variables and also the associations made between the observable variables and the latent variables.
- The researcher needs a firm conceptual grasp of the potential latent variables as well as some degree of certainty that each dimension of a given latent variable is represented within a list of observable measures.
- It is ideal for researchers to retain at least three observable indicators for each latent variable.
- Researchers should assess their data relative to a set of statistical assumptions associated with SEM and whether the breaking of these assumptions is warranted or allowable, any data transformations are necessary, or the analysis can be run at all.

3.8.4 Structural Equation Modelling

Garson (2009, p. 7) suggested that CFA measurement models are explored by means of Structural Equation Modelling (SEM) as an approach to factory analysis. SEM is also known as latent variable analysis or covariance structure analysis. It is an advanced multivariate technique that is used to simultaneously examine multiple dependence relationships between variables (Singh, 2009, p. 199). SEM is a confirmatory approach to testing relationships between variables rather than an exploratory approach.

SEM is central to the study of latent variables and is used to specifically test the theoretical relations between multiple constructs. A latent variable cannot be measured directly, but can be derived mathematically from variables that can be measured directly (Hayes et al., 2008, p. 200). In short, Hayes et al. (2008, p. 199) noted that the essence of a structural model is to hypothesise the influence that variables would have on each other and, thus, SEM is used to identify structural relationships among variables (Hayes et al., 2008, p. 200).

Measurement errors are accounted for through the course of model testing and incorporating indicator and latent variables in the analysis.

5.5.2.1 Model specification

SEM represents the measured variables with existing correlational relationships among them through an assumed linear relationship with as much close approximation as plausible (Singh, 2009, p. 200). The onus is on the researcher to choose a specific model that will closely fit the observed data. Singh (2009, p. 200) explained that model fit is never absolute because there may be an infinite number of models that fit the observed data. These models are distinguished based on their substantive meaning (Singh, 2009, p. 200) and relates back to the literature based on which model is most meaningful in the context of the research question.

5.5.2.2 Goodness of fit

After data is collected and a model is specified together with the parameters, the goodness of fit can be established (Myung, 2002, p. 90). Goodness of fit is established by means of parameter estimation. Maximum Likelihood Estimation (MLE) is the most commonly used method for parameter estimation and inference in statistics. Myung (2002, p. 90) mentioned that MLE has various optimal properties which includes sufficiency, consistency, efficiency and also parameterisation invariance. MLE is also a requirement for the chi-square test.

Hu and Bentler (cited in Hayes et al. 2008, p. 200) advised a ‘two-index’ strategy to report on model fit. It is recommended that when the sample size is less than

250, the Standardised Root Mean Squared Residual (SRMR) plus one other incremental fit index should be reported. This additional index should reflect misspecification in the structural model (Hayes et al., 2008, p. 200). The following indexes were used for the purpose of this study.

- **Chi-square**

Lacobucci (2009, p. 90) explained that the Chi-square (also referred to as the likelihood test statistic) is a traditional inferential statistic while all the others statistics are descriptive in nature. In other words, the researcher can make statements regarding the significance to assess goodness of fit but it should be noted that this is not the only statistic to report on.

Madurai, Olckers & Buys (2011, p. 4) stated that the chi-square statistic tests the difference between the hypothesised model and the observed data and that this mentioned difference should be minimal for the postulated model to fit the data. Chi-square is very sensitive to sample size, according to Gerbing and Anderson (cited in Lacobucci, 2009, p. 91). This means that even though a large sample is important to enhance the precision of parameter estimation, as the sample size increases, the chi-square increases dramatically. According to Kline (cited in Lacobucci, 2009, p. 91), if the statistic is adjusted but the degrees of freedom does not exceed 3.0, the model demonstrates a reasonable fit. Lacobucci (2009, p. 90) argued that the chi-square must not be significant for a model that fits the data. As parameters are added to the model the chi-square reduces and this results in the model becoming more complex and less parsimonious (Lacobucci, 2009, p. 96).

Garson (2009) stated that there are certain assumptions made by the researcher when using the chi-square.

- It is assumed that sample data is random otherwise significance cannot be established.
- A minimum sample size of approximately 50 (although there is no accepted cut off) is required otherwise the researcher can be exposed to Type II errors.

- Observations needs to be independent as the chi-square statistic cannot be used for the purposes to test correlated data.
- Five or more cells of a two-by-two table is required without any cells having a zero count. Whenever this assumption is not met, the Yates correction will be applied.
- All observations must share the same underlying distribution.
- Observations should be grouped according to categories.

Because the chi-square statistic has some limitations, fit indexes are used to breach the gap in information. Fit indexes alleviate the problems related to sample size and the misspecification of the distributional assumption of the chi-square test (Singh, 2009, p. 202).

Where the chi-square test the null-hypotheses, the fit indexes measure the covariance and the variance accounted for by the specified model. The first type of fit indexes is the absolute fit index which assesses to what degree the priori model reproduces the sample data with specific references to a saturated model (Singh, 2009, p. 202).

- **Root Mean Square Error of Approximation**

Root Mean Square Error of Approximation (RMSEA) also measures the discrepancy but per degree of freedom. Browne and Cudeck (cited in Singh, 2009, p. 203) argued that a RMSEA value of less than or equal to .05 is an indication of a close fit while a RMSEA value of less than or equal to .08 is an indication of reasonable fit (Singh, 2009, p. 203).

- **Standardized Root Mean Square Residual (SRMR)**

Lacobucci (2009, p. 91) explained SRMR as the differences between the model prediction and the data containing the residuals; this average is computed and after that the square root is taken. The larger the SRMR value, the worse the model fit. Therefore, it can be agreed upon that the SRMR is a badness-of-fit

index. When a model has high factor loadings, the SRMR is lowered and thus enhanced, according to Anderson and Gebring (cited in Lacobucci, 2009, p. 91). SRMR is less sensitive to distributional assumptions and, thus, this index is considered a good indicator of whether or not the model captures the data.

The second type of fit indices is incremental fit indices which assess how well a specified model fits relative to some alternative baseline model. The following incremental fit indices were used for the purpose of this study:

- **Comparative fit index**

CFI (also known as the Bentler Comparative Fit Index) is a relative goodness-of-fit index which compares the fit of one model to the fit of another, more simple, model using the same data. The larger the CFI, the better the fit. CFI ranges from .0 to 1.0. Model complexity and parsimony is adjusted by CFI by including the degrees of freedom which is used in the model (Lacobucci, 2009, p. 91).

- **Normed fit index**

Relative fit indexes compare the chi-square of a tested model to that of a baseline (also called independence) model. In the baseline model, all variables are uncorrelated and thus no latent variables exist. A prerequisite for the baseline model is a high chi-square which indicates poor fit. The values for NFI ranges from 0 to 1.0 where 1.0 is considered the ideal value (Simon, 2009).

- **Non-normed fit index**

Jennex (2007, p. 225) defined NNFI as the degree to which the model improves fit compared to the null model of which one must have random variables. Garson (cited in Jennex, 2007, p. 225) explained that an NNFI value greater than or equal to .90 is acceptable.

3.9 ASSESSING AND DEMONSTRATING THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

In order to prove the rigour of the study, and the accuracy and generalisability of the results, the research process should be transparent and thoroughly described by the researcher. The following section describes the reliability, validity and bias of this study.

3.9.1 Reliability and validity

Neuman (2000, p. 164) explained that reliability and validity are the two central issues of measurement. By investigating reliability and validity, the researcher aims to establish how concrete certain measures are connected to constructs (Neuman, 2000, p. 164). Neuman also argue that in social theory/research, constructs are ambiguous and not directly observable; thus, the significance of reliability and validity is emphasised. It should, however, be kept in mind that it is virtually impossible to obtain perfect reliability and validity.

- **Reliability**

Garson (2009) described reliability as a means of establishing internal consistency. Babbie (2008, p. 156) noted that reliability is high when an instrument yields the same result when it is applied repeatedly to the same object and measures the correlations between items. A reliable test should therefore minimise error and have consistent results when repeated. However, Babbie (2008, p. 157) mentions that reliability does not ensure accuracy and therefore the researcher should include bias in the research.

Chronbach's Alpha:
To establish internal consistency, Chronbach's Alpha is commonly used. For exploratory purposes .60 is acceptable; and for confirmatory purposes .70 is considered adequate and .80 is considered good (Garson, 2009, p. 37). This is determined through item analysis within this study.

- **Validity**

Words like truthfulness, accuracy and authenticity describe the concept of validity (Salkind, 2006, p. 113). Salkind further explained that validity tests whether or not an instrument measures what the researcher actually intended to measure (Salkind, 2006, p. 113). The following aspects of validity should be kept in mind when using the definition or the term:

- Validity of a test refers to the actual results of a test, not to the test itself. The validity is thus measured in terms of the outcome of the results based on the test.
- As mentioned before in the case of reliability, validity is also measured in degrees from low validity to high validity.
- Finally, validity of the results obtained from a test should be interpreted within the context of the test. Thus, the results should be understood in terms of the context of the research.
- Researchers have many types of validity to their disposal which include internal, external, test and face validity. This research aimed to prove construct validity.

Construct validity:

McBurney (1994, p. 128) argued that construct validity is the hardest to achieve because an indefinite number of theories may account for any given relationship. According to Neuman (2000, p. 171), validity can be seen as a bridge between any given construct and the data. He further explained that construct validity measures multiple indicators (Neuman, 2000, p. 170). In order to acquire construct validity the researcher has to determine whether theoretical explanations of the obtained data are plausible according to the theory supported by extensive research (McBurney, 1994, p. 128). According to Cook and Campbell (cited in Elmes, Kantowitz & Roediger, 1999, p. 55), construct validity can be defined as the extent to which an independent and dependent variable accurately measure what it should measure. Welman, Kruger and Mitchell (2007, p. 142) also noted that construct validity is when the instrument used to measure a variable, actually measures that variable. Therefore, a measurement's construct validity is the

degree to which the intended construct is measured instead of irrelevant constructs or measurement error (Welman, Kruger & Mitchell, 2007, p. 142).

- **Bias in testing**

Van de Vijver and Tanzer (1996) explained bias as any form of influence that has either separately or mutually influenced the credibility of the data. Construct and method bias will be explained for the purpose of this study.

Construct bias:
Construct bias can occur when there is only a partial overlap in the definitions of the constructs across cultures. Poor sampling of all the relevant behaviours associated with the construct can also give rise to construct bias. When an instrument measures different traits for one group than for another, or when the instrument measures the same trait but with varying degrees of accuracy, bias in terms of construct validity probably exists. In order to counter this type of bias, the researcher relied on random sampling as not to favour one specific group.

Method bias:
Method bias can be divided into three categories, namely sample, administration and instrument bias.

Babbie (2008, p. 208) noted that *sampling bias* is when a sample does not typically represent the larger population from which it was chosen. This type of bias is inevitable while doing research. Babbie (2008, p. 208) also mentioned that unconscious sampling bias occurs when the researcher's personal leanings affect the sample to the point where it does not truly represent the population. Random sampling was used to minimise method bias.

Administration bias includes all the sources of bias that is caused by the form of administration. This can include differences in environment, administration conditions, physical conditions, and communication problems between the participant and the tester. The fact that the participants completed the questionnaire in their own time without an administrator looking over their shoulder

led to a decrease in administration bias. It also ensured that their answers were more honest. The participants did not know the researcher and had no obligation toward or interest in the study. Therefore, they did not answer the questions in a way that promoted the study, eliminating reporting bias.

Van de Vijver et al. (2004) explained that *instrument bias* can be caused by response procedures, different response styles and different awareness of stimulus material. The POQ is in questionnaire format which minimises this type of bias.

3.10 RESEARCH ETHICS

Ethical clearance to conduct the research was obtained from the University of Pretoria Research Ethics Committee. Research ethics is described as the appropriateness of the researcher in relation to his or her behaviour regarding the human rights of participants (Saunders, Lewis and Thornhill, 2007). In order for a research study to be ethical, the researcher should ensure that the research design is morally acceptable and methodologically sound for all individuals involved.

3.10.1 The ethical survey

At the core of research lies the reality of ethics, especially in social research. The foremost issue in survey research is possible invasion of privacy (Neuman, 2000, p. 283). Survey researchers should be particularly aware of the possible invasion of a participant's privacy by inquiring about intimate actions or personal beliefs (Neuman, 2000, p. 283). For this reason, participants responded anonymously to the questionnaire in this study.

3.10.2 Privacy

The issue regarding information privacy in South Africa has not always enjoyed a great deal of attention. Section 14 of the Bill of Rights and the Constitution deal with the issue of privacy and states that:

> The issue on information privacy is not addressed. Although information privacy is not formally addressed in South Africa's Bill of Rights, it is the participant's prerogative to decide when and to whom to reveal personal information (Neuman, 2000, p. 283).

Neuman (2000, p. 283) argued that participants are more prone to share personal information in a comfortable context where mutual trust is apparent. Neuman also highlight the importance of respect between the researcher and the participant, and that it is the responsibility of the researcher to reduce anxiety and discomfort. Neuman contends that participants are comfortable to share personal information if they understand that the research is legitimate and that there is a need for them to contribute to the research (Neuman, 2000, p. 283). The fact that the participants stayed anonymous during the research contributed to the privacy factor.

3.10.3 Voluntary participation

When a participant is confronted with a questionnaire for a research project, it is usually not requested and requires time and effort to partake. Social research could also request personal information that might be unknown to the participant's friends and colleagues. This usually makes it difficult to obtain voluntary participation (Babbie, 2008, p. 67).

Neuman (2000, p. 283) stated participants who agreed to participate in a research project, have the right to refuse further participation at any given time. The informed consent of the participant gives the researcher permission to conduct the research but does not prevent the participant to refrain from participating.

3.10.4 Anonymity and confidentiality

Babbie (2008, p. 70) described the importance of confidentiality and anonymity: "Anonymity is guaranteed in a research project when neither the researcher nor the readers of the findings can identify a given response with a given participant". Babbie (2008, p. 70) explained that research assures confidentiality when the researcher is able to identify a participant's response but undertake not to do so publicly. It is the responsibility of the researcher to inform the participant on whether or not the research project is confidential or anonymous. This was done in this study by ensuring the participants of the anonymity and confidentiality of their results on the consent form.

3.10.5 Language

Creswell (2009, p. 92) discussed how research should not use language that is biased on the basis of gender, sexual orientation, racial or ethnic group, disability, or age. Creswell (2009, p. 92) suggested that the unbiased language should be presented at an appropriate level of specificity and also language should be sensitive to labels. In addition, Creswell also suggested that the researcher should acknowledge the participants in the study by using the word 'participant' instead of 'subject'. The researcher used the original format of the questionnaire and did not change any wording. The consent form also did not contain any discriminatory words which could offend the participants.

3.11 CONCLUSION

This chapter dealt with the research design and methods used by the researcher to prove construct validity of the Psychological Ownership Questionnaire (POQ). The type of research was explained together with a detailed analysis of the sample in terms of the biographical information. The method of data collection and analysis was explained detailing the specific tests that were done and the motivations for these. The chapter concluded with a discussion of research ethics.

This chapter was dedicated to explain the researchers motivation for the particular design and method used. The next chapter discusses the results of the data.

CHAPTER 4
RESULTS AND DISCUSSION

4.1 INTRODUCTION

To prove construct validity the data obtained had to be analysed. The EQS and SPSS programmes were used to complete the statistical analysis. The relevant data is presented and discussed in this chapter, linking it to the theory discussed in the previous chapter. The values are also discussed, interpreted and illustrated in tables and graphs.

4.2 DESCRIPTIVE STATISTICS

The descriptive statistics with regard to the Psychological Ownership Questionnaire were computed in order to describe the data and comprised a descriptive analysis of the content items of the instrument as well as the biographical data discussed in the previous chapter. The POQ was developed by Avey et al. (2009) to theoretically assess preventative and promotive psychological ownership. The questionnaire consists of 16 items, three (3) items for each of the four (4) components of promotive psychological ownership (self-efficacy, accountability, sense of belongingness and self-identity). The remaining four (4) items measure the last component, namely territoriality, which is a measure of the preventative psychological ownership construct. The responses were captured on a six-point likert scale ranging from 1=strongly disagree to 6=strongly agree.

Table 4 indicates the items per factor: territoriality is included in items 1 to 4; self-efficacy is included in items 5 to 7; accountability is included in items 8 to 10; belongingness is included in items 11 to 13; and lastly, self-identity is included in items 14 to 16.

Table 4 Items per factor for the Psychological Ownership Questionnaire

Territoriality *(4 Items)*	Self-efficacy *(3 Items)*	Accountability *(3 Items)*	Belongingness *(3 Items)*	Self-identity *(3 Items)*
Variables				
1	5	8	11	14
2	6	9	12	15
3	7	10	13	16
4				

The descriptive statistics of the psychological ownership questionnaire is presented in Table 5. The participants' responses to the different items in the questionnaire are illustrated by the variability of the mean, standard deviation, skewness and kurtosis.

Table 5 Descriptive Statistics for the Psychological Ownership Questionnaire

	Statistic			**Skewness**	**Kurtosis**	**Reliability**
	N	Mean	*SD*	Statistic	Statistic	
Territoriality	145	2.791	1.087	.394	-.151	.777
Self-efficacy	145	5.145	.821	-2.246	8.704	.845
Accountability	145	4.431	1.050	-.790	.909	.853
Belongingness	145	4.306	1.291	-.705	-.152	.895
Self-identity	145	4.159	1.253	-.552	-.164	.823

Within a normal distribution, skewness and kurtosis is between -1 and +1. This is an indication of symmetry and distribution of scores. Anything above or below 0 indicates deviation from the normal distribution (Field, 2005, p. 133). The summated scores presented in Table 5 indicate that the data is not normally distributed with a tendency towards negative skewness.

Chronbach's Alpha is commonly used to establish internal consistency. For exploratory purposes .60 is acceptable; for confirmatory purposes .70 is considered adequate and .80 is considered good (Garson, 2009, p. 37). In the data presented in Table 5, the Chronbach Alpha value of territoriality is above .7

which is adequate and the values for self-efficacy, self-identity, belongingness and accountability are above .8 indicating very good internal consistency.

4.3 STRUCTURAL EQUATION MODELLING

The Structural Equation Modelling (SEM) process was used to conduct a Confirmatory Factor Analysis (CFA) to validate the generated model. Garson (2009) explained that the model must then be tested with various fit indices as mentioned in Chapter 3. This is done to determine if the pattern of variances and co-variances is consistent in the data according to the postulated theoretical model.

4.3.1 Model fit

Lacobucci (2009, p. 90) explained that some form of fit statistic must be included when assessing a model as these fit statistics provide complementary information regarding the fit of the model.

The adequacy of the model was evaluated by means of the goodness-of-fit measures. The aim of goodness-of-fit tests is to determine if the model should be kept or rejected. The goal of the Mardia's coefficient, also called the multivariate kurtosis, is to test for the presence of multi-variance. The Mardia's coefficient for this study was 100.3273 with a normalised estimate of 24.9946. Hu and Bentler (2006, p. 55) indicated that the data is non-normally distributed if the normalised estimate is greater than 5, as is the case in this study. In order to rectify the non-normality indicated by the normalised estimate, the Santorra-Bentler Chi-square was used to remedy the bias (Garson, 2009).

In order to compute the SEM, the EQS programme was used with Maximum Likelihood (ML) estimation. Avey and Avolio (2009) indicated that their instrument consists of 5 factors and, for that reason, the five-factor model was tested.

4.3.1.1 The five-factor model

Results of the fit indices for the five-factor model are displayed in Table 6.

Table 6 Fit indices for the five-factor model (n=145)

Santorra-Bentler Scaled Chi-Square	126.082
Degrees of Freedom	94
Bentler-Bonnet Normed Fit Index	.847
Bentler-Bonnet Non-Normed Fit Index	.942
Comparative Fit Index (CFI)	.995
Standardized RMR	.680
RMSEA (.022 –.070)	.049

Note: The 90% confidence intervals for the RMSEA are given in brackets after the point estimation.

The result of the Santorra-Bentler Scaled chi-square value for the sample was 126.082 with 94 df (p=0.015). The chi-square is statistically significant (p<0.05) and, therefore, indicative of a poor overall fit. However, given the chi-square/degrees of freedom ratio, it would be incorrect to accept a poor model fit based on the significance of the chi-square value alone. The chi-square/degrees of freedom ratio was calculated as 1.341 and Schreiber et al. (2006, p. 330) explained that ratios of two or less can be interpreted as an indication of a good fit. Thus, it can be concluded that a chi-square/degrees of freedom ratio of 1.373 is an indication of good fit.

Table 6 depicts that the NFI, NNFI, CFI values were .847, .942 and .995, respectively. According to Schreiber et al. (2006, p. 330), the values should be greater than or equal to .95 for acceptance. Based on this guideline, NFI and NNFI do not meet the requirement for acceptable tolerance but CFI can be interpreted as acceptable. Schreiber et al. (2006, p. 330) indicated that a value of .05 indicates a good fit and a value below .08 indicates an adequate fit for SRMR. The SRMR value was .068 for the five-factor model which can be interpreted as a fairly good fit. Madurai et al. (2011, p. 6) suggested that a RMSEA value of .05 and

below is considered a well-fitting model and a value of .08 and below is considered a reasonably-fitting model. The RMSEA value was .049 with a 90% confidence interval (.022–.070) and is thus considered to be a well-fit with the model.

Figure 2 depicts the structural equation model for the five factors underlying psychological ownership. Latent variables were allowed to correlate with one another. Theoretically, well-defined constructs should reveal low values. The curved arrows between the factors illustrate the correlation or covariance between the latent variables. The correlation between Factor 1 and 2 was -.203; the correlation between Factor 2 and 3 was .416; Factor 3 and 4 has a correlation of .380. These correlations illustrate a successful confirmatory factor analysis as latent factors were clearly distinguished. However, Factor 4 and 5 has a correlation of .965. Gorsuch (cited in Bergh, Buys, Schaap and Olckers, 2004, p. 93) explained that when the correlation between latent factors is too high, the confirmatory structural equation model analysis could possibly fail. The reason for this is because the high correlation is an indication that the constructs cannot be distinguished as separate constructs. To test this conclusion, the aggregates for belongingness and identity should be grouped together and a four-factor model should, therefore, be tested. The negative correlations that exist between Factor 1 (territoriality) and the other factors confirm the existence of a distinctive form of psychological ownership, labelled prevention-oriented psychological ownership.

Path analysis was used to explore the correlations within the defined network and to show to what extent the observed variable explained each latent construct. Factor loadings should be at least .5, but preferably .7. All the observed variables demonstrated moderate to high path values ranging between .575 (the lowest) and .910 (the highest).

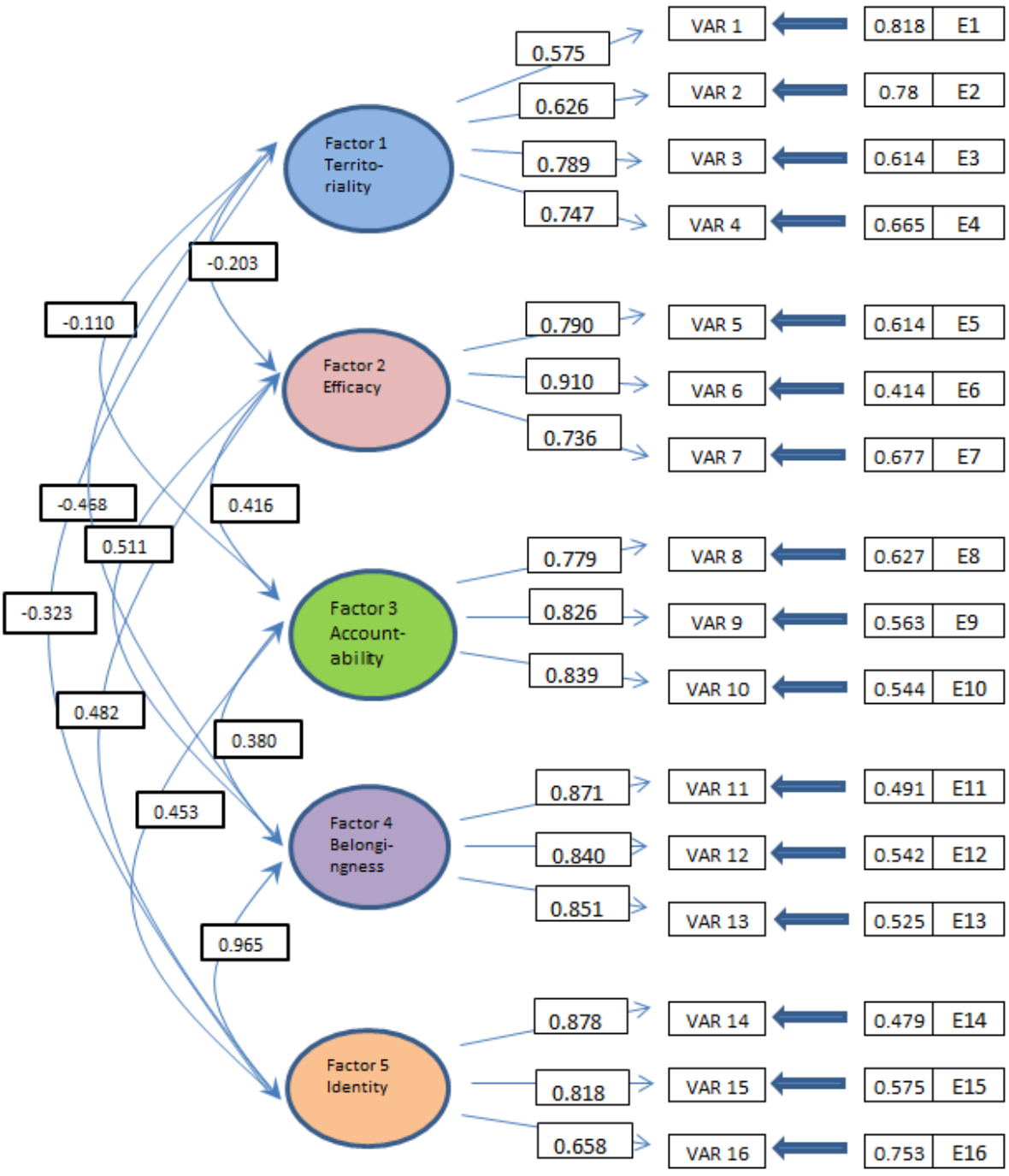

Figure 2 Structural Equation Model: five-factor model

Because of the high correlation (.965) between Factor 4 and 5, as discussed, a four-factor model was tested.

The four-factor model

Results of the fit indices for the four-factor model are displayed in Table 7.

Table 7 Fit indices for the four-factor model (n=145)

Santorra-Bentler Scaled Chi-Square	135.685
Degrees of Freedom	98
Bentler-Bonnet Normed Fit Index	.836
Bentler-Bonnet Non-Normed Fit Index	.935
Comparative Fit Index (CFI)	.947
Standardized RMR	.069
RMSEA (0.028-0.072)	.052

Note: The 90% confidence intervals for the RMSEA are given in brackets after the point estimation.

The Santorra-Bentler Scaled chi-square value is 135.685 with 98 degrees (p=0.007). Once again, the chi-square was statistically significant (p<0.05) and indicative of poor overall fit. The chi-square/degrees of freedom ratio is calculated as 1.384. This ratio can be considered a good fit as per Schreiber et al.'s (2006, p. 220) explanation that a value of two or less can be interpreted as an indication of a good fit.

As indicated in Table 7, the NFI, NNFI and CFI values were .836, .935 and .947, respectively. A value greater than or equal to .95 is considered a good fit for the above-mentioned indices (Shreiber et al., 2006, p. 330). NFI, NNFI and CFI did not meet this requirement for acceptable tolerance. Schreiber et al. (2006, p. 330) explained that an SRMR-value of 0 depicts a perfect fit and the value found for SRMR was .069, thus indicating an adequate fit. The RMSEA value of .052 with a 90% confidence interval (.028-.072) meets the .05 requirement for a good model fit.

Figure 3 illustrates the structural equation model for the four factors underlying psychological ownership. Because of the result of the high correlation between Factor 4 and Factor 5 in the five-factor model, these two factors were grouped together to form the merged belongingness-and-identity factor, thus creating the

four-factor model. Latent variables were allowed to correlate with one another. Factor loadings did not show high correlations between the constructs. Factor 1 and 2 had a correlation of .414; a correlation between Factor 3 and 4 was .413; a correlation between Factor 3 and 4 was .203.

Once again, the negative correlations that exist between Factor 1 (territoriality) and the other factors confirm the fact that territoriality is seen as a different form of psychological ownership, namely prevention-oriented psychological ownership.

All the observed variables demonstrated moderate to high path values ranging between .582 (the lowest) and .910 (the highest).

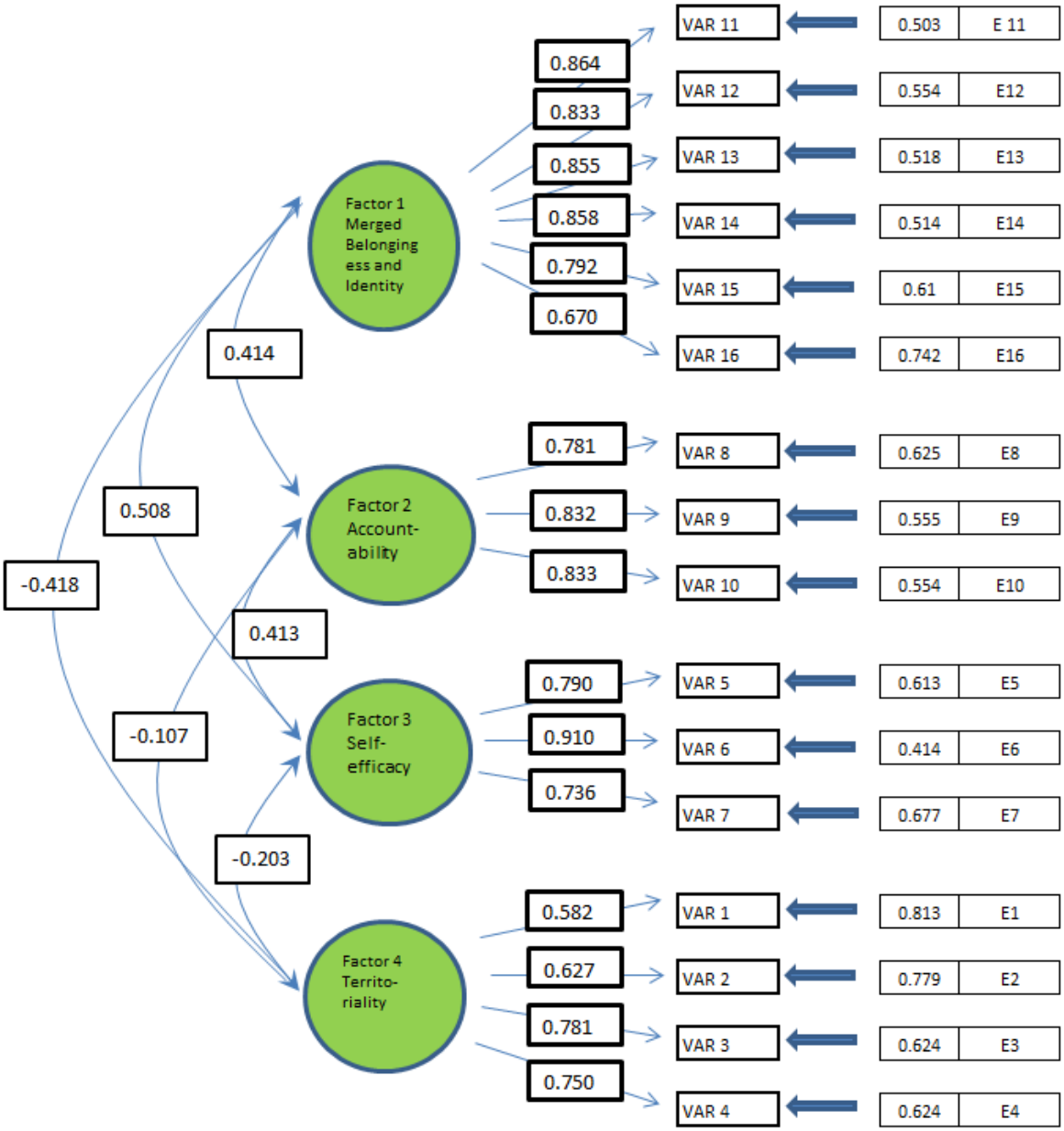

Figure 3 Structural Equation Model: four-factor model

4.4 CHOOSING THE APPROPRIATE MODEL

The research yielded two models through the SEM process, namely the five-factor and the four-factor model. The researcher had to determine which one of these models is more suitable for the purpose of this study.

Table 8 Summary statistics of four- and five-factor models (n=145)

	Four-Factor Model	Five-Factor Model
Chi-Square	135.685	126.082
Degrees of Freedom	98	94
NFI	.836	.847
NNFI	.935	.942
CFI	.947	.995
RMSEA	.052	.049
SRMR	.069	.068

The Santorra-Bentler chi-square of the four-factor model was 135.685 based upon 98 df. The chi-square proved to be significant with a value of .007.

For the four-factor model, the NFI was .836, the NNFI was .935 and the CFI was .947. As mentioned in Chapter 3, a value of .95 is widely considered as an indicator of a good model fit for the above-mentioned fit indices.

An RMSEA value between .05 and .08 is considered to be an indicator of an acceptable fit (Bergh et al., 2004, p. 92). The four-factor model yielded an RMSEA value of .052 which fall within this range and thus indicates an acceptable fit. The SRMR value was .069 for the four-factor model which can be interpreted as a good fit.

The Santorra-Bentler chi-square of the five-factor model was 126.081 based upon 94 df. The chi-square was significant with a value of .015. The latent factors of the five-factor model were allowed to correlate with each other. The NFI value was .847; the NNFI value was .942; and the value of CFI was .995. These all indicated a good model fit.

With regard to the five-factor model, an RMSEA value of .049 is an indication of a poor fit as an acceptable fit is indicated between the values of .05 and .08 (Bergh et al., 2004, p. 92).

By reviewing the values of both models it can be concluded that the five-factor model fits the data better than the four-factor model. The high correlation (.965) between belongingness and identity in the five-factor model is a matter of concern as this could mean that the analysis do not provide clear results between latent factors. The consequence of this high correlation is the inability to differentiate between the belongingness and the identity constructs. Taking this high correlation into consideration, the researcher still chose the five-factor model as it related back to the literature and the research question based on the model's substantive meaning.

Avey et al. (2009) explained that belongingness and self-identity is related but yet distinct as the underlying principle of psychological ownership manifests in both these constructs. This will cause these two constructs to be related but remain distinct.

4.5 CONCLUSION

This chapter was dedicated to the interpretation of the results of the research. An explanation of the descriptive statistics preceded the discussion on the Structural Equation Modelling process. The differences between the four-factor and the five-factor models were explained as well as the reason for choosing the appropriate model. The next chapter deals with the conclusions and the recommendations of this study.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The purpose of this study was to determine the construct validity of the Psychological Ownership Questionnaire (POQ) within the South African context by following a post-positivistic paradigm.

This study was divided into the following chapters:

Chapter 1 outlined the need to evaluate the validity of the Psychological Ownership Questionnaire within the South African context. It was explained that the aim of this study was to gather the perceptions of employees with regard to psychological ownership.

Chapter 2 covered the appropriate literature regarding psychological ownership. The concept was defined and the core of psychological ownership was discussed.

Chapter 3 focussed on the methodology that was used to investigate the validity and reliability of the POQ.

Chapter 4 presented the results of the research. The gathered data was statistically analysed in order to prove construct validity of the Psychological Ownership Questionnaire for the use in the South African context.

This chapter (**Chapter 5**) draws conclusions regarding the research and the evaluates the objectives set out in the beginning. Limitations of the research are also discussed and suggestions for future research are made.

5.2 ACHIEVEMENT OF STUDY OBJECTIVES

The construct validation of the Psychological Ownership Questionnaire was the **primary objective** of this study. The results proved that the POQ can be used effectively within the South African context to measure preventive and promotive psychological ownership.

The **secondary objectives** in this study were as follows:

- **To determine what is meant by psychological ownership**

According to Van Dyne and Pierce (2004, p. 440), psychological ownership is simply defined as a psychologically experienced phenomenon whereby an employee develops possessive feelings for a target. Wang et al. (2006, p. 226) argued that the definition of psychological ownership is applicable not only to material but also non-material objects. Thus, an individual can have a feeling of ownership towards physical objects (such as an office) or non-physical objects (such as ideas, knowledge and even other people). According to Litwinski (1947, p. 241), an individual can acquire, protect, transfer and abandon both ideas and objects.

- **To determine what constructs form part of psychological ownership**

Avey et al. (2009, p. 174) identified five constructs which form part of psychological ownership. These five constructs are territoriality (a component of preventative-oriented psychological ownership), and self-efficacy, accountability, belongingness and self-identity (components of promotive-oriented psychological ownership). The research confirmed these five factors through data analysis, even though self-identity and belongingness showed an extremely high correlation.

- **To evaluate the POQ as a valid and reliable instrument**

The POQ was developed and validated in the American context. The aim of this study was to validate the questionnaire in the South African context. James Avey and Bruce Avolio, the developers of the Psychological Ownership Questionnaire, mentioned that this is a relatively new concept and that the current knowledge regarding the subject is limited, and thus further research is needed. As psychological ownership has not been investigated or tested in South Africa, this study makes a valuable contribution towards the field of study regarding understanding psychological ownership in the South African context.

From the findings discussed in Chapter 4, it is evident that the Psychological Ownership Questionnaire measures what it is supposed to measure and that the instrument is valid and reliable within the South African context. This study confirmed the five-factor model through data analysis, even though self-identity and belongingness showed an extremely high correlation. The five-factor model fitted the data better than the four-factor model and the five-factor model also made theoretically more sense.

5.3 LIMITATIONS OF THE STUDY

- Lacobucci (2009, p. 92) explained that a sample size of 100 participants is sufficient for convergence but that a sample of 150 is sufficient for a proper convergent solution. The sample size in this study was 145 and, although this size can comfortably be used for generalisability and statistical analysis, it would have been more beneficial to the study if the sample consisted of more participants.

- The majority (84%) of the participants' mother tongue was Afrikaans. The questionnaire was only available in English as the researcher did not think it necessary to translate the items into Afrikaans because of the multi-cultural nature of South Africans. All the participants could understand, read and write English. However, the items could have been subject to

misinterpretation as the majority of the participants' first language was not English.

- Although random sampling was used to distribute the questionnaires, the statistics revealed that the majority of the sample was represented by white individuals. Thus, the sample was not a true reflection of the South African population and this could be interpreted as a limitation of the research.

- A cross-sectional research design was used to gather the information regarding the population at a single point in time. Although this still enables the researcher to make inferences regarding certain relationships in the data, it limits the research. Cross-sectional research design is very effective to build a foundation to support future research. It is, therefore, suggested that longitudinal research be done to enable the researcher to investigate the constructs in depth.

- One prominent factor is that South Africa has 11 official languages and the interpretation of the questions could pose a challenge. Thus, it must be considered that language may have a significant influence on this study.

5.4 SUGGESTIONS FOR FUTURE RESEARCH

Although the researcher achieved what the study set out to do, namely validate the POQ in the South African context, further research of construct validation is encouraged to strengthen the current theory in different contexts. It is also suggested that a more diverse sample be used to enable the research to be generalised to South Africa.

5.5 FINAL CONCLUSION

The main objective of the research was to prove that the Psychological Ownership Questionnaire is valid in the South African context. The results yielded evidence that, statistically, the POQ, developed by Avey and colleagues (2009), can be used for determining the psychological ownership of South African employees. By measuring psychological ownership, the HR specialist/practitioner has a distinct advantage to manage employees' attitudes towards their work and change in the organisation. Once this phenomenon can be measured and managed, it can be used to enhance the effectiveness of the organisation as well as the individual.

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APPENDIX A: Psychological Ownership Questionnaire

Instructions: below are statements that describe how you may think about yourself right now at your **current work situation.** Use the following scales to indicate your level of agreement or disagreement with each statement.

Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
1	2	3	4	5	6

1. I feel I need to protect my ideas from being used by others in my organisation	1	2	3	4	5	6
2. I feel that people I work with in my organisation should not invade my workspace	1	2	3	4	5	6
3. I feel I need to protect my property from being used by others in this organisation	1	2	3	4	5	6
4. I feel I have to tell people in my organisation to 'back off' from projects that are mine	1	2	3	4	5	6
5. I am confident in my ability to contribute to my organisation's success	1	2	3	4	5	6
6. I am confident I can make a positive difference in this organisation	1	2	3	4	5	6
7. I am confident setting high performance goals in my organisation	1	2	3	4	5	6

APPENDIX B: Informed Consent

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Economic and Management Sciences

Informed consent for participation in an academic research study

Dept. of Human Resource Management
Construct Validity of the Psychological Ownership Questionnaire

Research conducted by:
Ms.C. Alberts (24262120)
Cell: 083 287 3200

Dear Participant

You are invited to participate in an academic research study conducted by Carina Alberts, a Masters student from the Department Human Resource Management at the University of Pretoria.

The purpose of the study is to validate the Psychological Ownership Questionnaire for the South African context.

Please note the following:

- This study involves an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 5 minutes of your time
- The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
- Please contact my supervisor, Mrs Chantal Olckers (chantal.olckers@up.ac.za) if you have any questions or comments regarding the study.
- Please note that no signature is needed as you give your consent by completing the questionnaire.