

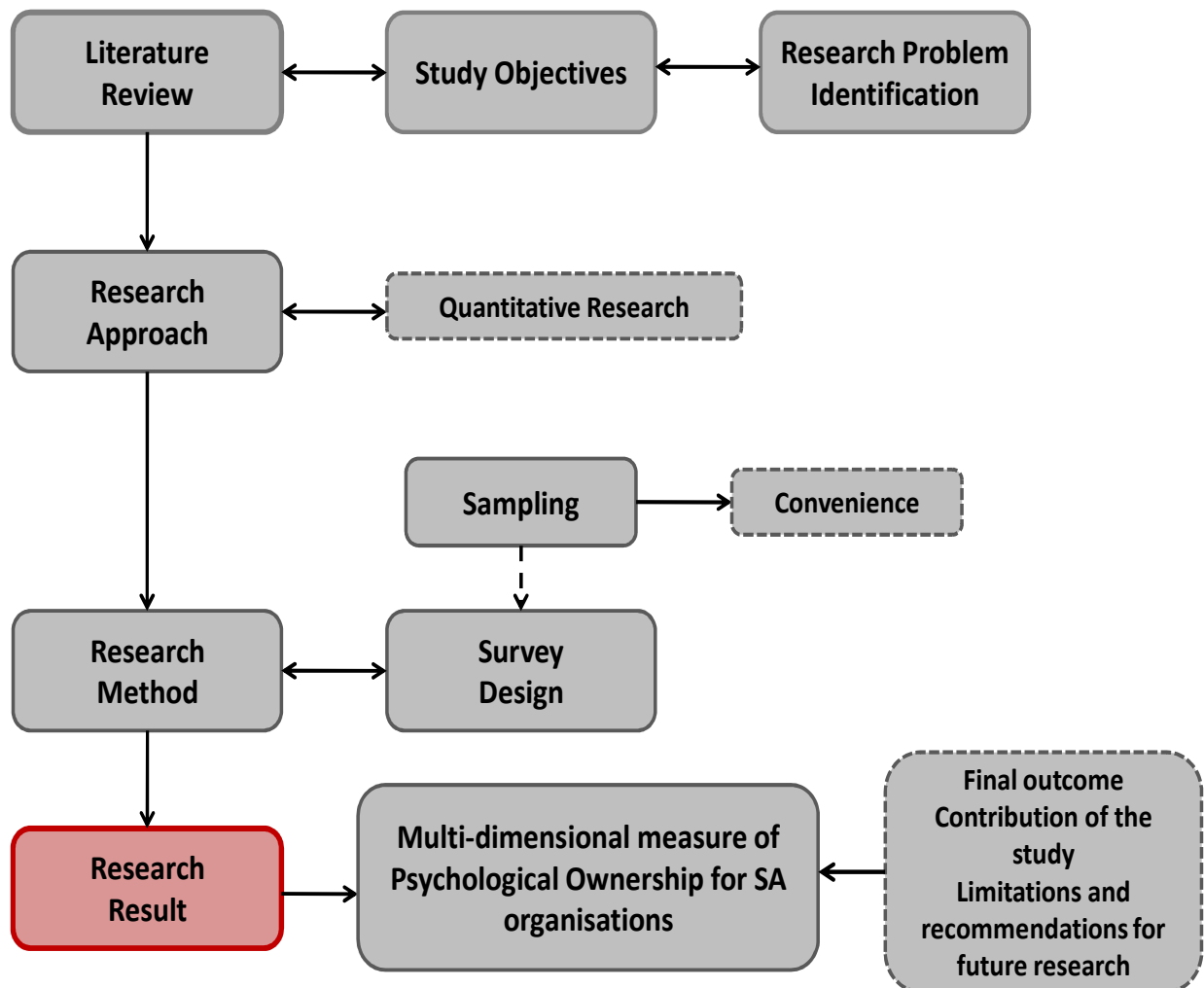
CHAPTER 4

RESEARCH RESULTS AND FINDINGS

If we knew what it was we were doing, it would not be called research, would it?

- Albert Einstein

In this chapter...

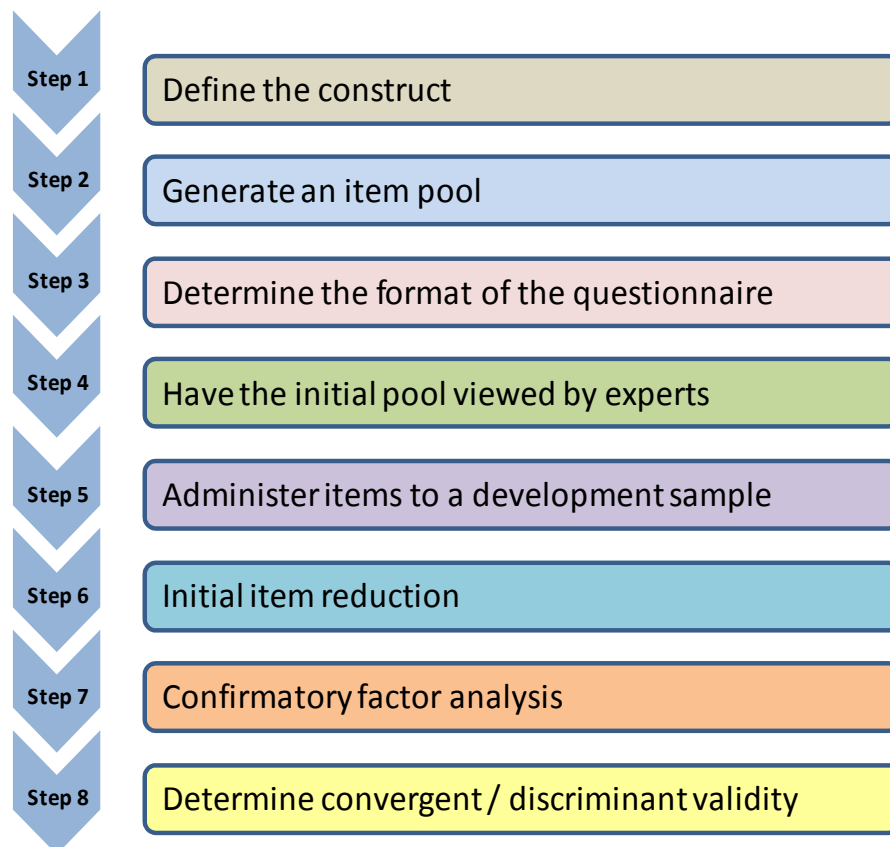


4.1 INTRODUCTION

In this chapter the research methodology, strategy and research methods used to develop a multi-dimensional measure of psychological ownership of employees within the South African context will be documented and explained.

As explained in Chapter 3, in this study a measure of psychological ownership was developed by following a combination of steps as suggested by DeVellis (2003), Hinkin (1998), and Spector (1992). The various steps in the scale development process that were followed are outlined in Figure 4.1 and are further described.

Figure 4.1: Steps in the scale development process



Source: Adapted from DeVellis (2003), Hinkin (1998), and Spector (1992)

4.2 STEPS TO BE FOLLOWED IN SCALE DEVELOPMENT

4.2.1 Step 1: Defining the construct

Building on the five recognised dimensions of psychological ownership: *self-efficacy*, *self-identity*, *having a place* (belonging), *accountability*, and *territoriality* of Avey and colleagues (2009), and after a comprehensive review of the literature, the concepts of *responsibility* and *autonomy* were posited as additional aspects of psychological ownership. These concepts have been clearly defined and described in Chapter 1 and in the literature review in Chapter 2.

The definition of each concept in the organisational context is summarised in Table 4.1.

Table 4.1: Definitions of key concepts in the organisational context

Concept	Definition
Psychological ownership	A state in which individuals feel as though the target of ownership (material or immaterial in nature) or piece of it is ‘theirs’ (i.e. ‘It is <i>mine!</i> ’) and it exists irrespective of legal ownership (Pierce et al., 2001)
Efficacy and effectance	Individuals’ judgement about their capability to perform across a variety of situations (Bandura, 1977)
Self-identity	A personal cognitive connection between an individual and an object (e.g. organisation). The individual’s perception of oneness with the target (e.g. the organisation) (Porteous, 1976).
Having a place (belonging)	The extent to which an individual feels “at home” in the organisation (Porteous, 1976).
Accountability	The implicit or explicit expectation of the perceived right to hold others and oneself accountable for influences on one’s target of ownership (Lerner & Tetlock, 1999)
Territoriality	An individual’s behavioural expression of his/her feelings of ownership toward a physical or social object (Brown et al. ,2005)

Concept	Definition
Autonomy	The regulation of the self and the extent to which a person needs or is eager to experience individual initiative in performing in the organisation (Ryan & Deci, 2006).
Responsibility	The state of cognitive and emotional acceptance of responsibility (Cummings & Anton, 1990).

4.2.2 Step 2: Generation of an item pool

For item generation the deductive process was used (Hinkin, 1998). Item generation was thus initiated by a thorough review of the literature on possessiveness, psychological ownership, and related terms as reported in Chapter 2. The definitions as given in Table 4.1 were used as a guide for the development of items. Items to be included in the measure were generated from the review of literature and expanded on the instrument developed by Avey et al. (2009). The six theory-driven domains determined to best constitute the dimensions of ***promotive or promotion-orientated psychological ownership*** include *self-efficacy*, *self-identity* with the target, *sense of belonging*, *accountability*, *autonomy* and *responsibility*. *Territoriality* was identified as the seventh dimension, belonging to ***preventative or prevention-orientated psychological ownership*** (Avey et al., 2009). The researcher generated 54 items representing these seven theory-driven dimensions of psychological ownership. The number of items representing each construct is indicated in Table 4.2:

Table 4.2: Items per dimension

Dimension	Items
Self-efficacy	7
Self-identity	8
Sense of belonging	7
Accountability	6
Territoriality	9
Autonomy	10
Responsibility	7
Total	54

A detailed theoretical verification of each item included under the seven descriptive dimensions of psychological ownership in the questionnaire has been provided in Table 4.3.

Table 4.3: Theoretical verification of each item per dimension

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
A.	Self-efficacy Def: Individuals' judgment about their capability to perform across a variety of situations (Bandura, 1977)	
1.	I am confident that I can make suggestions about ways to improve the working of my work unit.	According to Parker (1998, p. 835), "self-efficacy concerns the extent to which people feel confident that they are able to carry out a broader and more proactive role".
2.	I have the confidence to suggest doing things differently in my work unit.	According to Bandura (as cited in Parker, 1998), perceived control is a critical determinant of self-efficacy. Andrisani (1976) argues that a high level of perceived control relates positively to personal confidence, initiative, and innate ability.
3.	I am confident that I can design new procedures for my work unit/area.	Adapted from Parker's (1998) Role Breadth Self-efficacy instrument. Original item: "How confident would you feel making suggestions to management about ways to improve the working of your section?"
4.	I am confident that I am able to analyse a long-term problem to find a solution.	Adapted from Parker's (1998) Role Breadth Self-efficacy instrument. Original item: "How confident would you feel analysing a long-term problem to find a solution?"
5.	I am confident that when I make plans that will benefit the organisation, I can make them work.	Bandura (as cited in Parker, 1998) suggests that one of the four categories that are used in the development of self-efficacy is enactive mastery, or repeated performance success.
6.	I am confident that I have the ability to act within the responsibilities of my job.	According to Bandura (1995), p. 193, "An efficacy expectation is the conviction that one can successfully execute the behaviour required to produce outcomes."
7.	I am confident that I can meet my performance expectations that were agreed with me upfront.	Brockner (as cited in Parker, 1998) states that self-efficacy is a judgement about specific task capability.
B.	Self-identity Def: A personal cognitive connection between an individual and an object (e.g. organisation). The individual's perception of oneness with the target (e.g. the organisation) (Porteous, 1976).	
8.	I personally experience the successes and failures of the organisation as my successes and failures.	"...the tendency of individuals to perceive themselves and their groups or organisations as intertwined, sharing common qualities and faults, successes and failures, and common identities" (Mael & Tetrick, 1992, p. 813). Adapted from Mael and Ashforth (1992). Original item: "This school's successes are my successes."

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
9.	I feel that by identifying with the characteristics of the organisation it helps me develop a sense of who I am.	According to Pierce et al. (2003), people use ownership to define themselves, to express their self-identity to others and to maintain the continuity of the self across time.
10.	I feel the need to be seen as a member of the organisation.	"...the individual defines him or herself in terms of the organisation in which he or she is a member" (Mael & Ashforth, 1992, p104).
11.	It is important to me that others think highly of my organisation.	"...an individual may feel proud to be part of a group" (O'Reilly & Chatman, 1986, p. 493).
12.	My personal values and that of the organisation are aligned and cared for.	"...the values of the individual and the group or organisation are the same" (O'Reilly & Chatman, 1986, p. 493).
13.	It is important to me to defend my organisation to outsiders when it is criticised.	According to Lee, (1971, p. 215) cited in Edwards, 2005) where identification with the organisation is in the form of loyalty, this will relate to attitudes and behaviours that include "defending the organisation to outsiders".
14.	It is important to me to support my organisation's goals and policies.	"The organisation's goals become the individual's goals, and those who identify strongly are more likely to be motivated to work hard to help achieve these goals" (Edwards, 2005, p. 207).
15.	I am proud to say to every person I meet that this is my organisation.	"...an individual may feel proud to be part of a group" (O'Reilly & Chatman, 1986, p. 493) and according to Lee, as cited in Edwards, 2005, p. 215) where identification with the organisation is in the form of loyalty, this will relate to attitudes and behaviours that include "taking pride in the tenure in the organisation".
C.	Sense of belongingness Def: The extent to which an individual feels "at home" in the workplace (Porteous, 1976).	
16.	I think about this organisation as MY organisation.	Adapted from the original five-item measure of psychological ownership originally developed by Pierce, Van Dyne and Cummings (1992, cited in Van Dyne & Pierce, 2004).
17.	I perceive myself to be psychologically intertwined with the fate of the organisation.	"...the process by which the goals of the organisation and those of the individual become increasingly integrated or congruent" (Hall et al., 1970, p. 176).
18.	I feel that I belong in this organisation.	"...the perception of oneness with or belongingness to an organisation" (Mael & Ashforth, 1992, p. 104). Taken from Avey et al. (2009) Psychological Ownership Questionnaire. Original item: "I feel I belong in this organisation".
19.	I feel "at home" in this organisation.	According to Porteous (1976), it is those possessions in which an individual finds a strong sense of identification that come to be regarded as "home" – my place.
20.	This organisation cares for me as a person and looks after me.	According to Pierce et al. (2003), people become psychologically attached to a variety of objects of material and immaterial nature and in many of these possessions they find a special place that is familiar and provides some form of personal security.

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
21.	There is a strong relationship between me and my team.	“...Organisational identification is seen as a key psychological state reflecting the underlying link or bond that exists between the employee and the organisation” (Edwards, 2005, p. 201).
22.	I give and receive affection from my colleagues and this bonds us with the organisation.	According to Lee (as cited in Edwards, 2005, p. 214), belongingness results from common goals shared with other employees who feel that their function fulfils their personal needs.
D.	Accountability Def: The implicit or explicit expectation of the perceived right to hold others and oneself accountable for influences on one’s target of ownership (Lerner & Tetlock, 1999).	
23.	I will hold management accountable for their decisions.	According to Pierce et al. (2003), individuals who experience high levels of psychological ownership expect to be able to call others to account for influences on their target of ownership.
24.	I have the right to hold myself and others accountable for organisational performance.	Lerner and Tetlock (1999, p. 255) refer to accountability as “the implicit or explicit expectation that one may be called on to justify one’s beliefs, feelings, and actions to others”.
25.	It is important to me to have the right to information about the organisation, such as performance and projection and about my personal and team performance.	According to Pierce et al. (2001) individuals have the right to information about the target of ownership.
26.	In my organisation we are allowed to make mistakes and own up to it.	“Accountability requires a level of ownership that includes: making; keeping; and proactively <i>answering for personal commitments</i> ” (Wood & Winston, 2007, p. 168).
27.	In my organisation I accept responsibility and take the consequences of these decisions.	According to Kouzes and Posner (1993, cited in Wood & Winston, 2007) accountability has to do with the acceptance of responsibility, voluntary transparency and <i>answerability</i> .
28.	I work in an open environment where everyone is allowed to challenge a decision or strategy as long as it is done constructively.	Kubzansky and Druskat (as cited in Pierce et al., 2001) state that the right to information about the target of ownership and the <i>right to have a voice in decisions that impact on the target</i> are frequently associated with ownership. Adapted from Avey et al. (2009) Psychological ownership questionnaire. Item: “I would challenge the direction of my organisation to assure it’s correct”.
	Territoriality Def: An individual’s behavioural expression of his/her feelings of ownership toward a physical or social object (Brown et al., 2005)	

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
29.	It is important to me that my organisation allows me to personalise my work space.	According to Wells, (2000) employees are generally happier if they are allowed to personalise; Brown et al. (2005, p. 581) came to the conclusion that “personalizations are an important type of marking that allow a person to express his or her identity and foster a sense of belonging to the organization”.
30.	It is important to me to defend my work space from others in the organisation.	Porteous (1976) states that control over space per se is a satisfaction that is derived from ownership, and that people use control-orientated marking to persuade others not to attempt to gain access to their marked territory (Brown et al., 2005).
31.	It is important to me to have a work space or work area of my own.	Porteous (1976) has argued that individuals have an inherent territoriality need, that is, a need to possess a certain space.
32.	It is important to me to protect my belongings from others in the organisation.	According to Belk (1988) and Dittmar (1992), possessions can play such a dominant role in the owner’s identity that they become part of the extended self, with the result that the loss of possessions will, according to James (1890, p. 178), lead to “shrinkage of our personality, a partial conversion of ourselves to nothingness”. Item adapted from Avey et al. (2009) Psychological ownership questionnaire. Original item: “I feel I need to protect my property from being used by others in my organisation.”
33.	It is important to me that people I work with do not invade my work space.	According to Brown et al. (2005), control-orientated marking communicates to others that a territory has been claimed so as to discourage access, usage, and infringement attempts by others. Item taken from Avey et al. (2009) Psychological ownership questionnaire.
34.	It is important to me to protect my ideas from being used by others in the organisation.	According to Locke, (1690, cited in Pierce et al., 2001) people own their labour and, therefore, they often feel that they own that which they created, shaped or produced. Item adapted from Avey et al. (2009) Psychological ownership questionnaire. Original item: “I feel I need to protect my ideas from being used by others in my organisation.”
35.	It is important to me to discourage others from attempting to enter my work space.	According to Brown et al. (2005, p. 586) “Behaviors, such as marking and defending, that increase the sense one has a place of one’s own will increase the rootedness and sense of belonging an individual member has with the organisation.”
36.	It is important to me to know and have access to all policies and procedures of the organisation.	According to Pierce et al. (2001) “when employees are given information about potential targets of ownership (e.g., the mission of the organisation, its goals, and its performance), they feel that they know the organization better and, as a result, may develop psychological ownership toward it”.
37.	Every person in our organisation knows the boundary of acceptable and unacceptable behaviour.	Through intimate knowledge of an object, place, or person, a union of the self with the object takes place (Beaglehole, 1932). Weil (1952) supports this by stating that people can feel that something is theirs by virtue of being associated and familiar with it.

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
	<p>Autonomy Def: Refers to the regulation of the self and is the extent to which a person needs or is eager to experience individual initiative in performing a job (Ryan & Deci, 2006).</p>	
38.	My job gives me the freedom to schedule my work and determine how it is done.	Autonomy reflects “the degree to which the job provides <i>substantial freedom</i> , independence, and <i>discretion to the employee in scheduling the work</i> ” (Hackman and Oldham, 1975, p. 162).
39.	My job allows me to have control over my working environment.	According to Ashforth and Saks (2000, p. 313), people must perceive that they have control in the working environment.
40.	My job allows me to participate in making decisions that affect my task domain.	Perceived control refers to “employees’ belief about the extent to which they have autonomy in their job and are allowed to participate in making decisions on issues that effect their task domain” (Ashforth & Saks, 2000, p. 313).
41.	My job allows me the opportunity for independent thought and action.	Autonomy reflects “the degree to which the job provides substantial freedom, <i>independence</i> , and discretion to the employee in scheduling the work” (Hackman and Oldham, 1975, p. 162).
42.	My job allows me to do my work independently.	Mayhew et al. (2007) suggest that organisations should provide their employees with opportunities to control facets of their employment by allowing them the freedom and flexibility to plan and perform their workloads.
43.	My job allows me to use my personal initiative and judgment in carrying out my work.	Adapted from Hackman and Oldham’s (1975) Job Diagnostic survey. Original item: “The job gives me a chance to use my personal initiative and judgment in carrying out the work.”
44.	My job gives me the freedom to do pretty much what I want in my job.	Deci and Ryan (1985) refer to autonomous actions as those actions that are regulated and endorsed by the self and that are accompanied by a sense of psychological freedom and violation.
45.	My job gives me the freedom to act morally for the purpose of doing good for my organisation independently of incentives.	Adapted from Hackman and Oldham’s (1975) Job Diagnostic survey. Original item: “The job gives me considerable opportunity for independence and freedom in how I do the work”.
46.	My job allows me to apply informed consent to my activities that I deem necessary to action my task domain.	Adapted from Hackman and Oldham’s (1975) Job Diagnostic survey. Original item: “The job gives me considerable opportunity for independence and freedom in how I do the work.”
47.	My autonomy to act is restricted by the policies and procedures of the organisation but does not inhibit my ability to deliver the tasks required.	Prelinger (1959) found that the more an individual feels that he or she has control over an object, the more likely it is that that object will be perceived as part of the self.
	<p>Responsibility Def: The state of cognitive and emotional acceptance of responsibility (Cummings & Anton, 1990).</p>	

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Element/Items	Theoretical verification
48.	I accept full responsibility for my actions within the organisation.	Mackin (as cited in Pierce et al. 2001) states that for “every right of ownership which ... an owner may feel ... there is a commensurate or balancing responsibility”.
49.	I accept ownership for the results of my decisions and actions.	Adapted from a leader accountability instrument developed by Wood and Winston (2007). Original item: “The leader accepts responsibility for his/her actions within the organisation.”
50.	I strive to contribute as much as possible to the effectiveness of the organisation.	Pierce et al. (2001) propose that a positive and causal relationship exists between the extent to which an individual employee invests himself or herself in the potential target of ownership and the degree of ownership the employee feels toward that target.
51.	I feel personally responsible for the work I do in my organisation.	Dipboye (as cited in Pierce et al., 2003, p. 29) states that “When an individual’s sense of self is closely linked to the target, a desire to maintain, protect, or enhance that identity will result in an <i>enhanced sense of responsibility</i> .”
52.	I feel I should personally take the credit or blame for the results of my work in the organisation.	Rodgers (as cited in Pierce et al., 2001, p. 303) argues that “the right to participate in decision making is balanced with an active right and responsible voice”.
53.	The buck stops with me and I ensure that the task/complaint is resolved successfully every time.	Adapted from Hackman and Oldham’s (1975) four item <i>Sense of responsibility</i> for the job instrument. Original item: “It is hard, on this job, for me to care very much about whether or not the work got done right.”
54.	If I cannot deliver on a task for whatever reason, I maintain the responsibility to find an alternative resource or solution.	Adapted from Hackman and Oldham’s (1975) four item <i>Sense of responsibility</i> for the job instrument. Original item: “Whether or not this job gets done right is clearly my responsibility.”

From Table 4.3 it is evident that the origins of the items included in the seven dimensions of the questionnaire are as follows:

- **Self-efficacy:** Based on the self-efficacy scale developed by Parker (1998), seven *self-efficacy* items were developed. Parker (1998) found an alpha coefficient of .96 for his ten-item Role Breadth Self-Efficacy scale that was submitted to 669 employees from a glass manufacturing company in the United Kingdom (UK). Two of the items of Parker’s self-efficacy scale were adapted. Central key words of the original items were retained but rephrased to fit the structure of the newly developed questionnaire (please refer to Table 4.3). The remaining five items were developed by the researcher, based on the theoretical verification as displayed in Table 4.3.

- **Self-identity:** Eight items were developed for the measuring of self-identity. One of these items was based on the work done by Mael and Ashforth (1992). They measured “Organisational identification” with a six-item scale and reported coefficient alphas from .87 to .89 in two samples of US Army squad leaders. The remaining seven items were developed by the researcher, based on the theoretical verification presented in Table 4.3.
- **Sense of belonging:** Seven *sense of belonging* items were compiled. One of the items measuring *sense of belonging* was taken from the existing Psychological Ownership Questionnaire developed by Avey and colleagues (2009). They found an alpha coefficient of .92 for this particular dimension. One item, namely, “this organisation is *my* organisation” was adapted from the seven-item measure of psychological ownership developed by Van Dyne and Pierce (2004). This item was rephrased, although the key words of the original item were retained. Cronbach’s coefficient alpha showed acceptable internal consistency reliability respectively of .87, .90 and .93 for three US samples. The remaining five items were developed by the researcher, based on the theoretical verification as presented in Table 4.3.
- **Accountability:** Six *accountability* items were compiled. One item measuring *accountability* was adapted from the existing Psychological Ownership Questionnaire developed by Avey and colleagues (2009). An alpha coefficient of .86 was reported for this particular dimension. This item was rephrased and rewritten to form a newly developed item that would fit the structure of the newly developed questionnaire. Based on the theoretical verification for items displayed in Table 4.3, the researcher compiled the remaining five items.
- **Territoriality:** Nine items for the measuring of *territoriality* were compiled. Three items measuring territoriality were adapted from the existing Psychological Ownership Questionnaire developed by Avey and colleagues (2009). Cronbach’s coefficient alpha showed acceptable internal consistency reliability of .83 for this dimension. The researcher compiled the remaining six items based on the

theoretical verification for items displayed in Table 4.3

- **Autonomy:** Ten items for the measuring of *Autonomy* were compiled. Three items from the Revised Job Diagnostic Survey of Hackman and Oldham (1975) were adapted because they proved to be reliable items – an alpha coefficient of 0.72 for the autonomy dimension was reported by Buys et al. (2007) on a South African sample comprising 677 respondents from various organisations. However, although some of the key words of the original items remained, these three items were rephrased and rewritten to form three new items to fit the flow and structure of the newly developed questionnaire. Seven additional items were compiled by the researcher based on the theoretical verification provided in Table 4.3.
- **Responsibility:** Seven *Responsibility* items were compiled. Two items for the measuring of responsibility were adapted from Hackman and Oldham's four-item Sense of Responsibility instrument (cited in Li, 2008). Li reported a coefficient alpha for sense of responsibility of .79. The sample comprised 162 volunteers from various non-profit organisations in the Waikato region of New Zealand. However, these items were rephrased and rewritten to form two newly developed items. One item from Wood and Winston's (2007) Responsibility Scale was also adapted. A sample comprising 148 employees from the US completed their questionnaire and a remarkably high coefficient alpha score of .97 was reported. Although some of the key words of the original item remained, the item was rephrased to fit the current structure of the newly developed questionnaire. Four additional items were developed by the researcher (see the theoretical verification provided in Table 4.3).

4.2.3 Step 3: Determining the format of the questionnaire

A Likert-type rating scale with an equal 1-6 agreement format was chosen, where:

1 = Strongly disagree

2 = Disagree

3 = Slightly disagree

4 = Slightly agree

5 = Agree

6 = Strongly agree

The Likert-type scale was chosen above a typical dichotomous “yes-no or true-false” scale because Likert-type scales are most frequently used in survey questionnaire research and are most useful in behavioural research, according to Hinkin (1998). The Likert-type scale allows respondents to indicate their degree of agreement with the particular statement (DeVellis, 2003). A desirable quality of a measurement scale is to generate sufficient variance among respondents for subsequent statistical analyses. It was noted that an equal number of options could result in respondents’ falling to one side; however, the mid-range option of three in the scale could lead to respondents choosing the middle option.

4.2.4 Step 4: Having the initial pool reviewed by a panel of experts and pilot study

According to De Vos (2002), content validity is concerned with the sampling adequacy or representativeness of the content of an instrument, thus: “Does the instrument address whether items on an instrument adequately measure a desired domain of content?” (Grant & Davis, 1997) In order to determine the content validity of the psychological ownership measure, which assisted in the retention or rejection of certain items, Lawshe’s (1975) content validity technique was applied. This judgement-quantification process entails asking a specific number of subject matter experts to

evaluate the validity of items individually, as well as the entire instrument. The experts had to meet a predetermined set of five criteria in order for them to be regarded as Subject Matter Experts for the purpose of this study. He or she must

- have at least a three-year degree in the fields of industrial psychology or psychology, human resource management or related field
- have at least five years' work experience and expertise in applied psychology or related fields
- have had at least one article published in a refereed journal or have presented a paper at an international conference
- be registered with a professional body such as the Health Professions Council of South Africa (HPCSA), South African Board of People Practice (SABPP) or equivalent
- be regarded as an expert in the field of applied psychology or related fields by his or her colleagues and clients.

Questionnaires were distributed to the group of experts and they were requested to indicate whether or not a measurement item in a set of other measurement items was essential to the functionality of the construct. They were also asked to provide biographical information such as: their highest qualification, work experience in applied psychology or related fields, whether or not they were registered with a professional board, the number of their publications in refereed journals and papers presented at international conferences and their age. This information was used to determine whether or not each respondent did fill the criteria for a subject matter expert that had been set for the purposes of this study. Table 4.4 indicates how the respondents met such qualifying criteria.

Table 4.4: Subject matter expert criteria

Respondent No	Minimum 3-year degree in HR/ Industrial Psych/ Psych or related	Minimum 5 years' work experience	Registered with professional body or equivalent	Regarded as expert by clients/ colleagues	Publications in refereed journals /	Age	Meet SME criteria?
1	DPhil (Industrial Psychology)	38	HPCSA SABPP	Yes	31	64	Yes
2	PhD (HRM)	30	SANRF B-rated researcher	Yes	30	62	Yes
3	DPhil	28	HPCSA	Yes		51	Yes
4	PhD (Organisational Behaviour)	25	SABPP	Yes	6	53	Yes
5	PhD (Organisational Behaviour)	25	Chairperson: Centre of I/O Psychology advisory committee (UNISA)	Yes	8	49	Yes
6	MA (Research Psychology)	8	HPCSA	Yes	0	32	Yes
7	D Com (HRM)	15	HPCSA SABPP	Yes	13	50	Yes
8	MPhil (HRM)	7	Academy of Management	Yes	1	33	Yes
9	MA (Counselling Psychology)	35	HPCSA	Yes	10	62	Yes

It is clear from the information in Table 4.4 that all of the subject matter experts are indeed experts in evaluating the construct, as nine had obtained a minimum of a Master's degree in the field of industrial psychology, human resource management or related field. Six have doctoral degrees, whereas two of the three with Master's degrees are currently enrolled as doctoral students in organisational behaviour. Six of the experts have at least 25 years of work experience and the remaining three a minimum

of seven years. They are all registered with a professional body such as the Health Professions Council of South Africa (HPCSA) as psychologists or industrial psychologists or at the South African Board of People Practice (SABPP) as Master Human Resource Practitioners. One of the respondents is registered as a B-rated researcher at the South African National Research Foundation (SANRF). The remaining two serve as either a chairperson or member on various other human resource related committees. They are all regarded as experts in the field of applied psychology by their clients and colleagues. With an average age of 51, the assumption can be made that the experts are a very experienced group of people. With the exception of one, all these experts had had numerous articles published in refereed journals. Although one of the respondents did not have any articles published in a refereed journal, eight papers had been presented at international conferences. All of these experts are experienced in the field of scale development and quite a number of them have developed a measuring instrument as part of their study for their doctoral thesis. Thus, all nine of the respondents met the predetermined criteria that had been set and qualified as a subject matter expert.

The panel was asked not only to judge each item related to the specific dimension of psychological ownership, but to indicate the clarity of each item as well as to comment on the comprehensiveness of the entire instrument and addition of items.

Item content: the experts were provided with the conceptual definition of *psychological ownership* and the relevant dimensions of psychological ownership: *self-efficacy, self-identity, sense of belongingness, accountability, territoriality, autonomy and responsibility* (Addendum A).

Lawshe's (1975) quasi-quantitative approach to content validity was also used to facilitate the retention or rejection of specific items. The Content Validity Ratio (CVR) for each item was computed by making use of the following formula:

$$CVR = \frac{ne - \frac{N}{2}}{\frac{N}{2}}$$

Where:

ne = number of subject matter experts who indicated the item as essential;

N = the total number of subject matter experts on the panel

The CVR formula takes on values between -0.1 (where none of the experts think that the particular item is essential) and +0.1 (where all the experts regard that particular item as essential). A CVR-value of 0 (CVR=0), indicates that 50% of the experts in the selected panel of size N (N = number of experts) believe that the measurement item is essential. A CVR of > 0.0 will thus indicate that more than half of the subject matter experts believe that the particular item is essential.

The CVR is negative if fewer than half of the experts indicate that an item is essential and positive when more than half of the experts indicate it is essential. Hence the more experts over 50% that perceive the item as essential, the greater the degree of its content validity. A guideline to use as minimum CVR for different panel sizes based on a one-tailed test at the $\alpha = .05$ significance level was established by Lawshe (1975).

A total of nine subject matter experts completed the questionnaire. The minimum CVR values, according to the panel size, for an item to be retained as part of the content validity testing (Lawshe, 1975) was .78. All items with a CVR value of less than .78 should be rejected. Lawshe's content validity results are presented in Table 4.5.

Table 4.5: Lawshe’s content validity results

	DIMENSIONS and descriptive elements of psychological ownership	Endorsement of statements				CVR	Retain (yes / no)
		<i>Not essential</i>	<i>Essential</i>	<i>Item is clear</i>	<i>Item is unclear</i>		
	Element						
A.	Self-efficacy Def: The individual’s judgment about their capability to perform across a variety of situations.						
1.	I am confident that I can make suggestions about ways to improve the working of my work unit.	1	8	8	1	.78	Yes
2.	I have the confidence to suggest doing things differently in my work unit.	1	8	9	0	.78	Yes
3.	I am confident that I can design new procedures for my work unit/area.	1	8	8	1	.78	Yes
4.	I am confident that I am able to analyse a long-term problem to find a solution.	3	6	5	4	.33	No
5.	I am confident that when I make plans that will benefit the organisation, I can make them work.	1	8	9	0	.78	Yes
6.	I am confident that I have the ability to act within the responsibilities of my job.	2	7	9	0	.56	No
7.	I am confident that I can meet my performance expectations that were agreed with me upfront.	0	9	9	0	1	Yes
B.	Self-identity Def: A personal cognitive connection between an individual and an object (e.g. organisation). The individual’s perception of oneness with the target (e.g. the organisation).						
8.	I personally experience the successes and failures of the organisation as my successes and failures.	0	9	9	0	1	Yes
9.	I feel that by identifying with the characteristics of the organisation it helps me develop a sense of who I am.	1	8	6	3	.78	Yes
10.	I feel the need to be seen as a member of the organisation.	0	9	8	1	1	Yes
11.	It is important to me that others think highly of my organisation.	0	9	9	0	1	Yes
12.	My personal values and that of the organisation are aligned and cared for.	2	7	5	4	.56	No
13.	It is important to me to defend my organisation to outsiders when it is criticised.	0	9	8	1	1	Yes
14.	It is important to me to support my organisation’s goals and policies.	0	9	8	1	1	Yes
15.	I am proud to say to every person I meet that this is my organisation.	0	9	8	1	1	Yes
C.	Sense of belongingness Def: The extent to which an individual feels ‘at home’ in the work place.						

	DIMENSIONS and descriptive elements of psychological ownership	Endorsement of statements				CVR	Retain (yes / no)
		<i>Not essential</i>	<i>Essential</i>	<i>Item is clear</i>	<i>Item is unclear</i>		
	Element						
16.	I think about this organisation as MY organisation.	0	9	8	1	1	Yes
17.	I perceive myself to be psychologically intertwined with the fate of the organisation.	1	8	5	4	.78	Yes
18.	I feel that I belong in this organisation.	0	9	9	0	1	Yes
19.	I feel 'at home' in this organisation.	1	8	9	0	.78	Yes
20.	This organisation cares for me as a person and looks after me.	2	7	9	0	.56	No
21.	There is a strong relationship between me and my team.	3	6	6	3	.33	No
22.	I give and receive affection from my colleagues and this bonds us with the organisation.	4	5	4	4	.111	No
D.	Accountability Def: The implicit or explicit expectation of the perceived right to hold others and oneself accountable for influences on one's target of ownership.						
23.	I will hold management accountable for their decisions.	2	7	4	5	.56	No
24.	I have the right to hold myself and others accountable for organisational performance.	0	9	4	5	1	Yes
25.	It is important to me to have the right to information about the organisation, such as performance and projection and about my personal and team performance.	1	8	4	5	.78	Yes
26.	In my organisation we are allowed to make mistakes and own up to it.	2	7	8	1	.56	No
27.	In my organisation I accept responsibility and take the consequences of these decisions.	0	9	7	2	1	Yes
28.	I work in an open environment where everyone is allowed to challenge a decision or strategy as long as it is done constructively.	3	6	8	1	.33	No
E.	Territoriality Def: An individual's behavioural expression of his/her feelings of ownership toward a physical or social object.						
29.	It is important to me that my organisation allows me to personalise my work space.	2	7	7	2	.56	No
30.	It is important to me to defend my work space from others in the organisation.	2	7	7	2	.56	No
31.	It is important to me to have a work space or work area of my own.	1	8	7	2	.78	Yes

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	DIMENSIONS and descriptive elements of psychological ownership	Endorsement of statements				CVR	Retain (yes / no)
		<i>Not essential</i>	<i>Essential</i>	<i>Item is clear</i>	<i>Item is unclear</i>		
	Element						
32.	It is important to me to protect my belongings from others in the organisation.	4	5	7	2	.11	No
33.	It is important to me that people I work with do not invade my work space.	2	7	7	2	.56	No
34.	It is important to me to protect my ideas from being used by others in the organisation.	2	7	6	3	.56	No
35.	It is important to me to discourage others from attempting to enter my work space.	4	5	5	2	.11	No
36.	It is important to me to know and have access to all policies and procedures of the organisation.	3	6	8	1	.33	No
37.	Every person in our organisation knows the boundary of acceptable and unacceptable behaviour.	2	7	8	1	.56	No
F.	Autonomy Def: Refers to the regulation of the self and is the extent to which a person needs or is eager to experience individual initiative in performing a job.						
38.	My job gives me the freedom to schedule my work and determine how it is done.	0	9	7	2	1	Yes
39.	My job allows me to have control over my working environment.	1	8	6	3	.78	Yes
40.	My job allows me to participate in making decisions that affect my task domain.	1	8	6	3	.78	Yes
41.	My job allows me the opportunity for independent thought and action.	0	9	7	2	1	Yes
42.	My job allows me to do my work independently.	1	8	7	2	.78	Yes
43.	My job allows me to use my personal initiative and judgment in carrying out my work.	0	9	7	2	1	Yes
44.	My job gives me the freedom to do pretty much what I want in my job.	1	8	6	3	.78	Yes
45.	My job gives me the freedom to act morally for the purpose of doing good for my organisation independently of incentives.	3	6	6	3	.33	No
46.	My job allows me to apply informed consent to my activities that I deem necessary to action my task domain.	5	4	2	4	-.11	No
47.	My autonomy to act is restricted by the policies and procedures of the organisation but does not inhibit my ability to deliver the tasks required.	1	8	5	4	.78	Yes
G.	Responsibility Def: The state of cognitive and emotional acceptance of responsibility.						

	DIMENSIONS and descriptive elements of psychological ownership	Endorsement of statements				CVR	Retain (yes / no)
		<i>Not essential</i>	<i>Essential</i>	<i>Item is clear</i>	<i>Item is unclear</i>		
	Element						
48.	I accept full responsibility for my actions within the organisation.	0	9	9	0	1	Yes
49.	I accept ownership for the results of my decisions and actions.	0	9	9	0	1	Yes
50.	I strive to contribute as much as possible to the effectiveness of the organisation.	3	6	6	3	.33	No
51.	I feel personally responsible for the work I do in my organisation.	1	8	9	0	.78	Yes
52.	I feel I should personally take the credit or blame for the results of my work in the organisation.	0	9	9	0	1	Yes
53.	The buck stops with me and I ensure that the task / complaint is resolved successfully every time.	1	8	8	1	.78	Yes
54.	If I cannot deliver on a task for whatever reason, I maintain the responsibility to find an alternative resource or solution.	0	9	9	0	1	Yes
	Average number of endorsements	1.315	7.593			.72	

According to the results, the majority of measurement items with regard to each dimension were valid, since their CVR values were greater than or equal to .78 at a significance level of $\alpha = .05$, except for the dimensions of *Sense of belonging* (where 3 out of the original 6 items had to be rejected) and *Territoriality* (where 8 out of the original 9 items had to be rejected).

Rejection of such a large number of the *Territoriality* items could be due to the fact that the experts experience territoriality as negative and as a potential threat to psychological ownership. The researcher purposefully did not disclose to the experts that territoriality is a preventative form of psychological ownership. Their response to these items is a confirmation of the researcher's view that territoriality is a preventative form of psychological ownership. In their study, Brown et al. (2005. p. 580) focused on the territoriality concept as being behavioural and proposed that "the stronger an individual's psychological ownership of an object, the greater the likelihood he or she will engage in territorial behaviours". Although Pierce et al. (2001) argue that psychological ownership is a cognitive-affective construct, Avey et al. (2009) focus heavily on the cognitive aspects (versus behavioural displays) of territoriality as a

preventative form of psychological ownership. This also applies to this study. Although territoriality may lead people to become too preoccupied with their “objects of ownership” at the expense of their performance or other pro-social behaviours (Avey et al., 2009), the possibility exists that feelings of territoriality may promote positive organisational outcomes. If individuals believe that by protecting their territory they are doing what is right (Altman, as cited in Avey et al., 2009), territoriality may lead to increased retention and performance. Scholars such as Porteous (1976) have suggested that individuals exercise control by the “marking” of objects, which contributes to their attachment to the object and experienced psychological ownership. This type of behaviour may cause the individual to feel more secure and “at home” and they may feel that they discover themselves in the marked object. This study supports the viewpoint of Avey et al. (2009) that territorial psychological ownership with its typically negative implication may have a positive side.

A total of 20 items were rejected because the CVR values were less than .78. Although item 4 (part of *self-efficacy* dimension), item 12 (part of *self-identity* dimension) and item 23 (part of the *accountability* dimension) had CVR values of less than .78, it was decided to retain these three items since quite a few experts indicated that these items were unclear and that if the questions could be rephrased, they could be retained. The valid items from each dimension were retained. The number of items retained after the application of Lawshe’s (1975) technique was 34. Table 4.7 gives a summary of the original number of items compared with the number of items retained after the application of Lawshe’s (1975) technique.

Table 4.6: Comparison between the original number of items and items retained after the application of Lawshe’s technique

Dimension	Original number of items	Items retained
Self-efficacy	7	5
Self-identity	8	7
Belonging	7	4
Accountability	6	3
Territoriality	9	1
Autonomy	10	8
Responsibility	7	6
Total	54	34

Item style: The subject matter experts were also asked to evaluate each item’s clarity and conciseness. Unclear (vague) items were indicated, as can be seen in Table 4.6. In some cases the experts suggested alternative wordings of the questions. Items were reworded and clarified accordingly, as can be seen in Table 4.8.

Comprehensiveness: The panel of experts were also asked to evaluate the total instrument for comprehensiveness. The panel all agreed that all the dimensions of the desired content domain of the psychological ownership concept had been included. However, in judging the entire instrument, the panel of experts suggested that additional items should be added in order to represent the total content domain. The inclusion of additional items in the questionnaire would also help in determining the validity of the final scale, as suggested by Worthington and Whittaker (2006). Idaszak et al. (1988) support this by stating that an instrument should have at least four to six items per scale because this will increase the likelihood that a factor analysis will accurately reflect the true underlying structure of the item pool. Therefore, in the second round of items derived from the literature study 24 additional items as per Table 4.7 were added to each one of the dimensions to better represent the total content domain.

Table 4.7: Additional items as per seven dimensions

SEVEN DIMENSIONS AND DESCRIPTIVE ELEMENTS OF PSYCHOLOGICAL OWNERSHIP		
	Additional Elements / Items	Theoretical verification
A.	Self-efficacy Def: The individuals' judgement about their capability to perform across a variety of situations (Bandura, 1977)	
1.	I am confident in my ability to execute the required tasks of my job.	According to Bandura (1977, p. 193), "An efficacy expectation is the conviction that one can successfully execute the behavior required to produce outcomes".
2.	I am confident that I can implement policies and procedures in my work environment.	According to Bandura (1977, p. 193), "An efficacy expectation is the conviction that one can successfully execute the behavior required to produce outcomes".
3.	I feel that I can represent my work environment with all internal / external stakeholders.	Adapted from Parker's (1998) Role Breadth Self-efficacy instrument.
4.	I am confident to act as an expert in my field for my work environment.	According to Bandura (1986, cited in Parker, 1989), perceived control is a critical determinant of self-efficacy. Andrisani (1976) argues that a high level of perceived control relates positively to personal confidence, initiative, and innate ability.
B.	Self-identity Def: A personal cognitive connection between an individual and an object (e.g. organisation). The individual's perception of oneness with the target (e.g. the organisation) (Porteous, 1976).	
5.	I act to the benefit of my organisation.	Having a membership that shares the organisation's goals and values can ensure that individuals act instinctively to benefit the organisation" (O'Reilly & Chatman, 1986, p. 493).
6.	I feel part of the larger organisational entity.	"...individuals perceive themselves to be part of a larger organisation" (Rousseau, 1998, p. 217).
7.	I feel a strong linkage between me and my organisation.	"...the individual ... see him or herself as psychologically intertwined with the fate of the group" (Mael & Ashforth, 1992, p 105).
C.	Sense of belongingness Def: The extent to which an individual feels "at home" in the work place (Porteous, 1976).	
8.	I feel totally comfortable being in the organisation.	According to Brown, (1969, cited in Edwards, 2005) the basic components of organisational identification are: attraction to the organisation, consistency of organisational and individual goals, loyalty, and reference to the self to organisational membership.

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9.	I feel that this organisation is part of me	“...the perception of oneness with or belongingness to an organisation” (Mael & Ashforth, 1992, p. 104) and according to Rousseau (1998) the organisation becomes a part of the individual’s self-concept.
10.	I feel I have a considerable emotional investment in my organisation.	“...the process by which the goals of the organisation and those of the individual become increasingly integrated or congruent” (Hall et al., 1970, p. 176).
11.	I feel I have a strong bond with the organisation.	“...Organisational identification is seen as a key psychological state reflecting the underlying link or bond that exists between the employee and the organisation” (Edwards, 2005, p. 201)
12.	I feel secure in this organisation.	Dittmar (1992) believes that possessions may provide a sense of security, and according to Porteous (1976), “the home” is important because it provides the individual with both psychic and physical security.
D.	Accountability Def: The implicit or explicit expectation of the perceived right to hold others and oneself accountable for influences on one’s target of ownership (Lerner & Tetlock, 1999).	
13.	I would take action against inappropriate behaviour in my organisation.	In their stewardship theory, Davis et al. (1997) propose that in certain situations when individuals feel like stewards, they will be motivated to act in the best interest of the principals rather than in their personal interests. Pierce et al. (2003, p. 30) thus came to the conclusion that “when individuals feel psychological ownership, they may feel as though they are the ‘psychological principals’ or stewards and act accordingly”.
14.	I would challenge a decision or strategy being made in the organisation.	Kubzansky and Druskat (1993, cited in Pierce et al., 2001) state that the right to information about the target of ownership and the <i>right to have a voice in decisions that impact the target</i> are frequently associated with ownership. Adapted from Avey et al. (2009) Psychological ownership questionnaire. Item: “I would challenge the direction of my organisation to ensure it’s correct.”
15.	I would report inappropriate behaviour in my organisation.	Adapted from Avey et al. (2009) Psychological ownership questionnaire. Item: “I would not hesitate to tell my organisation if I thought something was done wrong.”
16.	I acknowledge my mistakes in the organisation.	“Accountability requires a level of ownership that includes: making; keeping; and proactively <i>answering for personal commitments</i> ” (Wood & Winston, 2007, p. 168).
17.	I take responsibility for my decisions in the organisation.	According to Kouzes and Posner (1993, cited in Wood & Winston, 2007) accountability has to do with the <i>acceptance of responsibility</i> , voluntary transparency and answerability.

18.	I hold myself and others accountable for organisational performance. This question was split into two, due to the fact that it was double-barrelled. I hold myself... and I hold others...	
	Territoriality Def: An individual's behavioural expression of his/her feelings of ownership toward a physical or social object (Brown, et al., 2005)	
	No additional items were added. Original items remained, as was discussed in paragraph 4.2.4	
	Autonomy Def: Refers to the regulation of the self and is the extent to which a person needs or is eager to experience individual initiative in performing a job (Ryan & Deci, 2006)	
19.	I have almost complete responsibility for deciding how and when the work is done.	According to Pierce O'Driscoll et al. (2004), the creating and maintaining of work settings that empower individuals and enable them to exercise control over important aspects of their work arrangements should enhance their sense of ownership, which may promote the manifestation of work-related attitudes and behaviours.
20.	I have considerable opportunity for independence and freedom in how I do my work.	Adapted from Hackman and Oldham's (1975) Job Diagnostic survey. Original item: "The job gives me considerable opportunity for independence and freedom in how I do the work."
	Responsibility Def: The state of cognitive and emotional acceptance of responsibility (Cummings & Anton, 1990).	
21.	I would invest time and energy beyond my job in the organisation	Pierce et al. (2001) propose that a positive and causal relationship exists between the extent to which an individual employee invests himself or herself into the potential target of ownership and the degree of ownership the employee feels toward that target.
22.	I proactively enhance both tangible and intangible targets of my organisation	The feelings of ownership toward both material and immaterial objects can not only shape identity (as was mentioned earlier by Belk (1988) and Dittmar (1992)), but can also affect behaviour (Isaacs, 1933).
23.	I would protect, care and nurture all elements of my organisation	Pierce et al. (2003, p. 29) state that "Psychological ownership for a particular target may also promote feelings of responsibility that include feelings of being protective, caring, and nurturing and the proactive assumption of responsibility for that target."

Five of the originally nine experts served as a second set of expert judges for content validation of the remaining 69 items and agreed that all 69 items be included in the final construct measure of psychological ownership. Table 4.8 indicates the number of items

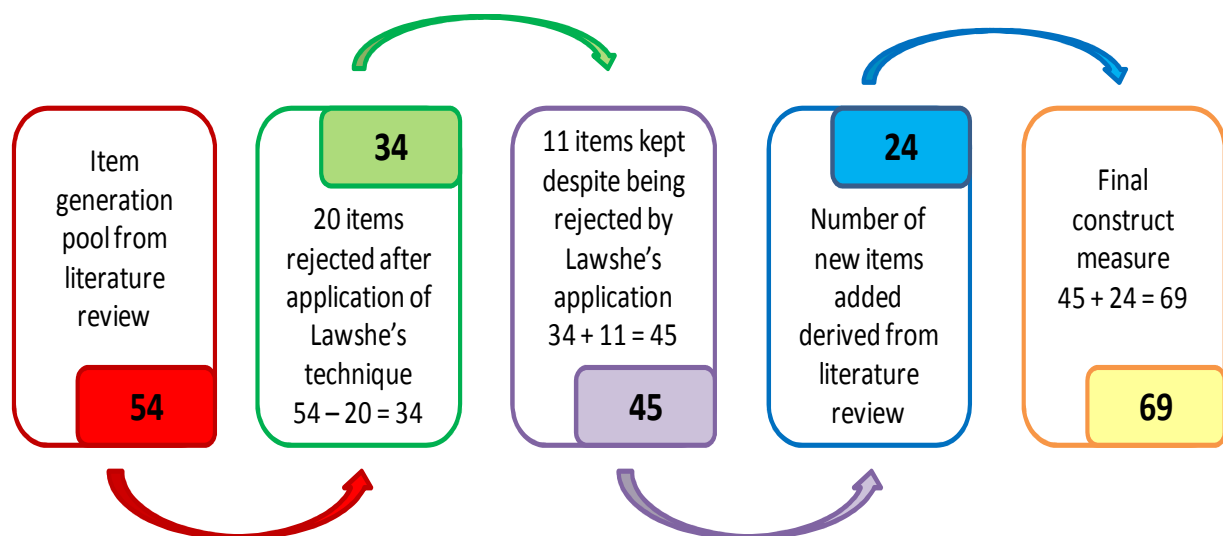
to be included in the final instrument after the application of Lawshe’s technique and after additional items had been added.

Table 4.8: Number of items included in the final instrument after additional items had been added

Dimension	Number of items retained after the application of Lawshe’s technique	Number of items kept despite Lawshe’s application	Second round of items derived from literature study	Total number of items to be included in the final instrument to be tested
Self-efficacy	5	1	4	10
Self-identity	7	1	4	11
Belonging	4		5	9
Accountability	3	1	6	10
Territoriality	1	8		9
Autonomy	8		2	10
Responsibility	6		3	9
Total	34	11	24	69

Figure 4.2 summarises in a flow diagram the development process in the final construct measure as reflected in Table 4.8.

Figure 4.2: Development process of items



- **Pilot study**

A pilot study was initiated. The purpose of the pilot study was twofold: firstly, to test the experimental process to be employed in the study and, secondly, to get an indication of how the measures kept together. A questionnaire consisting of the 69 psychological ownership items was administered via paper and pencil to a small group of individuals ($N = 46$) from the same population as that for which the eventual project was intended.

The pilot study ended with the participants' completion of a combination of measures which included the psychological ownership, affective commitment, turnover intentions and job satisfaction measures. The affective commitment, turnover intentions and job satisfaction measures were included to examine the nomological network of the variable of interest as part of the construct validation process (Judge, Erez, Bono & Thoresen, 2003).

Although the pilot sample was small, it was felt that conducting the pilot study would help to identify ambiguous or unclear items, as well as ease of completion of the questionnaire (Welman & Kruger, 1999). The outcome of the pilot study could also offer some insight into the potential reliability of not only the psychological ownership measure, but also the other measures (Hess, as cited in Faranda, 2001). Subsequent to the completion of the questionnaire, respondents were requested to comment on the clarity of the items.

- **Preliminary analysis on pilot study**

Each of the dimensions of the psychological ownership measure achieved a satisfactory reliability coefficient. Several respondents, however, expressed confusion regarding the meaning of the words “own up to” used in items 8 and 16. As a result, the wording was changed as indicated in Table 4.9.

Table 4.9: Original versus revised items identified from the pilot study

Item no	Original item	Revised item
8	I own up to my mistakes in the organisation.	I acknowledge my mistakes in the organisation
16	I own up to the consequences of my decisions in the organisation.	I accept the consequences of my decisions in the organisation

The alpha values for the respective dimensions of the psychological ownership measure for the pilot study are indicated in Table 4.10.

Table 4.10: Alpha values for pilot study per dimension

Seven Dimensions	Alpha coefficient
Self-efficacy	.83
Self-identity	.88
Sense of belonging	.90
Accountability	.72
Territoriality	.60
Autonomy	.92
Responsibility	.87

With respect to exploratory measurement research, these alpha values surpass the moderate reliabilities of .50 – .60 that were suggested by Nunnally (1967). For basic research, according to Peter (1979), values close to .80 are definitely adequate, while Carmines and Zeller (1979) prefer alphas above .80. Pilot-study alpha values for the other measures taken were, according to the criteria mentioned, also adequate. The coefficient alpha for affective commitment was .69. For turnover intentions and job satisfaction, alphas were .89 and .60, respectively.

The final psychological ownership instrument comprising 69 items can be viewed in Annexure B.

4.2.5 Step 5: Administering items to a development sample

A non-probability convenience sample of 712 was collected from employed professional, high-skilled and skilled individuals in various organisations in both the private and public sector in South Africa. If sample size permits, the sample may be randomly split into two subsets (Hair et al., 2006). The reason for this split in this study was due to the fact that data were collected at one time. One half of the sample was used for the development of a model and the other half of the sample was used to validate the results that were obtained from the first half (Anderson & Gerbing, 1988). Thus, a sample of 356 respondents was used for Exploratory Factor Analysis (EFA) and a sample of 356 for Confirmatory Factor Analysis (CFA). The sample size is in accordance with the guideline established by Worthington and Whittaker (2006), that 300 is generally sufficient for factor analysis. The ratio of 5.1:1 of the sample size to the number of variables met the guideline set by Hair et al. (2006), who suggest that the number of observations per variable should be a minimum of five and hopefully at least ten observations per variable.

4.2.6 Step 6: Initial item reduction

4.2.6.1 Exploratory factor analysis (EFA)

According to Worthington and Whittaker (2006, p. 807), the main purpose of the EFA is to “group a large item set into meaningful subsets that measure different factors”. An EFA was conducted to determine the following: (1) the number of factors that underlie the set of items and (2) to define the underlying dimensionality of the set of items (Tabachnick & Fidell, 2007). This would enable the researcher to identify those items that did not measure an anticipated factor or that simultaneously measured multiple factors. These items could be poor indicators of the preferred construct and could be eliminated from further research.

Before the commencement of an EFA, it is important to determine the factorability of the correlation matrix. As indicated in Table 4.11, a statistically significant Bartlett's Test of Sphericity (sig. < .50) showed that sufficient correlations existed among the variables to proceed with a factor analysis. The KMO measure of sample adequacy of 0.931, which is well above the guideline of .60 (Tabachnick & Fidell, 2007) confirmed that the overall significance of the correlations within the correlation matrix was suitable for factor analysis.

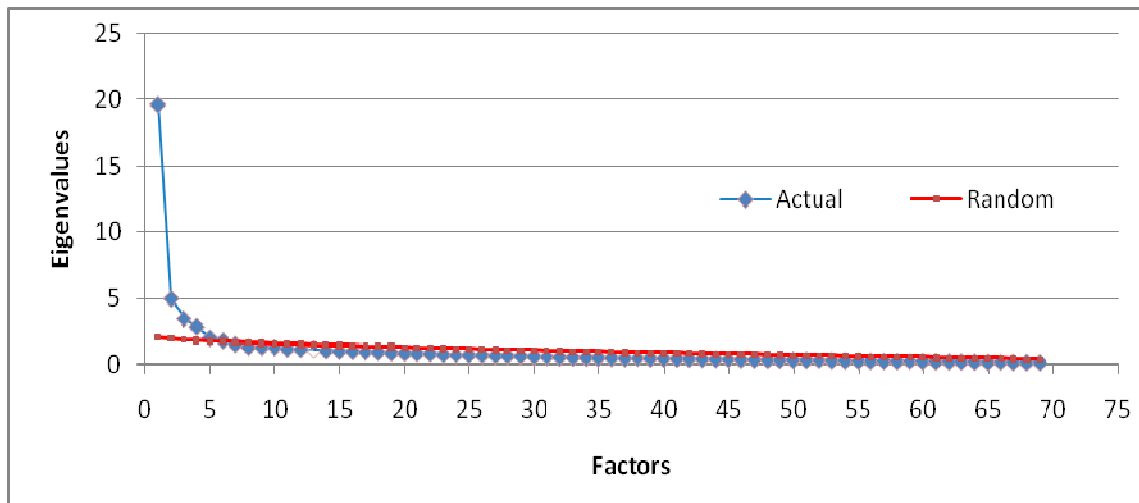
Table 4.11: KMO and Bartlett's Test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	10445.178
	Df	1326
	Sig.	.000

In the EFA the responses on the 69 items of the Psychological Ownership Questionnaire (POSQ) were correlated and rotated using maximum-likelihood factor extraction with oblique rotation (direct oblimin, delta = 0) using SPSS statistical software. Maximum-likelihood factoring estimates the factor loadings for the population that maximise the likelihood of sampling the observed correlation matrix (Tabachnick & Fidell, 2007). In this study an oblique rotation was employed because the factors in the psychological ownership measure were considered to be correlated.

The scree plot and parallel analysis was used to determine the number of factors to be considered as suitable for further retention. The scree plot and parallel analysis in Figure 4.3 indicated that only four significant factors from the originally defined seven factors could be identified from the 69 items.

Figure 4.3: Scree plot of the actual and the random data for 69 items



In the parallel analysis a break can be observed on the scree plot between factors four and five. The eigenvalues of the random data set (the solid line) intersect the eigenvalues for the actual data (dotted line) set at factor five, signifying four significant factors. The results reported in Table 4.12 indicate that four significant factors explain only 44.79% of the total variance. According to Hayton et al. (2004), as many common factors as possible should be kept to explain at least 50% of the variance in the data set.

Table 4.12: Factor eigenvalues and variance explained for the 69 items

Factor	Total	% of variance	Cumulative %
1	19.652	28.481	28.481
2	4.976	7.212	35.693
3	3.432	4.974	40.667
4	2.847	4.126	44.794
5	2.003	2.903	47.697
6	1.796	2.603	50.300
7	1.512	2.192	52.491
8	1.296	1.878	54.369
9	1.286	1.863	56.232
10	1.243	1.801	58.034

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Factor	Total	% of variance	Cumulative %
11	1.152	1.670	59.703
12	1.120	1.623	61.326
13	1.088	1.577	62.903
14	1.011	1.466	64.369
15	.973	1.410	65.778
16	.967	1.401	67.180
17	.914	1.324	68.504
18	.895	1.297	69.801
19	.845	1.225	71.026
20	.815	1.181	72.207
21	.797	1.155	73.362
22	.784	1.136	74.498
23	.707	1.025	75.523
24	.684	.992	76.515
25	.681	.987	77.501
26	.666	.966	78.467
27	.637	.924	79.391
28	.626	.908	80.298
29	.609	.883	81.181
30	.574	.832	82.013
31	.549	.796	82.809
32	.520	.754	83.563
33	.512	.742	84.305
34	.503	.729	85.034
35	.482	.698	85.732
36	.471	.683	86.415
37	.457	.663	87.078
38	.449	.650	87.729
39	.436	.631	88.360
40	.433	.627	88.987
41	.419	.607	89.594
42	.398	.577	90.171
43	.385	.558	90.729
44	.376	.545	91.274
45	.367	.532	91.806
46	.353	.512	92.318

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Factor	Total	% of variance	Cumulative %
47	.333	.483	92.801
48	.328	.475	93.276
49	.322	.467	93.743
50	.314	.455	94.198
51	.304	.440	94.638
52	.291	.421	95.059
53	.273	.395	95.455
54	.263	.382	95.836
55	.252	.365	96.202
56	.241	.350	96.551
57	.237	.344	96.895
58	.226	.328	97.223
59	.220	.318	97.542
60	.214	.310	97.852
61	.204	.295	98.147
62	.194	.281	98.428
63	.189	.274	98.702
64	.177	.257	98.959
65	.159	.230	99.189
66	.148	.215	99.403
67	.144	.209	99.612
68	.139	.202	99.814
69	.128	.186	100.000

Extraction Method: Maximum Likelihood.

Kaiser's criterion, compared with Cattell's scree test and parallel analysis, clearly overestimated the number of true factors for the data set.

In the first round of Exploratory Factor Analysis on the four-factor model, all items with factor loadings of less than .32 in the rotation matrix were removed (Worthington & Whittaker, 2006). Items that cross-loaded were deleted as well. Only 52 items were retained and they were subjected to a second round of Exploratory Factor Analysis.

In the second round of Exploratory Factor Analysis on the four-factor model an additional two items that loaded significantly across two or more factors were omitted. To create a more parsimonious and simple structure, only those items that clearly loaded on a single appropriate factor, and were based on the researcher's understanding of the theoretical foundation of the construct measured, were retained. Therefore an additional 12 items were omitted that were theoretically inconsistent with their factor. For example, two responsibility items, four accountability items, one territoriality item and one self-efficacy item that loaded on the belongingness factor were omitted. Two self-efficacy and one self-identity item that loaded on the responsibility factor and one self-efficacy and one territoriality item that loaded on the autonomy factor were deleted as well.

Self-efficacy items

Although ten items were written to capture the dimension of self-efficacy, none of these items survived the stages of scale development. The items either cross-loaded or loaded on dimensions which were theoretically inconsistent with the factor. Control of objects leads to perceptions of personal efficacy. According to Furby (1978), possessions came to be part of the extended self and are therefore important to the individual because they are instrumental in exercising control over the physical environment as well as over people. Control is a key characteristic of the phenomenon of ownership. The greater the amount of control, the more the object is experienced as part of the self.

The individual's self-concept is strongly influenced by culture. In their study Janse van Rensburg and Roodt (2005) found that race groups differ in their perceptions of employment equity (EE) and black economic empowerment (BEE). These perceptions have strong bearing on people's beliefs, values and needs. In another South African study, Urban (2006) found that White South Africans had lower mean scores with regard to self-efficacy comparing to Indian and Black South Africans.

It might be that the White respondents that account for 60% of the sample do have the perception that due to EE and BEE they are losing control over their environment as well as over people.

Self-identity and sense of belonging items

In the four-factor solution, ten of the self-identity items and eight of the sense-of-belonging items loaded on one factor. The researcher decided to retain these items as part as one dimension because these constructs are essentially the same; according to Lee (as cited in Edwards, 2005, p. 210), identification involves a sense of belongingness that results “from common goals shared with others in the organisation or as a result of employees’ feeling that their function within the organisation is important in fulfilling their personal needs”. Ashforth and Mael (1989, p. 21) refer to identification as “the perception of oneness or belongingness to some human aggregate”, or “when a person’s self-concept contains the same attributes as those in the perceived organizational identity” (Dutton, Dukerich & Harquail, 1994).

Accountability items

Ownership is frequently associated with a bundle of rights (Pierce et al, 2001). Most frequently associated with ownership are the right to information about the target of ownership and the right to have a voice in decisions that impact the target.

The expectation of information sharing and permission to influence the direction of the target are consequences of the right to hold others accountable. It might be that the White respondents in the sample that account for 60% of the sample do have the perception that they’ve lost their right to have a voice in the workplace due to the implementation of EE and BEE.

Responsibility items

The remaining two of the original ten accountability items loaded on the responsibility factor. According to Bavy (as cited in Wood & Winston, 2007), accountability implies the acceptance of responsibility. It seems that the sample respondents interpreted these two questions as part of their responsibility, accepting the responsibility for them, rather than as belonging to the accountability factor.

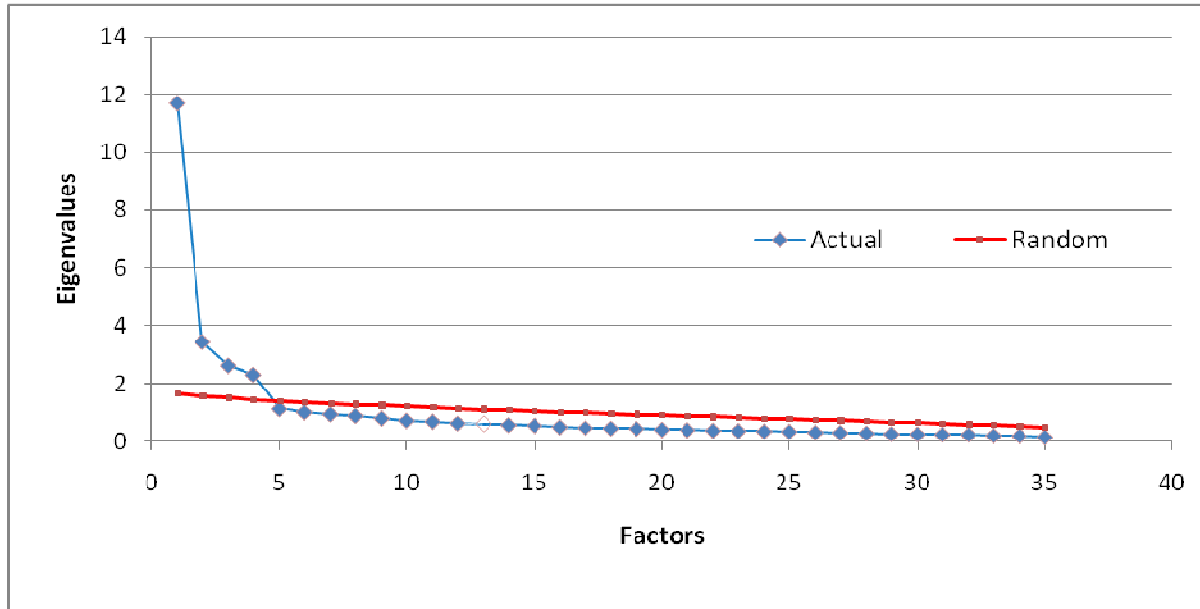
Territoriality items

Only five of the original nine territoriality items survived the stages of scale development. The remaining items either cross-loaded on other factors or loaded on dimensions which were theoretically inconsistent with the factor.

Therefore the researcher decided to retain two accountability items but as part of the responsibility factor. Only 35 of the original 69 items now remained. Once more Bartlett's Test of Sphericity [χ^2 (703) =7783.467, $p < .001$] and the KMO measure of sample adequacy (0.923) pointed out that the attributes of the correlation matrices of the 35 item scores would probably factor well.

The scree plot and parallel analysis shown in Figure 4.4 indicates once again that only four significant factors could be identified. In the parallel analysis a clear break can be observed on the scree plot between factors four and five. The eigenvalues of the random data set (the solid line) intersect the eigenvalues for the actual data (dotted line) set at factor five, signifying four significant factors.

Figure 4.4: Scree plot of the actual and the random data for 35 items



The results reported in Table 4.13 indicated that the four factors of the SAPOS, comprising 35 items, explained 57.37% of the total variance. This is in accordance with the recommendation of Hayton et al. (2004) that as many common factors as possible should be kept to explain at least 50% of the variance in the data set.

Table 4.13: Factor eigenvalues and variance explained for the 35 items

Factor	Total	% of variance	Cumulative %
1	11.708	33.452	33.452
2	3.445	9.842	43.294
3	2.622	7.492	50.786
4	2.305	6.586	57.372
5	1.122	3.205	60.576
6	1.010	2.886	63.463
7	.944	2.697	66.160
8	.884	2.526	68.685
9	.798	2.280	70.965
10	.719	2.054	73.020
11	.687	1.962	74.982

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Factor	Total	% of variance	Cumulative %
12	.627	1.791	76.773
13	.600	1.715	78.488
14	.563	1.609	80.097
15	.546	1.561	81.658
16	.495	1.415	83.073
17	.471	1.346	84.419
18	.449	1.283	85.702
19	.439	1.256	86.957
20	.404	1.154	88.112
21	.390	1.114	89.226
22	.371	1.060	90.286
23	.356	1.016	91.302
24	.343	.979	92.281
25	.333	.953	93.233
26	.305	.873	94.106
27	.296	.847	94.953
28	.276	.788	95.741
29	.250	.713	96.455
30	.243	.695	97.150
31	.233	.665	97.814
32	.228	.652	98.466
33	.198	.566	99.033
34	.191	.545	99.578
35	.148	.422	100.000

Extraction Method: Maximum Likelihood.

The rotated pattern matrix for the 35 items of the South African Psychological Ownership Questionnaire (SAPOS) is displayed in Table 4.14. All the items had factor loadings of .40 and higher, indicating the significance of these items for interpretative purposes. Sixteen items loaded on factor 1, eight items loaded on factor 2, five items on factor 3 and six items loaded on factor 4. The factors were labelled according to the general content of their significant related items. The four factors of POSQ were labelled *Identification, Responsibility, Autonomy and Territoriality* respectively.

Table 4.14: Rotated pattern matrix for the four-factor model

	Factor			
	1	2	3	4
Q52 B	.919	-.011	-.071	-.011
Q43 B	.837	-.033	.047	-.019
Q51 SI	.752	-.039	-.136	.035
Q31 B	.742	.009	.175	-.066
Q56 SI	.714	.056	.060	-.157
Q24 SI	.704	-.058	.190	-.055
Q34 B	.703	.018	-.201	-.161
Q66 SI	.693	.006	.168	-.013
Q27 B	.642	-.043	.052	.027
Q40 B	.624	.098	.181	-.078
Q55 B	.613	.003	.231	.003
Q12 SI	.586	-.020	.127	-.023
Q49 B	.551	.056	.036	.053
Q6 SI	.547	-.028	.086	.086
Q61 SI	.539	.159	.154	.154
Q9 SI	.456	.150	.002	.002
Q47 R	.037	.795	.004	.081
Q54 R	.071	.745	-.043	-.046
Q63 R	.069	.706	-.071	.002
Q48 R	.025	.678	.070	.064
Q62 R	.017	.653	.008	.008
Q16 Acc	-.057	.632	.096	-.006
Q59 R	-.032	.630	-.057	-.081
Q28 Acc	-.051	.558	.125	-.019
Q23Aut	-.028	-.018	.775	.040
Q42 Aut	.093	.064	.725	.038
Q29 Aut	.108	.008	.705	-.036
Q19 Aut	.014	.113	.689	-.079
Q38 Aut	.217	-.012	.616	.113
Q11 Aut	.074	.065	.598	.074
Q39 T	-.063	.028	.032	.792
Q26 T	-.125	-.009	.104	.700
Q35 T	.035	.021	.014	.678
Q22 T	.031	-.004	.045	.584
Q2 T	.077	-.052	-.081	.470
Extraction Method: Maximum Likelihood.				
Rotation Method: Oblimin with Kaiser Normalization.				
a. Rotation converged in 6 iterations.				

The inter-correlation matrix displayed in Table 4.15 shows the correlation coefficients between the factors. Factor 4 (*Territoriality*) has little or no relationship with any other factors because the correlation coefficients are very low (Field, 2005). However, factors 1 (*Identification*) and 2 (*Responsibility*), with an $R = .363$, and factors 1 (*Identification*) and 3 (*Autonomy*) with an $R = .466$, correlated with one another, indicating that these constructs are interrelated (Hair et al., 2006).

Table 4.15: Scale inter-correlation matrix for the four-factor model

		Factor 1: Identification	Factor 2: Responsibility	Factor 3: Autonomy	Factor 4: Territoriality
Factor 1: Identification	1	1.000			
Factor 2: Responsibility	2	.363	1.000		
Factor 3: Autonomy	3	.466	.256	1.000	
Factor 4: Territoriality	4	.105	-.048	-.047	1.000

A second-order factor analysis was performed using maximum-likelihood factor extraction with an oblique rotation. The results of the second-order factor analysis displayed in Table 4.16 indicate clearly the existence of two distinctive dimensions. Factors 1, 2 and 3 (*Identification*, *Responsibility* and *Autonomy*) share common variance and contribute significantly ($R = .821$, $.683$ and $.767$) to a single overall dimension labelled promotive (promotion-orientated) psychological ownership. Factor 4 (*Territoriality*) loaded to the second single overall dimension ($R = .984$), labelled preventative (prevention-orientated) psychological ownership.

Table 4.16: Rotated second-order factors from the matrix of factor correlations

		2 nd Order 1	2 nd Order 2
Factor 1: Identification	1	.821	.218
Factor 2: Responsibility	2	.683	-.122
Factor 3: Autonomy	3	.767	-.053
Factor 4: Territoriality	4	-.012	.984

4.2.6.2 Examination of construct equivalence

Construct equivalence of the SAPOS were determined by using exploratory factor analysis and target (Procrustean) rotation. The factor loadings of the different race groups were rotated to a joint common matrix of factor loadings. After target rotation had been carried out, factorial agreement was estimated using Tucker's coefficient of agreement (Tucker's phi). However, due to the small representation of the Indian (4.80%) and Coloured (3.40%) respondents construct equivalence could not be determined for all cultural groups. These two race groups have been incorporated with the African group based on the Employee Equity Act, 1997 (Act No. 75 of 1997) who defined black people as a generic term for Africans, Coloureds and Indians. The Tucker's phi-coefficients for the two groups are given in Table 4.17.

Table 4.17: Construct equivalence of the SAPOS for the two groups

Group	Percentage of sample	Tucker's phi – Identity	Tucker's phi - Responsibility	Tucker's phi - Autonomy	Tucker's phi - Territoriality
White	59.54	.93	.96	.94	.96
Black	40.46	.93	.96	.94	.96

Inspection of Table 4.17 shows that the Tucker's phi coefficients for the Black and White respondents were all acceptable (>.90). Therefore, it can be deduced that the four factors of the SAPOS were equivalent for the two race groups.

4.2.6.3 Examination of internal consistency

Evidence of internal consistency could be provided by a number of measures. In this study reliability was calculated using Cronbach's alpha and variance extracted (VE) estimates. Alphas for each subscale were highly satisfactory, ranging between .78 and .94 and well above the .7 cut-off (Hair et al., 2006; Cortina, 1993). The variance extracted (VE) estimate is the average squared factor loading and, according to Hair et al. (2006), as a rule of thumb a VE value of .50 or higher indicates adequate

convergence. Alpha coefficients and variance extracted (VE) estimates for the subscales are displayed in Table 4.18.

Table 4.18: Internal consistency for the subscales of SAPOS

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Factor 1: Identification		
Q6 SI	.497	.940
Q9 SI	.494	.939
Q12 SI	.636	.936
Q24 SI	.757	.933
Q27 B	.628	.937
Q31 B	.795	.932
Q34 B	.769	.933
Q40 B	.714	.932
Q43 B	.818	.932
Q49 B	.579	.938
Q51 SI	.633	.937
Q52 B	.844	.931
Q55 B	.699	.935
Q56 SI	.724	.934
Q61 SI	.507	.939
Q66 SI	.763	.933
Scale reliability: .939		
Variance Extracted (VE): .460		
Factor 2: Responsibility		
Q16 Acc	.602	.858
Q28 Acc	.523	.866
Q47 R	.738	.845
Q48 R	.634	.855
Q54 R	.716	.846
Q59 R	.567	.863
Q62 R	.598	.859
Q63 R	.664	.852
Scale reliability: .871		
Variance Extracted (VE): .460		
Factor 3: Autonomy		
Q11 Aut	.631	.862
Q19 Aut	.654	.857
Q23 Aut	.673	.854
Q29 Aut	.681	.853
Q38 Aut	.691	.853
Q42 Aut	.764	.838

Scale reliability: .874		
Variance Extracted (VE): .470		
Factor 4: Territoriality		
Q2 T	.428	.778
Q22 T	.552	.734
Q26 T	.536	.740
Q35 T	.599	.718
Q39 T	.649	.703
Scale reliability : .776		
Variance Extracted (VE): .430		

Although the alphas for the subscales were highly satisfactory, the variance extracted (VE) estimates of .460 (*Identification*); .460 (*Responsibility*); .470 for *Autonomy* and .430 for *Territoriality* were less than .50. According to Hair et al. (2006), this could be an indication that variance due to measurement error is larger than the variance depicted by the factor. However, Hatcher (1994) notes that the variance extracted estimate test is very conservative, therefore reliabilities can be acceptable even if variance extracted estimates are less than .50.

4.2.6.4 Descriptive statistics of the scales of the SAPOS

The results of the descriptive statistics of the South African Psychological Ownership Questionnaire (SAPOS) for the four factors are set out in Table 4.19: The mean, standard deviation, skewness and kurtosis were computed for the sample scores on the four scales of the SAPOS.

Table 4.19: Descriptive statistics for the four scales of the SAPOS

	Factor 1: Identity	Factor 2: Responsibility	Factor 3: Autonomy	Factor 4: Territoriality
N	356	356	356	356
Mean	72.3258	41.3146	27.8258	17.6601
Std. Error of Mean	.69667	.22004	.27617	.27821
Std. Deviation	13.14472	4.15162	5.21082	5.24925
Skewness	-1.126	-.930	-1.189	.134
Skewness error	.129	.129	.129	.129
Kurtosis	1.534	2.827	2.031	-.725
Kurtosis error	.258	.258	.258	.258

According to Field (2005), the values of skewness and kurtosis are 0 within a normal distribution. Therefore, values of skewness or kurtosis above or below 0 indicate a deviation from normal. Morgan and Griego (1998), on the other hand, state that the assumption for normality expects skewness and kurtosis to be less than 2.5 times the standard error. According to these criteria the summated scores of the sample on the four scales presented in Table 4.19 indicate that the data has a deviation from the normal distribution with a tendency towards negative skewness and leptokurtic distributions.

4.2.7 Step 7: Confirmatory factor analysis

Following the guideline of Krzysofiak et al. (1988), the original sample was randomly split into two halves. One half of the sample ($n = 365$) was used for the development of a model (as discussed in Chapter 3) and the other half was used to validate the outcome that was obtained from the first half (Gerbing & Anderson, 1988). Therefore, the 35-item psychological ownership measure (SAPOS) was subjected to confirmatory factor analysis (CFA) on the other half of the sample ($n = 365$) and to competing model comparisons using EQS. Conducting a CFA allowed the researcher to examine the dimensionality and to evaluate the internal consistency of the developed measure more rigorously (Faranda, 2001).

The data was checked for the presence of multivariate outliers because these outliers might unduly influence the results of the factor analysis (Tabachnick & Fidell, 2007) Multivariate outliers were identified by inspecting the standardised scores (z-scores) and Mahalanobis distance statistic. There were no cases with very large Mahalanobis distance values that were clearly separated from the values of the other cases.

Assumptions of normality were assessed as well. According to Bentler (as cited in Byrne, 2006) Mardia's normalised estimate values greater than 5.00 indicate that the data are non-normally distributed. In this study, Mardia's coefficient (397.433) and the normalised estimate of the coefficient (z-statistic) of 85.6875 suggested that the measured variables were not normally distributed. Tabachnick and Fidell (2007) suggest that in the case of non-normality the robust maximum-likelihood (ML) estimate with the Satorra-Bentler scaled chi-square and adjustment of the standard errors should be employed. According to Garson (2002), the Satorra-Bentler chi-square is a corrected chi-square that makes an attempt to rectify the bias that is presented when the data are noticeably non-normal in the distribution.

The structural equation models for the four dimensions underlying the SAPOS are depicted in Table 4.20 and Figure 4.5 respectively. Latent variables were allowed to correlate with one another.

Table 4.20: Maximum-likelihood estimates of the four-factor model ($n = 365$)

Fit indices	Four-factor solution
S-B χ^2	951.772
<i>Df</i>	554
NNFI	0.897
CFI	0.904
RMSEA	0.045 (0.04 – 0.05)
SRMR	0.059

The result of the Satorra-Bentler chi-square statistic was 951.772, based upon 554 *df* ($p < .0001$). This chi-square statistic is significant and revealed a poor overall fit of the

original measured four-factor SAPOS model. If a chi-square value is significant, it indicates the covariance structure of the model differs significantly from the observed covariance structure. A non-significant chi-square value indicates a good model fit (Garson, 2002). However, according to Kelloway (1998), given the sample size and chi-square/*df* ratio, it would be incorrect to accept a poor model fit based on the significance of the chi-square index alone. The chi-square/*df* ratio was 1.72. Ullman (as cited in Tabachnick & Fidell, 2007) suggests that ratios of two or less can be interpreted as an indication of a good fit. According to this guideline, the measurement model appears to fit the data well. However, the chi-square statistic is very sensitive to sample size (Garson, 2002), with the result that a model with a large chi-square may still have a good fit if the fit indices are high. Therefore, the chi-square statistic must be used with caution and other multiple fit indices should be used to assess a model's goodness-of-fit. According to Bentler (2007) standardised root mean square residual (SRMR) should be reported, accompanied by at most two other fit indices of fit, such as the comparative fit index (CFI).

The model yielded a CFI value of .904. This value is slightly greater than the required .90 but less than the more recently .95 desirable levels (Hu & Bentler, 1999) to indicate a good model fit.

The RMSEA value was estimated at .045. This RMSEA value supports the belief of a good model fit because, according to Hair et al. (2006), RMSEA values between .05 and .08 are indicative of an acceptable fit. In a well-fitting model, the 90% confidence interval of the RMSEA should be between 0 and .08. The 90% confidence interval of the RMSEA (.04, .05) confirmed the acceptable fit of the four-factor measurement model to the data.

The model yielded an SRMR value of .059. Considering the guideline of Garson (2002) that SRMR values of less than .05 are widely considered good fit, and below .08 adequate fit, this value illustrates a fairly good fit.

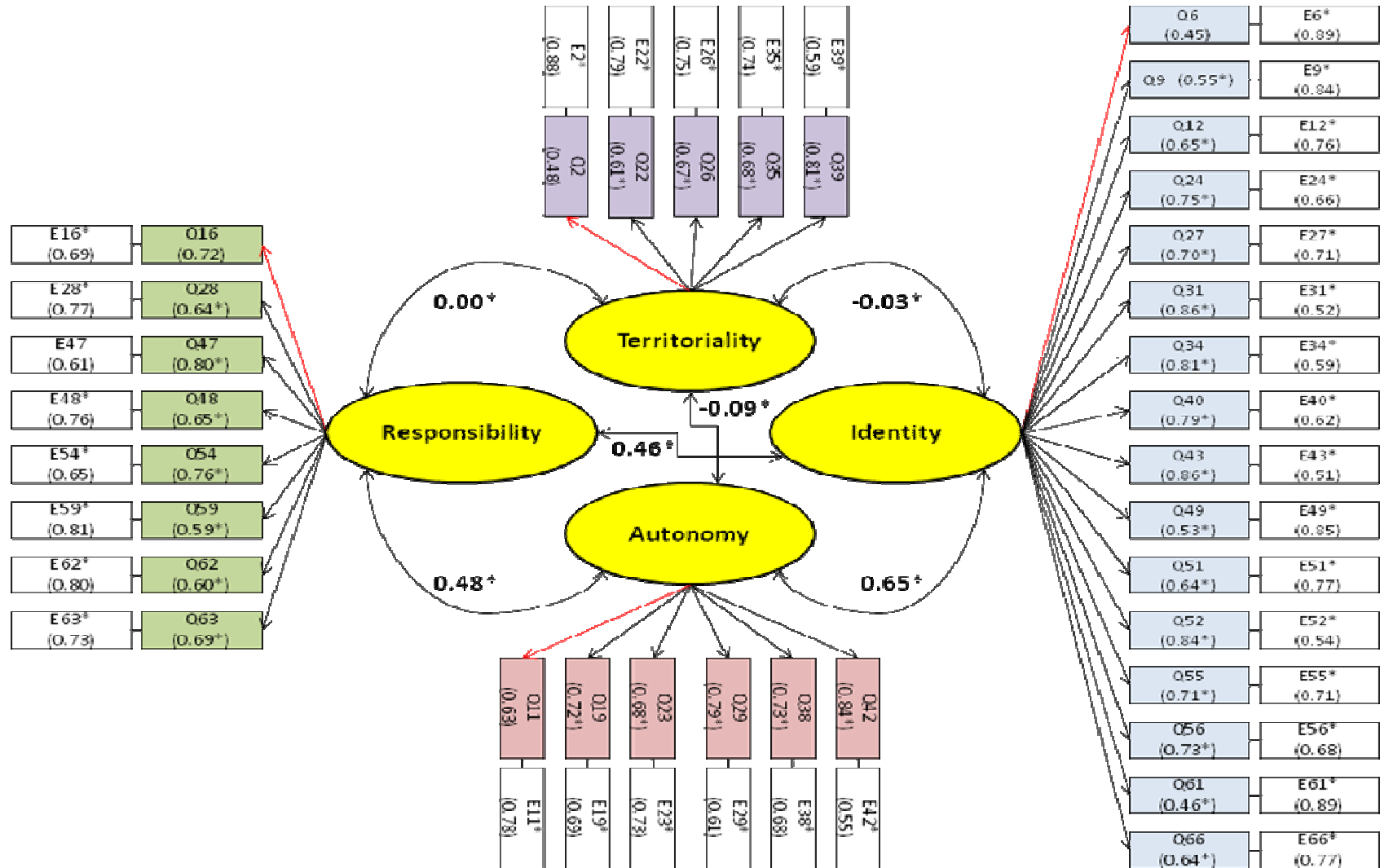
The chi-square/*df* ratio, CFI, RMSEA and SRMR values therefore met the minimum recommended standards, indicating a reasonable model fit.

The path diagram with parameter estimates produced by EQS, based on the four-factor results of the EFA, is displayed in Figure 4.5. The observed variables in this diagram reflecting the 35 items of the POSQ are coloured in blue, pink, green and purple, whereas the independent variables, namely *Identification*, *Responsibility*, *Autonomy* and *Territoriality*, are coloured in yellow. The 35 one-way arrows are indicative of regression coefficients that are indicative of the hypothesised effects of the observed variables (Bentler, 2004), whereas the two-way arrows represent the correlation or covariance between variables.

Path values indicate measures of reliability, displaying how well the observed variable explains each latent construct. Values of .7 or higher are required for acceptance in this regard (Hair et al., 2006).

For the latent construct *Identification* (F1) the observed variables Q6, Q9, Q12, Q49, Q51, Q61 and Q66 demonstrated moderate to low path values varying between .45 and .65, which is as a rule not considered as a good coefficient for acceptability. These observed variables also show high standard error, indicating that they cannot be sufficiently explained by the latent construct *Identification*. This finding is indicative of a limited fit with judgement or sound theory regarding the relationship between the latent construct and these observed variables. Except for variable Q49, the other observed variables had originally been defined to form part of the self-identity dimension.

Figure 4.5: Standardised estimated parameters of the four-factor model



However, on the basis of the researcher's belief at that point, she decided to retain these items as part of one dimension because these constructs seemed to be very similar; according to Lee (as cited in Edwards, 2005, p. 210), identification involves a sense of belongingness, and this is supported by Ashforth and Mael (1989, p. 21), who referred to identification as "the perception of oneness or belongingness".

Identification is a very complex phenomenon (Edwards & Peccei, 2007). Edwards and Peccei developed an instrument for measuring organisational identification (OID). According to them OID, is a multi-dimensional construct comprising three empirically distinct, yet strongly related components: self-categorisation and labelling; value and goal synergy; and belonging and membership. "Self-categorisation and labelling" refers to the process by which individuals categorise themselves as members of the organisation as a social category and, through the process, effectively label themselves as organisational members (Ashforth & Humphrey, as cited in Edwards & Peccei (2007). "Value and goal synergy" refers to the extent to which employees share the values and goals of the organisation and integrate them into their own belief system (Ashforth & Mael, 1989). "Belonging and membership" refers to the extent to which employees experience a sense of attachment to, belonging and membership of the organisation (Brown, 1969; Lee, as cited in Edwards, 2005). Edwards and Peccei found that although these three subcomponents are analytically and empirically distinct, they were found to be strongly interrelated and therefore showed very low discriminant validity.

According to Edwards and Peccei (2007), in practice it might not be meaningful and/or sensible to treat the three subcomponents as completely separate constructs and use them as distinct variables in analysis. They therefore suggest that it may rather be preferable to combine the three subcomponents into an aggregate measure and use it as a single overall scale of OID.

Avey et al. (2009) argue that although the underlying principle of ownership may be manifested in both self-identity and belongingness, these two should remain distinct, yet

related constructs. However, preliminary exploratory factor results conducted on the psychological ownership questionnaire (POQ) developed by Avey et al. (2009) on a South African sample comprising 145 health professional employees also indicated that the self-identity and sense of belonging items load onto one factor.

Higher, more acceptable path values were displayed by the remaining observed variables, ranging between .70 and .85.

In the case of *Responsibility* (F2), the highest coefficient is displayed by variable Q47 (.80) and the lowest coefficient by variable Q59 (.59).

In the case of *Autonomy* (F3), an overall better indication of reliability in comparison with the previous latent constructs is displayed, with the lowest path value of .63 for variable Q11. The other coefficients vary from .68 to .84.

Territoriality (F4) displays coefficients ranging between .48 and .81. Variable Q2 has the lowest path value (.48) and variable Q39 the highest path value (.81). Once again, in the case of variable Q2, it seems that the logically and theoretically aligned concept cannot be adequately explained by the latent construct.

The latent constructs were also allowed to correlate. Theoretically, well-defined constructs should reveal low values. The correlations in this model between the latent constructs *Identity* and *Responsibility* and *Responsibility* and *Autonomy* were relatively low, with values of .46 and .48 respectively. A moderate correlation with the value of .65 was found between *Identity* and *Autonomy*. As expected, and confirmed by the second-order factor analysis, the latent construct, *Territoriality* (the preventative form of psychological ownership) showed either no (.00) or extremely low negative correlations (-.09 and -.03) with the other more promotive latent constructs.

4.2.8 Step 8: Discriminant and criterion-related validity

4.2.8.1 Discriminant validity

Discriminant validity is the extent to which a construct is truly distinct from other constructs (Fornell & Larcker, 1981). In this study, evidence of discriminant validity was provided by the following procedure recommended by Fornell & Larcker. The variance extracted (VE) estimates (the average squared factor loading (Hair et al., (2006)) for two factors were compared and then compared with the squared correlation between the two factors. If the variance extracted estimates for both factors exceeds the squared correlation, discriminant validity is demonstrated. The correlations and squared correlations between the factors are depicted in Table 4.21.

Table 4.21: Correlations and squared correlations between the four factors

		Factor 1: Identification	Factor 2: Responsibility	Factor 3: Autonomy	Factor 4: Territoriality
Factor 1: Identification	1	1.000	(.132)	(.217)	(.011)
Factor 2: Responsibility	2	.363	1.000	(.067)	(.002)
Factor 3: Autonomy	3	.466	.256	1.000	(.002)
Factor 4: Territoriality	4	.105	-.048	-.047	1.000
Variance Extracted (VE)		.460	.460	.470	.430

Note: Values shown in brackets above the diagonal are squared correlations

As illustrated in Table 4.21, the correlation between factor 1 (*Identification*) and factor 2 (*Responsibility*) for example is .363 and the squared correlation is .132. The variance extracted estimate for both factor 1 (*Identification*) and factor 2 (*Responsibility*) is .460. The discriminant validity of factor 1 (*Identification*) and factor 2 (*Responsibility*) was

confirmed, because the variance extracted estimates exceeded the square of the inter-factor correlation.

The correlation between factor 2 (*Responsibility*) and factor 3 (*Autonomy*) is .256 and the squared correlation is .067. The variance extracted estimates for factor 2 (*Responsibility*) and factor 3 (*Autonomy*) are .460 and .470 respectively. Since the variance extracted estimates exceeded the square of the inter-factor correlation, the discriminant validity of factor 2 (*Responsibility*) and factor 3 (*Autonomy*) is confirmed.

The correlation between factor 1 (*Identification*) and factor 3 (*Autonomy*) is .466 and the squared correlation is .217. The variance extracted estimates for factor 1 (*Identification*) and factor 3 (*Autonomy*) are .460 and .470 respectively, therefore, similarly, the discriminant validity of factor 1 (*Identification*) and factor 3 (*Autonomy*) is confirmed, due to the fact that the variance extracted estimates exceeded the square of the inter-factor correlation.

In the case of factor 4 (*Territoriality*), examination of the other variance extracted estimates (.460, .460 and .470) and squared correlation coefficients (.011, .002 and .002) confirmed discriminate validity within the model.

4.2.8.2 Criterion-related validity

According to Cronbach and Meehl (1955), the relationship of the focal construct with other similar constructs should be examined to develop a nomological network. In this study, evidence of criterion-related validity was provided by examining the relationships between measures of psychological ownership and other theoretically related constructs, such as organisational commitment (Avey et al., 2009; Mayhew et al., 2007; O'Driscoll et al., 2006) Other measures that were included in the primary study to explore the corresponding semantic network were job satisfaction and turnover intentions (Avey et al., 2009; Buchko, 1993; Mayhew et al., 2007; Pierce et al., 1991; VandeWalle et al., 1995; Van Dyne & Pierce, 2004). According to Bagozzi and Yi

(1988), it is essential that researchers carefully scrutinise the internal structure of their model even if global measures of fit imply a satisfactory model. Therefore, for the purposes of this study, the composite reliability of promotive psychological ownership was calculated, as suggested by Schepers (1992). A high composite reliability value of .945 was calculated for the promotive psychological ownership dimension. According to Bagozzi and Yi, composite reliability values of greater than .60 are desirable.

- **Organisational commitment**

To assess organisational commitment, all eight items from Allen and Meyer's (1991) Affective Organisational Commitment Scale were used. Affective commitment refers to "the employee's emotional attachment to, identification with, and involvement in the organization" and "[E]mployees with a strong affective commitment continue employment with the organization because they *want* to do so" (Meyer & Allen, 1991, p. 67). Both VandeWalle et al. (1995) and Van Dyne and Pierce (2004) have shown that affective commitment is related to psychological ownership. The eight items were measured on a seven-point scale, ranging from 1 = strongly disagree to 7 = strongly agree. Allen and Meyer (1990) found a coefficient alpha of .87 for the affective commitment scale. In this study, the affective commitment scale yielded an acceptable reliability alpha ($\alpha = .71$).

- **Job satisfaction**

Job satisfaction was measured using three items that form part of Hackman and Oldham's (1980) Job Diagnostic Survey. Although Idaszak et al. (1988) suggest that an instrument should have at least four to six items per scale, Tabachnick and Fidell (2007) suggest retaining at least three items per factor. According to Tabachnick and Fidell (2007), it is possible to retain a factor with only two items if the items are highly correlated (i.e., $r > .70$) and relatively uncorrelated with other variables. The three items were measured on a seven-point scale, ranging from 1 = disagree strongly to 7 = agree strongly. This scale demonstrated internal reliability of .65.

- **Turnover intentions**

Turnover intentions were assessed by using a three-item turnover intention scale used by O’Driscoll and Beehr (1994). Zwick and Velicer (1986) and Gorsuch (1997) suggest that factors need at least three to four substantial factor loadings within the .40 (after rotation) range to be considered substantially meaningful. The three items rated whether respondents thought about leaving their job, planned to look for a new job over the next 12 months, and would actively search for a new job outside the organisation. O’Driscoll and Beehr (1994) obtained an alpha of .93 from the three-item turnover intention scale in their study. The three items were measured on a six-point rating scale where the response format varied for each item. The Cronbach alpha for turnover intentions was .77.

Correlation results

Correlation between the constructs was determined by means of Pearson correlation. Although the distribution is skewed, it was more useful to employ Pearson correlation because of the relatively large sample size ($N = 713$). As opposed to the more promotion-oriented forms of psychological ownership, feelings of territoriality showed no relationship with the outcome variables. Pierce et al. (1991) propose that psychological ownership is an antecedent to organisational commitment. As anticipated, and in accordance with empirical research findings by Avey et al. (2009), Mayhew et al. (2007) and O’Driscoll et al. (2006), promotive psychological ownership was positively related to affective commitment toward the organisation with an $r = .642$ ($p < 0.01$). A positive relationship was confirmed between job satisfaction and promotive psychological ownership ($r = .536$, $p < 0.01$). Empirical research findings (e.g. Avey et al. (2009), Buchko (1993), Mayhew et al. (2007), Pierce et al. (2007), VandeWalle et al. (1995) and Van Dyne and Pierce (2004)) support a positive relationship between job satisfaction and psychological ownership. According to Mayhew et al., although evidence indicates relationships between psychological ownership and commitment and job satisfaction, the emergence of such relationships may be a consequence of conceptual overlap.

The distinctiveness of the psychological ownership construct was supported by previous research done by Van Dyne and Pierce. They found that organisation-based psychological ownership could clearly be distinguished from both affective commitment and job satisfaction.

As expected and confirmed by Avey et al. (2009), turnover intentions were negatively related to promotive psychological ownership with an $r = -.376$ ($p < 0.01$).

The correlation results for all study variables are reported in Table 4.22.

Table 4.22: Relationships with Psychological Ownership

		Promotive psychological ownership	Identification	Responsibility	Autonomy	Territoriality	Commitment	Job satisfaction	Turnover intentions
Promotive psychological ownership	Pearson Correlation	1	.944**	.614**	.757**	.011	.642**	.536**	-.376**
	Sig. (2-tailed)		.000	.000	.000	.759	.000	.000	.000
	N	713	713	713	713	713	713	708	709
Identification	Pearson Correlation	.944**	1	.416**	.575**	.040	.675**	.526**	-.412**
	Sig. (2-tailed)	.000		.000	.000	.286	.000	.000	.000
	N	713	713	713	713	713	713	708	709
Responsibility	Pearson Correlation	.614**	.416**	1	.364**	-.030	.324**	.249**	-.115**
	Sig. (2-tailed)	.000	.000		.000	.417	.000	.000	.002
	N	713	713	713	713	713	713	708	709
Autonomy	Pearson Correlation	.757**	.575**	.364**	1	-.033	.371**	.420**	-.236**
	Sig. (2-tailed)	.000	.000	.000		.375	.000	.000	.000
	N	713	713	713	713	713	713	708	709
Territoriality	Pearson Correlation	.011	.040	-.030	-.033	1	-.071	-.147**	.156**
	Sig. (2-tailed)	.759	.286	.417	.375		.058	.000	.000
	N	713	713	713	713	713	713	708	709
Commitment	Pearson Correlation	.642**	.675**	.324**	.371**	-.071	1	.467**	-.459**
	Sig. (2-tailed)	.000	.000	.000	.000	.058		.000	.000
	N	713	713	713	713	713	713	708	709
Job satisfaction	Pearson Correlation	.536**	.526**	.249**	.420**	-.147**	.467**	1	-.475**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	708	708	708	708	708	708	708	708
Turnover intentions	Pearson Correlation	-.376**	-.412**	-.115**	-.236**	.156**	-.459**	-.475**	1
	Sig. (2-tailed)	.000	.000	.002	.000	.000	.000	.000	
	N	709	709	709	709	709	709	708	709

**. Correlation is significant at the .01 level (2-tailed).

4.2.8.3 Comparing different groups

Independent sample *t*-tests and the analysis of variance (ANOVA) technique were conducted to assess whether employees varying in biographical variables (age, gender, ethnic group, education, the sector in which their organisation operates, level in the organisation and registration with a professional board) differed significantly with regard to the specific dimensions (*Identification, Responsibility, Autonomy and Territoriality*) underlying the concept of psychological ownership. Independent sample *t*-tests were used to test whether significant differences existed between the means of two groups, and where several independent variables were compared the analysis of variance (ANOVA) technique was used.

Independent sample *t*-tests were conducted for the following biographical variables:

- Ethnic group
- Gender
- Registration at a professional board

ANOVAs were conducted for the following biographical variables:

- Level in the organisation
 - Age
 - Educational level
 - Sector in which the organisation operates
-
- **Ethnic groups**

According to Pierce et al. (2003), cultural aspects of a social context may have a significant influence on people's psychological ownership. Pierce and colleagues suggest that it is possible that feelings of ownership may be present in different cultures to a different extent.

According to Pierce et al. (2003), different targets and different characteristics of potential targets of psychological ownership may become more important in different cultures. The different types of target towards which people develop feelings of ownership will depend on where the self-concept of individuals in a given society predominantly resides. For example, cultures that are more collectivistic, familial and relationship based tend to be more orientated towards family and friends, while cultures that are more individualistic gain their self-concept primarily from their personal successes and achievements. It can be expected that the former will develop feelings of ownership primarily towards social targets like people and family, while the latter would focus more on their material possessions and work that address these achievements.

According to Maré (2009, p 84),

Even without sound theoretical analysis it is evident that the white South African is strongly representative of an independent individualist style. Black South Africans, on the other hand, constitute a cohesive approach that can be deemed rather the opposite of individualism.

According to Arnoldi-Van der Walt (as cited in Maré, 2009), a contrast exists between the individualistic understanding which is manifested in the western model of society and the *ubuntu* model. *Ubuntu* is an African humanist philosophy that focuses on people's interconnectedness with one another. According to the *Ubuntu* belief, a person cannot exist as a human being in isolation because your actions affect the whole world. Arnoldi-Van der Walt (as cited in Maré, 2009, p 87) compares the Western and *Ubuntu* models with regard to the social/environmental and cultural context, as presented in Table 4.23.

Table 4.23: Differences in social/environmental/cultural context between Western and Ubuntu models

Western model	Ubuntu model
Individualistic culture: view themselves as individuals who together form a group; self reliant	High collectivist culture: group affiliation much more important than individuality; dependent
Low face-saving culture: very direct	High face-saving culture: dignity; inclusive group orientation; greatest fear is rejection by the group
Low-context culture: information explicitly conveyed	High-context culture: information implicitly conveyed; unconditional dialogue
In the forefront of development/utilization of modern technology	Low utilization of management of foreign technology
The more the individual has, the more powerful he/she is	The more the communal person is prepared to give and share, the more respected he/she is

Source: Maré (2009, p. 87)

An independent *t*-test was used to determine the difference between black and white South African employees with regard to the dimensions of psychological ownership. Differences in the mean scores would indicate that the two groups differ with regard to their perception of psychological ownership. The results of the independent *t*-test are displayed in Table 4.24. According to Levene's test, this study found that a significant ($p < .05$) difference exists between black employees and white employees, specifically towards the *Responsibility* and *Territoriality* dimensions of psychological ownership.

With regard to the *Responsibility* dimension of psychological ownership, white employees (mean = 41.907) showed a slightly higher inclination towards responsibility in their organisations than black employees (mean = 40.328). This indicates that white employees still take full responsibility for the organisations in which they are currently employed in order to secure their jobs. They cannot afford to lose their jobs since competition in the market is stronger than ever due to the implementation of employment equity (EE) and black economic empowerment (BEE). This is supported by a study conducted by Berg, Buys, Schaap and Olckers (2004) on Scheper's Locus of Control Inventory. They found differences between English second-language (black people) and first-language (white people) groups with regard to their internal locus of control (the individual believes that outcomes are a consequence of her or his own behaviour). The first-language group showed a higher internal locus of control than the

second-language group. The practical significance ($d = .355$) between black employees and white employees with regard to responsibility reflects a medium effect size.

The difference that exists between black employees (mean = 19.729) and white employees (mean = 16.452) with regard to *Territoriality* can probably be ascribed to black people's collectivistic culture. This is related to a study conducted by Watkins (1995) among 487 managers working in various South African organisations, which found that black managers experience a stronger sense of entitlement than their white colleagues, which is ascribed to deprivation in the past. The difference between black employees and white employees with regard to territoriality reflects a medium effect size ($d = .658$).

Table 4.24: t-test: Ethnic groups

Dependent variables	Groups	N	Mean	Standard Deviation	t-value	Sig. (2-tailed)	d
Identification	White	418	71.794	13.268	-1.717	.086	.132
	Black	284	73.514	12.665			
Responsibility	White	418	41.907	3.509	4.610	.000*	.355
	Black	284	40.328	4.998			
Autonomy	White	418	27.845	5.313	.443	.658	.034
	Black	284	27.666	5.178			
Territoriality	White	418	16.452	4.812	-8.615	.000*	.658
	Black	284	19.729	5.137			

* $p < .05$

- **Gender**

Results of the independent *t*-test as displayed in Table 4.25 indicated that a significant difference exists between males and females with regard to the *Responsibility* and *Territoriality* dimensions. Males (mean = 41.760), on the one hand, seem to feel more responsible and take more responsibility than their female counterparts (mean = 40.886), whereas females (mean = 18.571), on the other hand, tend to be more territorial than

males (mean = 16.728). The reason for this might be the fact that the workplace is traditionally occupied by males and thus it is an environment in which males take up a natural role and the accountability for that role. One may say that males are groomed for these roles through the cultural view that the male is expected to be the breadwinner. This is supported by Coetzee (2008), who found in her study that males and females differed significantly with respect to their career preferences. The male respondents showed significantly higher mean scores than the females with regard to managerial (referring to individuals who view upward mobility to positions of successively greater responsibility) and autonomy (referring to independence and freedom from external interruptions) career preferences.

According to Lamphere (1985), our culture still assumes that women are primarily daughters, wives, and mothers and therefore are expected to care for the children and household, thus their achievements in the workplace involve a much more arduous journey; they have to fight for their equivalent place in the corporate world and this is evident in their higher territorial behaviour. Although significant differences were found between males and females with regard to these two dimensions, a medium effect size ($d = .209$ and $d = .358$) was calculated.

Table 4.25: t-test: Gender

Dependent variables	Groups	N	Mean	Standard Deviation	t-value	Sig. (2-tailed)	<i>d</i>
Identification	Male	287	72.265	13.376	-.415	.678	.032
	Female	420	72.679	12.749			
Responsibility	Male	287	41.76	3.958	2.699	.007*	.209
	Female	420	40.886	4.402			
Autonomy	Male	287	27.728	5.097	-.161	.872	.012
	Female	420	27.793	5.346			
Territoriality	Male	287	16.728	5.116	-4.681	.000*	.358
	Female	420	18.571	5.158			

* $p < .05$

- **Registration with a professional board**

An independent *t*-test was conducted between employees registered with a professional board and those that were not registered. Table 4.26 indicates a significant difference between employees registered with a professional board and those not registered with regard to the *Identification* and *Territoriality* dimensions. People who are registered (mean = 73.605) seem to have a higher feeling of identification than those who are not registered (mean = 18.784), as well as a greater territorial need than those who are not registered (mean = 71.395 and mean = 16.678 respectively). Since a professional qualification indicates that the person is a competent professional, whose skills and knowledge are highly valued by industry peers, a professional qualification allows employees to plan their continuous professional development (CPD) with structure and direction that can lead to the enhancement of their career prospects; provision of higher earning potential and greater status and influence (Institute of Telecommunications Professionals).

A significant portion of the research population consisted of professionals working in the mining and engineering field, where there are stringent regulatory obligations in their professional environment. Stringent laws may result in non-compliant professionals receiving harsh penalties or even jail sentences. The result of this can be seen in their higher mean with regard to *Identification* and *Territoriality*.

The practical significance value for *Identification* was $d = .169$, reflecting a small effect size and therefore negligible in terms of practical importance. The practical significance ($d = .412$) for *Territoriality*, however, reflected a medium effect size.

Table 4.26: t-test: Registration with a professional board

Dependent variables	Groups	N	Mean	Standard Deviation	t-value	Sig. (2-tailed)	d
Identification	Registered	324	73.605	12.870	2.205	.028*	.169
	Not-registered	357	71.395	13.235			
Responsibility	Registered	324	41.043	4.771	-1.717	.086	.133
	Not-registered	357	41.608	3.675			
Autonomy	Registered	324	28.034	4.821	1.039	.299	.08
	Not-registered	357	27.613	5.659			
Territoriality	Registered	324	18.784	5.194	5.383	.000*	.412
	Not-registered	357	16.678	5.011			

*p<.05

- **Age**

The ANOVA results displayed in Table 4.27 indicate that there is a significant ($F = 6.302$; $p < .05$) difference between the age groups with regard to their territorial need. A Sheffé post-hoc test was conducted to determine exactly where the difference lies. Employees in the age category 40–49 years (mean = 19.00) seem to be more territorial than those under 29 years of age (mean = 17.285), those between 30 and 39 years of age (mean = 17.291), and those older than 50 years of age (mean = 17.083).

Employees older than 50 are less territorial since most organisations today allow staff to take early retirement at age 55. The respondents who are on average older than 50 ($n = 123$) are therefore less territorial, since they have an exit option out of the organisation by requesting early retirement. This does not, however, apply to the age group 40–49 years, who in the current economic downturn are at high risk of retrenchment and a probable target of transformation. Their territorial score is much higher, confirming their fight for corporate survival, while employees younger than 40 years in generation X are still confident that they can climb the corporate ladder either in their current or an alternative organisation. This is confirmed by a study conducted by Coetzee (2008), who found that employees in the middle and late adulthood life stages showed a higher

need for developing expertise by means of further growth and learning opportunities than those in the early adulthood life stage. This confirms their belief that with the acquired skills they will improve their employability and will be able to prove their ability to their superiors.

The effect size was partial η^2 with a value of .027, which is an indication of a small effect size. Although the partial η^2 value was small, determining effect sizes between specific groups reveals medium effect sizes as follows: a $d = .322$ value between the group under 29 years of age and those between 40 and 49 years of age, a value of $d = .342$ between 30–39 years and 40–49 years old, and a $d = .352$ value between those employees between 40 and 49 and those older than 50 years.

Table 4.27: ANOVA and post-hoc Scheffé's test – Age

Dependent variables	F – value	Sig.	Sub-groups	N	Mean	Standard Deviation	Partial eta squared
Identification	2.331	.073	<29	137	70.839	13.516	.010
			30-39	213	71.667	12.187	
			40-49	240	73.163	13.167	
			50+	122	74.602	13.208	
Responsibility	1.354	.256	<29	137	40.883	3.963	.006
			30-39	213	41.366	4.195	
			40-49	240	41.042	4.280	
			50+	122	41.829	4.517	
Autonomy	1.420	.236	<29	137	27.314	4.940	.006
			30-39	213	27.418	5.715	
			40-49	240	28.092	4.889	
			50+	122	28.317	5.280	
Territoriality	6.302	.000*	<29	137	17.285 ^a	5.229	.027
			30-39	213	17.291 ^b	4.567	
			40-49	240	19.00 ^{abc}	5.386	
			50+	122	17.083 ^c	5.492	

* $p < .05$

- **Educational level**

Using the Scheffé's test of post-hoc comparisons, the following groups differed significantly on the *Identification* ($F = 4.063$; $p < .05$), *Responsibility* ($F = 4.083$; $p < .05$), *Autonomy* ($F = 3.000$; $p < .05$), and *Territoriality* ($F = 13.249$; $p < .05$), dimensions: employees with a bachelor's degree (mean = 74.748) showed a stronger identification with the organisation than employees with postgraduate degrees (mean = 70.543). Postgraduates (mean = 41.732) showed a slightly higher inclination towards responsibility in their organisations than employees having a diploma (mean = 40.493). Given that postgraduates are probably employed in senior management positions, this is another indication that, socially and by law, strenuous responsibility is placed on senior management for decisions made and actions taken. According to Coetzee (2008, p. 18), "people with a post-graduate qualification seem to have a higher sense of career calling and are more interested in applying their expertise where they can help make a difference in their own and other's lives".

Postgraduates (mean = 28.093) experience more autonomy in the workplace than employees with only Grade 12 (mean = 25.883) as their highest qualification. This is supported by Brass's (1985) observation that employees exposed to high job design autonomy experienced more influence (control) than their counterparts working with low autonomy. This assumption is based on the fact that postgraduates are probably employed in higher management positions where they have the freedom to schedule work and determine how it is done (Ashforth & Saks, 2000)

With regard to the *Territoriality* dimension, employees with a diploma (mean = 19.331) showed a higher territorial need than those with a bachelor's degree (mean = 16.807) or postgraduate degree (mean = 16.736). In a typical organisational hierarchy the number of junior management employees competing for the next middle management position is in all probability 10:1, while the contenders for the next senior management positions are two or three candidates. This assumption is based on the fact that postgraduates are employed at the senior management level. According to Coetzee and Schreuder (as

cited in Coetzee, 2008), people with an undergraduate qualification seem to be more job orientated and are more attracted to careers that afford them the opportunity to apply and develop their own skills in positions of power and influence.

Partial η^2 showed small effect size values (.17, .17, .13 and .54 respectively). However, the calculation of effect sizes between the different groups showed the following results: a medium effect size of $d = .33$ between those with a bachelor's degree and those with a postgraduate degree with regard to *identification*; a medium effect size of $d = .283$ between those employees holding a diploma and those with a postgraduate degree with regard to *responsibility*; a medium effect size of $d = .397$ between employees with a Grade 12 and employees with a postgraduate degree with regard to the *autonomy* dimension. With regard to the *territoriality* dimension, a medium effect size of $d = .475$ was calculated between diploma holders and bachelor degree holders, as well as between diploma holders and postgraduate degree holders with a value of $d = .515$. The results of the ANOVA are displayed in Table 4.28.

Table 4.28: ANOVA and post-hoc Scheffé’s test – Education

Dependent variables	F - value	Sig.	Sub-groups	N	Mean	Standard Deviation	Partial eta squared
Identification	4.063	.007*	Grade 12	60	72.1500	12.513	.017
			Diploma	223	73.646	13.029	
			Bachelor’s degree	135	74.748*	11.842	
			Post-graduate	280	70.543*	13.555	
Responsibility	4.083	.007*	Grade 12	60	41.383	3.532	.017
			Diploma	223	40.493*	4.812	
			Bachelor’s degree	135	41.674	4.055	
			Post-graduate	280	41.732*	3.879	
Autonomy	3.000	.030*	Grade 12	60	25.883*	5.666	.013
			Diploma	223	27.803	5.000	
			Bachelor’s degree	135	27.948	5.017	
			Post-graduate	280	28.093*	5.435	
Territoriality	13.249	.000*	Grade 12	60	18.667	5.401	.054
			Diploma	223	19.331 ^{ab}	5.426	
			Bachelor’s degree	135	16.807 ^a	5.165	
			Post-graduate	280	16.736 ^b	4.604	

*p < .05

- **Sector in which organisation operates**

ANOVA results displayed in Table 4.29 indicate a significant difference in the extent to which the different sectors in which the organisation operates vary, with regard to the *Responsibility* ($F = 4.880$; $p < .05$) and *Territoriality* ($F = 16.084$; $p < .05$) dimensions. Once more the post-hoc test of Sheffé was employed to determine where the differences between the groups lie. Employees working in the financial sector (mean = 2.67) seem to be more responsible than those employed in the government sector (mean = 40.506), or those working in other sectors (mean = 40.919) such as telecommunications, information technology, professional services and others. Employees working in the government sector (mean = 19.913) seem to be more territorial than those employed in the financial sector (mean = 16.301), chemical industry (mean = 16.204) as well as manufacturing and production (mean = 17.182)

which include the mining sector. Those employees employed in other sectors (mean = 18.626) such as telecommunications, information technology and professional services showed a higher territorial need than those working in either the financial sector (mean = 16.301) or the chemical industry (mean = 16.204).

Financial service employees are subject to stringent regulatory compliance laws both in South Africa and internationally (e.g. the BASIL-code). Employees within the financial services organisations write annual compliance exams to verify their knowledge and understanding of these laws and they are not allowed to perform their duties if these exams are not completed in a specified period. The FAIS Act (Financial Advisory and Intermediary Services Act), for example, was introduced to regulate all financial advisors and intermediaries. The aim of this act is to protect the consumer against inappropriate financial advice. The financial service sectors' responsibility score is much higher than that of other organisations, since the responsibility of passing these compliance exams has been internalised and each employee is responsible for performance in this regard in his or her own right. Similar compliance regulations are not applicable within the government sector.

Partial eta squared values of .028 and .085 indicated small effect sizes. However, medium effect sizes of $d = .476$ were calculated between employees working in the financial sector and those in the government sector with regard to the *Responsibility* dimension and $d = .423$ between employees employed in the financial sector and those employed in other sectors. With regard to the *Territoriality* dimension, the following results were found: a relatively high medium effect size of $d = .753$ between employees in the financial and government sector, between employees in the financial and other sectors ($d = .735$) and between employees in the chemical industry and government sector ($d = .785$). Medium effect sizes were also calculated between those employed in the chemical industry and other sectors ($d = .446$) and those working in the government and manufacturing and production sectors ($d = .546$).

Table 4.29: ANOVA and post-hoc Scheffés test – Sector in which the organisation operates

Dependent variables	F - value	Sig.	Sub-groups	N	Mean	Standard Deviation	Partial eta squared
Identification	1.456	.214	Financial services	103	70.592	14.803	.008
			Chemical / Petroleum	186	71.839	12.143	
			Government	172	72.523	13.102	
			Manufacturing & production	110	74.691	11.846	
			Other	123			
Responsibility	4.880	.001*	Financial services	103	42.67 ^{ab}	3.725	.028
			Chemical / Petroleum	186	41.634	3.243	
			Government	172	40.506 ^a	4.953	
			Manufacturing & production	110	41.164	4.374	
			Other	123	40.919 ^b	4.479	
Autonomy	.488	.744	Financial services	103	28.301	5.490	.003
			Chemical / Petroleum	186	27.538	5.476	
			Government	172	27.680	5.102	
			Manufacturing & production	110	28.046	5.007	
			Other	123	27.553	5.330	
Territoriality	16.084	.000*	Financial services	103	16.301 ^{ab}	4.907	.085
			Chemical / Petroleum	186	16.204 ^{cd}	4.766	
			Government	172	19.913 ^{ace}	4.658	
			Manufacturing & production	110	17.182 ^e	5.297	
			Other	123	18.626 ^{bd}	5.470	

*p < .05

- **Level in the organisation**

The four different levels on which people operate in their organisations were compared. The different levels are as follows: operational level, junior management level, middle management level and senior management level. From the ANOVA results displayed in

Table 4.30, it is evident that significant ($p < .05$) differences exist between the four groups with regard to the different dimensions that psychological ownership comprises.

Post-hoc comparisons done by means of the Scheffé test reveal significant differences among the four groups in the following dimensions:

- *Identification*

Once again significant differences ($F = 5.392$; $p < .05$) exist between employees functioning on operational level and junior management level and those on senior management level. Employees on senior management level (mean = 76.450) showed a higher sense of identification toward their organisations than those employees functioning on operational level (mean = 70.873) and junior management level (mean = 71.240). Senior management may feel a stronger sense of ownership and feel “part of the pride” because normally they have been in the organisation for quite some time. These people are usually heads of departments in which they play a dominant role and where they take decisions on both human and asset capital and see the effect of the decisions within the organisation. This may enhance their feelings of attachment to the organisation. They feel they have earned their wings”. Govender and Parumasur (2010) for example, found that top managers possess and display significantly higher levels of director competencies than middle and senior managers. (Competencies in the director role entail communicating a vision, setting goals and objectives, and designing and organising.) The partial eta squared value calculated was small (.023). Cohen’s d (1992) was calculated between employees on operational level and senior management level and a medium effect size of ($d = .434$) was revealed. A medium practical significance ($d = .414$) was found between junior management and senior management level employees.

- *Responsibility*

There is a significant difference ($F = 5.483$; $p < .05$) between employees on operational level and junior management level and those employees on senior management level with regard to *Responsibility*. Employees on senior management (mean = 42.450) level showed a slightly higher inclination towards responsibility in their organisations than those on operational level (mean = 40.910) and junior management level (mean = 40.653). Both socially and by law, there is strenuous responsibility placed on senior management and they can be held liable for major disasters such as health and safety breaches, and can be personally fined or receive a jail sentence. According to Wood and Winston (2007, p.169), leaders should be accountable, therefore need to accept the responsibilities inherent in their leadership position, “not just for activities, circumstances, or past results, but for future direction, potential effectiveness, possibility thinking, an inspiring shared vision, and maximum contribution”. The partial eta squared value calculated was small (.023). Calculation of the effect sizes revealed a medium practical significance ($d = .331$) between employees on operational level and those on senior management level. A medium effect size value of $d = .422$ was also found between employees functioning on junior management level and those on senior management level.

- *Autonomy*

With regard to the *Autonomy* dimension, a significant difference ($F = 10.094$; $p < .05$) exists between employees on an operational level (mean = 26.864) and those on middle management level (mean = 28.448) and senior management level (mean = 29.592). Both employees on middle management level and senior management level experience more autonomy in the workplace than those who function on an operational level. A significant difference also exists between employees on junior management level (mean = 26.813) and those on middle management level (mean = 28.448) and senior management level (mean = 29.592). Both employees on middle management level and senior management level experience more autonomy in the workplace than those who

function on junior management level. The reason for this difference probably lies in the fact that the higher up the employees are in the organisation, the broader their mandate to make decisions and the bigger the impact of those decisions will be on the long-term sustainability of the organisation. This is supported by Brass (1985), who observed that employees exposed to high job design autonomy experienced more influence (control) than their counterparts working with low autonomy. A small partial eta squared value of .042 was calculated for the autonomy dimension. Medium practical significance was reflected between operational and middle management level employees ($d = .308$), between operational and senior management level employees ($d = .516$), between junior management and middle management employees ($d = .326$) and between junior management and senior management employees ($d = .538$).

- *Territoriality*

The following groups differ significantly ($F = 5.284$; $p < .05$) with regard to the *Territoriality* dimension: employees functioning on the operational level (mean = 18.733) showed a higher territorial need than employees functioning on senior management level (mean = 16.575). Operational staff displays an attachment to their department/organisation for the purposes of constructing, communicating, maintaining, and restoring (Brown et al., 2005). This is done to ensure their department access and to maintain their existing capacity and resources despite the general cut-back experienced by many organisations in the current economic downturn. Further indication of territorial behaviour on operational level is that operational teams mark their areas with personalised insignia (Brown et al., 2005). Senior management showed a lower territorial need, as many of them have their own office to which they feel attached, while operational staff normally works in open-plan offices where personal space is limited. Although a partial eta squared value for the *Territoriality* dimension calculated was small, a medium effect size of $d = .407$ was reflected between operational and senior management level employees.

Table 4.30: ANOVA and post-hoc Scheffé’s test – Level in the organisation

Dependent variables	F – value	Sig.	Sub-groups	N	Mean	Standard deviation	Partial eta squared
Identification	5.392	.001*	Operational	221	70.873 ^a	13.375	.023
			Junior management	150	71.240 ^b	12.853	
			Middle management	201	72.751	12.925	
			Senior management	120	76.450 ^{ab}	12.218	
Responsibility	5.483	.001*	Operational	221	40.910 ^a	4.495	.023
			Junior management	150	40.653 ^b	3.629	
			Middle management	201	41.647	3.547	
			Senior management	120	42.450 ^{ab}	4.784	
Autonomy	10.094	.000*	Operational	221	26.864 ^{ab}	5.663	.042
			Junior management	150	26.813 ^{cd}	5.422	
			Middle management	201	28.448 ^{ac}	4.547	
			Senior management	120	29.592 ^{bd}	4.857	
Territoriality	5.284	.001*	Operational	221	18.733 ^a	5.089	.023
			Junior management	150	17.260	5.113	
			Middle management	201	17.617	4.976	
			Senior management	120	16.575 ^a	5.497	

*p < .05

- **Number of years working in the current organisation**

However, contrary to general belief, Table 4.31 indicates that no significant differences exist between the number of years employees have worked in their current organisation and the dependent variables. Pierce et al. (2001) propose that a longer association with a target (e.g. long tenure) will probably lead to perceptions of knowing the target better and as a result, to a sense of ownership.

Table 4.31: ANOVA and post-hoc Scheffé’s test – Number of years working in the current organisation

Dependent variables	F - value	Sig.	Sub-groups	N	Mean	Standard deviation	Partial eta squared
Identification	3.709	.464	Less than 5 years	307	70.981	14.013	.015
			6-10 years	138	72.044	12.667	
			11-20 years	163	74.282	11.341	
			21+ years	105	74.895	12.187	
Responsibility	1.449	.227	Less than 5 years	307	41.283	4.087	.006
			6-10 years	138	41.261	4.338	
			11-20 years	163	40.761	4.722	
			21+ years	105	41.857	3.707	
Autonomy	1.718	.162	Less than 5 years	307	27.365	5.398	.007
			6-10 years	138	27.790	5.306	
			11-20 years	163	27.988	4.765	
			21+ years	105	28.657	5.288	
Territoriality	.372	.774	Less than 5 years	307	17.808	4.968	.002
			6-10 years	138	17.768	4.972	
			11-20 years	163	18.147	5.507	
			21+ years	105	17.476	5.693	

* $p < .05$

- **Number of years working in current position**

According to the results displayed in Table 4.32, significant differences exist between the numbers of years employees have worked in their current position in the organisation with regard to the *Territoriality* dimension ($F = 6.638$; $p < .05$). Once more a Scheffé post-hoc test was conducted to determine where the differences lie between the groups. The results indicated that employees employed for less than 5 years in their current position differ significantly from employees who have worked between 6 and 10 years and 11 to 20 years in their current position in terms of their territorial need. Employees who have worked between 6 and 10 years (mean = 18.971) and 11 and 20 years (mean = 19.131) in their current position indicated a higher territorial need than employees employed for less than 5 years (mean = 17.214) in their current position.

Employees working in their current position for 11 to 20 years have reached corporate maturity and have made their position absolutely their own. This is good news for the organisation, which has employees that are well entrenched in their position and form the backbone of the organisation. The downside of this is that these employees may have fallen into a comfort zone and may no longer grow with the organisation. They display a higher territorial score since they are protecting their current environment and will oppose any change in their operating environment. Prevention-orientated people tend to be less open to change and they prefer to stick with the already known (Kark & Van Dijk, 2007). It seems that employees who have worked in their current position for 11 to 20 years are more prevention-orientated and therefore more territorial than employees employed for less than 5 years in their current position.

A small partial eta squared value of .027 was calculated. However, medium effect sizes were calculated between employees employed for less than 5 years in their current position and those employed between 6 and 10 years ($d = 0.354$) as well as between employees working in their current position for less than 5 years and those employees working between 11 and 20 years ($d = .356$).

Table 4.32: ANOVA and post-hoc Scheffé’s test – Number of years working in current position

Dependent variables	F - value	Sig.	Sub-groups	N	Mean	Standard Deviation	Partial eta squared
Identification	1.935	.123	<5 years	471	72.064	13.516	.015
			6-10 years	102	73.431	11.818	
			11-20 years	99	71.950	12.602	
			21+ years	40	76.829	9.633	
Responsibility	.834	.475	<5 years	471	41.420	4.200	.006
			6-10 years	102	40.912	4.315	
			11-20 years	99	40.818	4.687	
			21+ years	40	41.073	3.357	
Autonomy	.775	.508	<5 years	471	27.796	5.095	.007
			6-10 years	102	27.480	5.734	
			11-20 years	99	27.556	5.397	
			21+ years	40	28.878	5.124	
Territoriality	6.638	.000*	<5 years	471	17.214 ^{ab}	5.077	.027
			6-10 years	102	18.971 ^a	4.839	
			11-20 years	99	19.131 ^b	5.665	
			21+ years	40	18.902	5.253	

*p < .05

4.3 CONCLUSION

In this chapter a measure of psychological ownership was developed by following eight steps for scale development as suggested by Hinkin (1998), DeVellis (2003), and Spector (1992).

In the *first step* all the dimensions underlying the concept of psychological ownership were clearly defined and described, namely self-efficacy, self-identity, sense of belonging, accountability, autonomy, responsibility and territoriality.

In the *second step*, by following a deductive approach, items were generated for each one of the dimensions. A total number of 54 items were generated.

In the *third step* of scale development a Likert-type rating scale, with an equal 1-6 agreement format, was chosen.

In the *fourth step* a panel of nine subject matter experts reviewed the initial pool of items to judge each item related to the specific dimension of psychological ownership. The experts commented on the item content, item style, and comprehensiveness of the instrument. After the application of Lawshe's (1975) quasi-quantitative technique a total number of 34 items were retained. However, a total of 11 items were kept despite Lawshe's application. Based on the suggestion of the subject matter experts, an additional 24 items derived from the literature study were added to the measurement to better represent the total content domain. The total number of items to be included in the final instrument to be tested was 69. Preliminary analysis on the pilot study ($n = 46$) revealed satisfactory reliability coefficients for each of the dimensions.

In the *fifth step* the instrument was administered to a non-probability convenience sample ($N = 712$) comprising employed professional, high-skilled and skilled individuals in various organisations in both the private and public sector in South Africa. However, the sample was randomly split into two subsets. A sample of 356 was used for the development of a model and the remaining half was used for validating the results that were attained from the first half (Anderson & Gerbing, 1988).

In the *sixth step* of scale development an exploratory factor analysis (EFA) was performed on the sample comprising 356 individuals. The results of the Bartlett's Test of Sphericity and the KMO measure of sample adequacy confirmed that the data was suitable for factor analysis. The parallel analysis signified four significant factors. Two rounds of exploratory factor analysis were performed on the four-factor model that resulted in a measure comprising 35 items. The four factors of the South African Psychological Ownership Questionnaire (SAPOS) were labelled *Identification*, *Responsibility*, *Autonomy* and *Territoriality* respectively. The four factors retained explained 50.7% of the total variance of the data set.

Results of the second-order factor analysis clearly indicated the existence of two distinctive dimensions, labelled promotive (promotion-orientated) psychological ownership and preventative (prevention-orientated) psychological ownership

respectively. The Tucker's phi coefficients for the Black and White respondents were all acceptable ($>.90$) indicating that the four factors of the SAPOS were equivalent for the two race groups. All four subscales revealed highly satisfactory Cronbach alpha coefficients (0.94; 0.87; 0.87 and 0.78). Results of the descriptive statistics for the four scales of the SAPOS indicated a deviation from the normal distribution with a tendency towards negative skewness and leptokuric distributions.

In the *seventh* step the four-factor model consisting of 35 items of the SAPOS was subjected to confirmatory factor analysis on the other half of the sample ($n = 365$). Mardia's coefficient indicated that the data was non-normally distributed and therefore the robust maximum-likelihood (ML) estimation with the Santorra-Bentler scaled chi-square was employed. Except for the NNFI value of 0.897, the chi-square/df ratio (1:7), CFI (0.904), RMSEA (0.045), and SRMR (0.059) values met the minimum recommended standards, indicating a reasonable fit.

In the *eighth* step the discriminant validity and criterion-related validity of the SAPOS were examined. Examination of the variance extracted estimates confirmed discriminant validity within the model. The relationship between psychological ownership and similar constructs was examined to develop a semantic network. Promotive psychological ownership was positively correlated with affective commitment and job satisfaction and negatively related to turnover intentions. These results provided evidence of criterion-related validity.

To determine the differences between the means scores of the different groups with regard to their biographical characteristics, independent sample *t*-tests and analysis of variance (ANOVA) were conducted. Differences exist between groups with regard to their ethnic grouping, gender, registration with a professional board, age, educational level, sector in which their organisation operates, level in the organisation and number of years working in their current position. However, in most cases medium practical significance was established between the groups. Contrary to general belief, no

significant differences were found between the number of years employees had been working in their current organisation and the dependent variables.

The following chapter will conclude the research and discuss a summary of the study. It will assess the contribution of the study from a theoretical, methodological and practical point of view. The limitations and directions for future research will be discussed.