

# Development of an interpretation framework for the Kruger National Park

**E van Loggerenberg**

**20300212**

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(Article route)

Promoter: Prof Dr M. Saayman

Co-promoter: Prof M. Kruger

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## Proof of language editing



36 Finch Street  
Ontdekkerspark 1709

Telephone: 084 716 6588  
e-mail: [dtraining@iafrica.com](mailto:dtraining@iafrica.com)

11 November 2014

To whom it may concern

### Language Editing – PhD Thesis – E. van Loggerenberg

I have reviewed the thesis entitled “Development of an interpretation framework for the Kruger National Park” in terms of spelling, language, and grammar and have made recommendations to the author concerning the changes necessary.

A handwritten signature in black ink, appearing to be "R. Taylor".

R. Taylor  
CEO

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Good day Mr Tinker

I am currently busy with my PhD in tourism management at the North-West University. I am aiming to develop an interpretation framework for the Kruger National Park with my thesis.

I am specifically emailing with regards to the map of the Kruger National Park used in your guide on page 4 (Tinker, A. & Tinker, L. 2011. Kruger National Park guide and map). I would like to include this map only within Chapter 1 of my thesis if you would permit me. If possible I would also need a permission letter stating that I may indeed use this map only for my thesis publication purposes. Could you perhaps forward the map to me or seeing as MetroGIS was responsible for the map conceptions in the guide, should I request the map from them? If so could you perhaps assist me then with their contact information? I would be very grateful if you could assist me.

Hope to hear from you soon.

Ms Elricke van Loggerenberg

M.Com Tourism Management  
Unisa  
School for Economic Management Sciences  
Department of Transport Economics, Logistics and Tourism

**From:** Andy [mailto:info@atp.co.za]  
**Sent:** Wednesday, July 09, 2014 3:01 PM  
**To:** Van Loggerenberg, Elricke  
**Subject:** Re: Kruger National Park map

Hi Elricke

Thanks for your email.

I am currently working in the Timbavati and signal is not good at all.

You are welcome to use my map of the Kruger Park for your Thesis and please can you accredit us for the map.

Good luck

Thanks

Regards

Andy Tinker  
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Today, I am looking back on nine years of learning, development and a journey of acquiring wisdom. This degree has always seemed to be the conclusion of my education and the licence to pursue a career. I had the idea that, once this degree is obtained, I will finally have obtained the highest degree and that this will be the end of extra obligations – I will finally be finished. But never have I anticipated the real outcome of such a journey.

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# Development of an interpretation framework for the Kruger National Park

**Abstract:** The growth of the ecotourism industry has resulted in increased demand for ecotourism and, consequently, the demand for one of the most renowned ecotourism destinations in South Africa, the Kruger National Park. Eco-tourists are highly educated and expect information-rich experiences which can be addressed with interpretation services. Previous studies indicated that the Kruger National Park's management neglects the importance of interpretation and, thus, the expectations of interpretation services exceeded the actual experience thereof. Additionally, the Kruger National Park is faced with a decline in public funding and consequently shifted their focus to ecotourism management to support successful conservation management of the park. Interpretation, however is not only considered to be an important educational tool that addresses visitors' expectations for educational services, but also contributes to national parks' conservation mandate since it influences visitors' behaviour to be more in line with respect for the environment, philanthropic support for conservation and general environmental behaviour. Clearly the Kruger National Park should address interpretation services with the aim of addressing visitor expectations but also to contribute to conservation management.

The aim of this study is therefore to develop an interpretation framework for the Kruger National Park. To achieve this aim, this study made use of a self-administered questionnaire which was distributed in the southern and northern regions of the park during December 2011 and June 2012 respectively. Only one questionnaire per travelling group was distributed and resulted in 855 completed questionnaires for this study. Furthermore, the aim of the study was realised by means of several objectives.

The first objective was to conduct a thorough literature analysis on the components, theories and goals related to interpretation within ecotourism related products. This was accomplished in Chapter 2 and provided a conceptual framework which was tested in the subsequent chapters to provide an interpretation framework for the Kruger National Park.

The second objective explored all the methodological considerations for the subsequent chapters (i.e. articles). Due to the limited space available in the articles, Chapter 3 provided additional information or methodological considerations not captured in the articles of the study.

The third objective of this study determined the interpretation expectations and experiences of visitors to the Kruger National Park. This was done in Chapter 4 of the study. Factor analyses revealed visitors' expected and experienced interpretation services and compared these factors by means of paired sample t-tests for the park as a whole as well as between the northern and southern regions of the park. The results revealed that there is a gap between visitors' expectations and experiences with interpretation services of the park, however, there are no significant differences between the northern and southern regions' interpretation services.

In addition to determining the visitors' expectations and experiences with the Kruger National Park's interpretation services; the fourth objective determined market segments for the Kruger National Park based on expected interpretation services. This was accomplished in Chapter 5 of the study by means of cluster analyses (i.e. hierarchical and non-hierarchical) that revealed four distinct markets (i.e. *Inquisitive*, *Eager*, *Comfort* and *Quasi-interested seekers*). A factor analysis also determined several motivations for visitors to visit the Kruger National Park and by means of ANOVAs and Chi-square analyses, the differences between the market segments based on socio-demographic and behavioural characteristics as well as motivations, expected and experienced interpretation services were determined.

The fifth objective of this study determined whether the Kruger National Park's interpretation services have an impact on the visitors' behaviour to be more in line with the park's conservation practices and was accomplished in Chapter 6. This chapter made use of structural equation modelling to determine the multiple relationships between expected interpretation services as well as attitudes and behaviour. Results revealed that visitors to the Kruger National Park are inclined towards positive attitudes towards conservation practices but that the current interpretation services influenced the attitudes as well as the behaviour of visitors negatively and needs to be addressed.

Lastly, the results of this research suggest several recommendations for the Kruger National Park as explained in Chapter 7 of this study. Clearly the Kruger National Park needs to address the gap between interpretation expectations and experiences by planning for interpretation in the form of a policy or strategy. The interpretation policy or strategy should also be re-evaluated and amended periodically since visitor's needs and markets change. An interpretation framework is presented for the Kruger National Park based on the results of this study to address the current dilemmas of the park in terms of interpretation.

Not only did this study provide practical contributions to the Kruger National Park but made several distinct contributions. An interpretation framework was developed that can not only assist the Kruger National Park but which also contributes to the body of knowledge on the topic and can also assist other ecotourism destinations in the same position as the Kruger National Park. This study also confirmed a general classification of interpretation services as well as suggested interpretation typologies that can be used for future ecotourism research. Since there was no guideline available to segment interpretation visitors, this study also made a methodological contribution by proving that expected interpretation can be a viable segmentation base and that the selection of a variable should be based on statistical calculations.

**Keywords:** Kruger National Park, national parks tourism, ecotourism, interpretation, experience, expectations, mindfulness, conservation tourism, market segmentation, theory of planned behaviour, cognitive dissonance theory, attitudes, behaviour

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# CHAPTER 1: INTRODUCTION, PROBLEM STATEMENT, OBJECTIVES AND METHOD OF RESEARCH

## 1.1 INTRODUCTION

Ecotourism is one of the fastest growing sub-sectors of tourism (Ayob, Saman, Hussin & Jusoff, 2009:76; Jurdana, 2009:270; Kara, Deniz, Kilicaslan & Polat, 2011:146). Nwahia, Omonona, Onyeabor and Balogun (2012:26) state that ecotourism indicates a growth rate of 10-15% worldwide. As a result of the amount of attention paid to ecotourism and the fast pace at which ecotourism businesses are growing worldwide, ecotourism businesses are becoming more competitive and have to deliver quality services that fulfil the needs and expectations of eco-tourists (Khan, 2003:109-110).

There is little agreement on what precisely ecotourism means (Mason, 2008:157) and therefore there are various definitions of ecotourism (Geldenhuys, 2009:4). Ecotourism, however emerged from the work of Ceballos-Lascurain (1987:14) who defined ecotourism as travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying, admiring and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas. From an analysis of all the definitions of ecotourism that exist, ecotourism should be (i) nature-based, (ii) environmentally educating (in other words studying), and (iii) sustainably managed (Geldenhuys, 2009:4).

National parks are an excellent example of an ecotourism attraction. Saayman (2009:358) asserts that park management consists of conservation management, ecotourism management and, as with any other business, general management (such as human resources, finance and marketing). Fennell (2008:112) agrees and indicates that national parks are broadly mandated with the dual purpose of protecting representative natural areas of significance (conservation management), and encouraging public understanding, appreciation and enjoyment (ecotourism management).

From the definition stated by Ceballos-Lascurain (1987:14) and the analysis of definitions by Geldenhuys (2009:4) one aspect of ecotourism that should be given attention is education. Kara *et al.* (2011:146) explain that ecotourism was initially used

to describe nature-based travel to undisturbed areas with an emphasis on education or an enlightening experience. Wearing and Neil (2009:90) add that providing education is an essential ingredient for successful park management and should be a key component of ecotourism and protected areas. Saayman (2009:358, 375) draws attention to education as an aspect that should be considered under ecotourism management as a means of managing the tourist's expectations as well as an aspect that creates an understanding of, and interest in, environmental conservation of the park. Clearly, education is a core component of ecotourism. This seems to be the case since Shultis and Way (2006:232) state that eco-tourists are interested in experiencing and learning about nature and are also interested in more active and participatory learning experiences (Khan, 2003:112). Khan (2003:112), Eagles (2004:19) and Jurdana (2009:270) explain the use of national parks is predominately by the higher-educated sectors of society that leads to travel oriented towards intellectual enrichment.

One way in which education can be accomplished is by means of interpretation. Interpretation services provided by parks not only help visitors achieve their recreation goals but also clarify the park's preservation, conservation and education goals (Chen, Hwang & Lee, 2006:1167). As a result of the trend of travel oriented towards intellectual enrichment, park managers are seeing a greater demand for information, interpretation and knowledge about the area (Eagles, 2004:19). Henker and Brown (2011:8) argue that interpretation is the primary means by which visitors understand the site they are visiting and should be the cornerstone of the management plans of all national parks.

The Kruger National Park is one of South Africa's most renowned ecotourism products. The Kruger National Park is the largest game reserve in South Africa covering nearly 2 million hectares of land (SANParks, 2012a:4; 2014a). Some of the interpretation services that the Kruger National Park provides include maps of the park, educational books, interpretation centres (at Olifants and Berg and Dal rest camps), game drives and educational information boards. However, a study conducted by Engelbrecht (2011:74) on critical success factors for managing the visitor experience at the Kruger National Park found that tourists' expectations exceeded the actual experience with interpretation services by 16%. Kruger, Scholtz and Saayman (2012:42-43) found that, well-qualified tourists predominantly visited the Kruger National Park during 2001 to 2012 and were motivated by educational factors to visit the park which include

appreciation for endangered species, learning about animals, and learning about endangered species. The SANParks honorary rangers' annual target of 10% increase for environmental education, on the other hand, showed a decrease of 4,2% in 2011 (SANParks, 2011:33) of which the activities in the Kruger National Park comprise 74% of all the activities performed in SANParks (SANParks, 2011:32). Therefore, even though the park provides interpretation services, these facts clearly indicate that the Kruger National Park's interpretation services have room for improvement. Seeing that the Kruger National Park is a large park with many rest camps, numerous cultural and historical products and several important biotic as well as abiotic aspects, the absence of an interpretation framework creates difficulty for successful implementation of interpretation in the park.

The outline of this chapter is as follows: the background to the problem, the problem statement, followed by the goals and objectives of the study, the research methodology, definitions of key concepts and chapter classification.

## **1.2 BACKGROUND TO THE PROBLEM**

To understand what interpretation entails, it is necessary to consider the definition stated by Tilden, who is considered as the father of interpretation. Tilden (1977:8) explains that interpretation is an educational activity which aims to reveal meanings and relationships through firsthand experience, the use of original objects, and illustrative media, rather than simply to communicate factual information. Moscardo (1999:5) elaborates that interpretation should also deliver an enjoyable experience for the people (tourists) and that it may lead to a behavioural change towards the conservation of natural resources. From these two definitions it is evident that interpretation has three distinct components: communication, education, and behavioural change. These components will be discussed in the next section.

With regards to the first component, communication, Carmody and Prideaux (2011:92) state that interpretation is a similar term to communication; interpretation is often used as the preferred term within the tourism industry and recreation sectors. Interpretation, however, incorporates all the various ways in which attraction or destination managers seek to communicate with their visitors (Moscardo & Ballantyne, 2008:238). From the definition of interpretation it is clear that communication is one component of interpretation and should therefore also be understood clearly.

Verderber and Verderber (2005:4) define communication as the process of creating or sharing meaning in informal conversation, group interaction, or public speaking. Buckley (2010:313) explains communication as the transfer of information. As with most of the definitions of communication, Schiffman and Kanuk's (2007:276) definition refers more to the components of communication when they clarify that communication is the transmission of a *message* from a *sender* to a *receiver* via a *medium* (or channel) of which *feedback* is the fifth essential component which alerts the sender as to whether the intended message was received. All of these communication components have to function successfully for effective interpretation to occur (Kuo, 2002:96). Ham, Housego and Weiler (2005:4) explain that at the most basic level, planning for interpretation involves the theme (the message), the medium and the audience (the receiver). Particular attention should be paid to the message and medium of communication in order to understand interpretation more clearly. The message is both the verbal and non-verbal forms of an idea, thought or feeling the sender wishes to communicate (Pearson & Nelson, 2000:11). The medium, on the other hand, can be impersonal (e.g. mass media such as print, broadcasts or electronic media) or interpersonal (e.g. a formal or informal conversation between two people) (Schiffman & Kanuk, 2007:278).

Since interpretation is the preferred tourism term to use, communication messages can be classified as types of interpretation. A clear consensus in academic literature pertaining to the categories or types of interpretation does not exist. Tilden (1977) explains that these communication messages or information can be in the form of attended interpretation (information provision in person, conducted activities and lectures) or unattended interpretation (such as labels, signs, exhibits, publications and visitor centres). Ward and Wilkinson (2006:4) refer to personal (direct person-to-person contact such as guided tours) and non-personal interpretation (any information, orientational, or educational messages provided to tourists without personal contact such as information boards). Kuo (2002:89) categorises interpretation into hard – (such as physical -, regulatory -, and economic management strategies) and soft interpretation (education management strategies). On the other hand, Stewart, Hayward, Devlin and Kirby (1998:260-261) refer to primary (guide books, staff assistance, and displays), secondary (commentary offered on transport to and from site and seen as auxiliary to a wider activity), and tertiary interpretation (advertising and informal conversation with park staff which is seen as hidden interpretation and impacts the experience of the

place visited). It is interesting to note that these forms (attended / unattended; personal/ non-personal; hard / soft; primary / secondary / tertiary) of interpretation can be classified under the message (verbal or non-verbal) or medium (impersonal or interpersonal) of communication. Hence the explanation by Moscardo and Ballantyne (2008:238) which clarifies that interpretation incorporates all the various ways in which destination managers seek to communicate to tourists. It is therefore imperative to understand that when one refers to interpretation examples that examples of communication will be given since information is transmitted in this manner. At this stage practical examples of interpretation will make the concept more understandable.

Ballantyne, Packer and Sutherland (2011:771-772) researched interpretation on four marine wildlife-based locations in Southeast Queensland to increase public awareness and promote conservation efforts in relation to the marine environment:

- Aquarium – touch tank area, underwater shark-viewing tunnel, and animal shows. Conservation messages are included in the interpretive signage throughout the aquarium.
- Marine-based theme park – marine-based rides, shows and attractions including Shark Bay (a two-level exhibit and touch pool that allows tourists to view sharks, stingrays and a range of tropical fish both above – and under-water), Polar Bear Shores (naturalistic environment), and Dolphin Cove (demonstrations with dolphin-trainer interactions. Interpretation educates tourists about the marine environment through artificially-based wildlife encounters.
- Turtle viewing experiences – viewing of nesting and hatching turtles, amphitheatres. Signage and displays convey the importance of protecting turtles and rangers conduct interpretive talks, shows and slides in an amphitheatre based on specialist animal watching.
- Whale-watching tours – viewing of annual migration of whales by boat. On-board commentaries provide tourists with information regarding whales, whale behaviour and issues relating to their conservation.

Ballantyne, Packer, Hughes and Dierking (2007:369-370) refer to third generation exhibits in zoos and aquariums that recreate habitats of the wild and use techniques such as placing food high for animals to search for it, making scent trails to lure animals to different areas of the exhibit, creating areas where animals will seek hot or cold spots and then provide information to the tourist on how animals will behave in the wild.

Some exhibits also incorporate interactive activities that provide tourists with an up-close encounter with animals. These exhibits stimulate interest and increase tourist understanding and also foster positive attitudes towards conservation of these animals. Henker and Brown (2011:18) found that online podcasts, video clip podcasts downloadable to iPods, and short ranger talks are all effective interpretation methods. These methods are all used to increase Canyonland National Park's online presence and, in a way, the website preserves memories long after a visit. Munro, Morrison-Saunders and Hughes (2008:3) provide interpretation examples such as spontaneous interactions with site staff, guided tours, information desk personnel, formal presentations and organised entertainment activities as well as signs, brochures, computers and touch tables.

However, other interpretation examples include physical (fences or boardwalks), regulatory (reducing traffic congestion or hazard signs ensuring visitor safety), and economic management (regulations for littering or installing cheap on-site transport and therefore reducing traffic problems) (Orams, 1996:42-44; Kuo, 2002:89-92). These forms of interpretation may seem as though they do not qualify; however they all manage the interaction between the tourist and wildlife and can therefore be seen as tertiary interpretation (Stewart *et al.*, 1998:260-261) that is often hidden, obscure and indistinct as an interpretive activity but impacts the tourists' experience.

Two apt South African examples are the Ulwazi Interpretive Centre in the Addo Elephant National Park in the Eastern Cape Province and the Mapungubwe National Park Interpretive Centre in Limpopo Province. The Ulwazi Interpretive Centre has a sonic hearing display to demonstrate the sonic hearing ability of elephants, an education centre, an elephant family tree, sound booth, and information about the legendary dominant bull of Addo's early years, Hapoor (Patton, s.a.:2). Mapungubwe's interpretive centre was constructed by using environmentally friendly techniques with the intention of merging the natural location with the park's cultural heritage (SANParks, 2012b). This centre includes remains and artefacts which were removed in the 1930s to educate and inform tourists of the area's rich heritage (SANPark, 2012b).

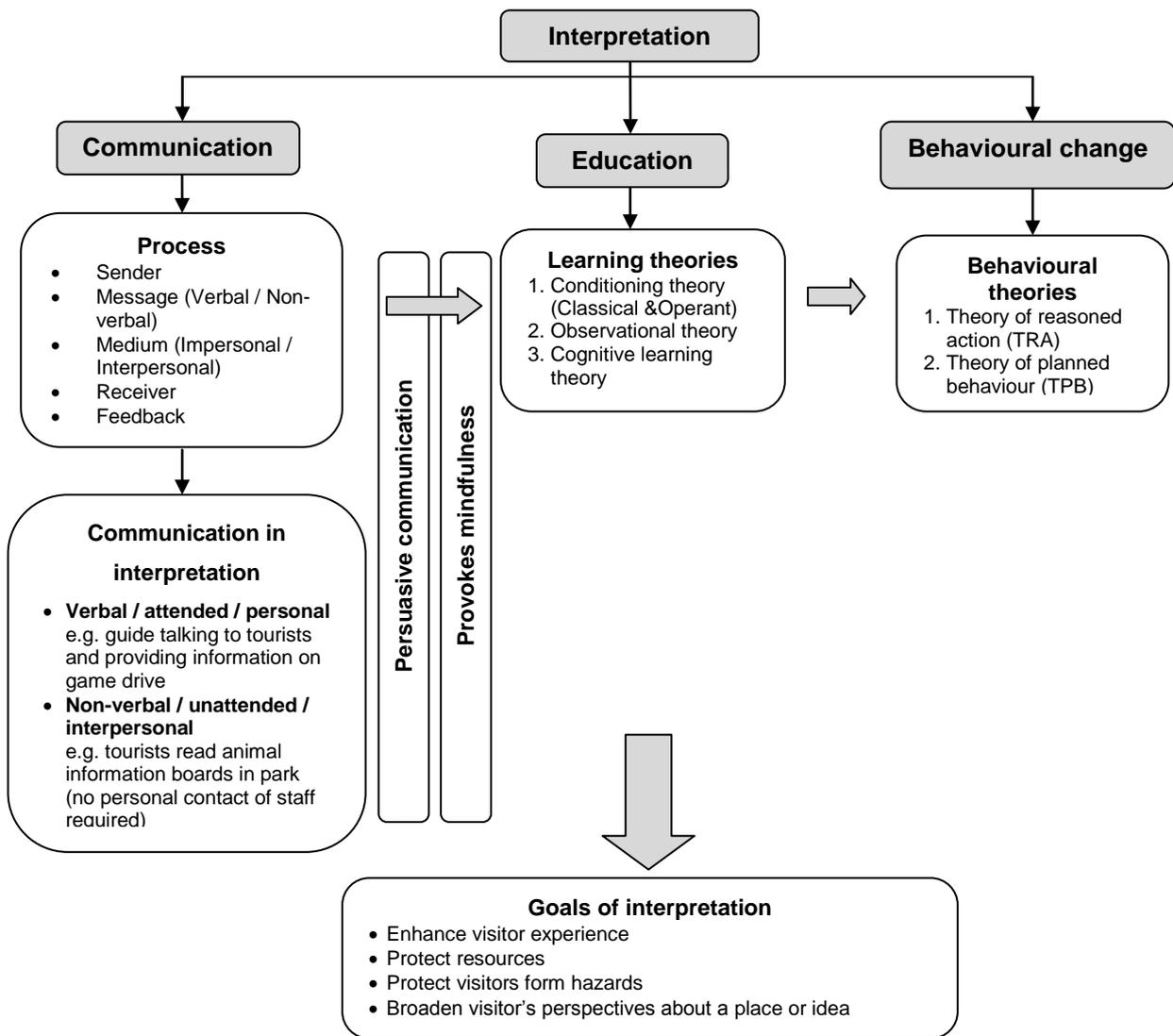
Interpretation however does not stop at communication. Given that communication can be considered as the transfer of information (Buckley, 2010:316), the message of communication is of particular importance for interpretation. No matter in what form

interpretation is done (as portrayed in the examples above); once the information/message has been received the information should be processed. This leads to the component of interpretation known as education or better understood as learning. Active mental processing of information results in learning and consequently brings some change in the cognitive schema that the person holds (Moscardo, Woods & Saltzer, 2004:242). The most widely accepted theory of learning that explains the change in schema is Piaget's (1972) cognitive learning theory which states that people learn new information by either assimilation (fitting the new information into an existing framework that has been built up through past experience) or accommodation (that requires a change in the schema to fit the new information). On the other hand, Moscardo *et al.* (2004:243) argue that people may engage in active mental processing of information but may not accept the validity and therefore explain that interpretation should focus on persuasion (persuasive communication).

Persuasion is defined as a process of communication in which the sender succeeds in voluntarily forming, sustaining or changing the attitudes or behaviour (which will be discussed later) of the receiver in accordance with what the sender intends with their message (De Wet, 2010:4). It should be noted that a situation is made persuasive by accomplishing something predetermined and therefore not all communication can be regarded as persuasion (De Wet, 2010:4). If the definition of interpretation is considered, interpretation wants to accomplish a change in behaviour and persuasive communication seems to be the means of accomplishing the goals of interpretation. In pure persuasion terms the recipient does not have to understand why they do what they do; within the education context, however, which is one form of persuasion, revolves around helping the recipient understand (De Wet, 2010:5). Chin, Moore, Wallington and Dowling (2000:31) explain that education has an important role in terms of communicating the reasons behind management actions to visitors. Ham (1992:3) clarifies that even though interpretation may use factual information, it rather communicates points and meanings than the actual facts. The latter is also evident in Tilden's definition of interpretation. Communication should therefore not persuade tourists to do anything but, as explained by Stewart *et al.* (1998:258), to rather aim for the attainment of "mindful" tourist behaviour to make sure the message is correctly received. Mindfulness is a state of active cognitive or mental processing (Moscardo & Ballantyne, 2008:243) which is precisely what is stated by the definitions of education.

Orams (1994:27) and Jarvis (2012:16) explain that learning begins with or is a result from experience. This corresponds with the discussion above that indicates that interpretation starts with (or the experience with) communication that transfers information to the tourist and results in learning. Orams (1994:27) and Myers (2010:287) assert that learning involves a relatively permanent change in behaviour and therefore the third component of interpretation is behavioural change. As seen from the discussion above, information is mindfully communicated (through the different forms of interpretation) to tourists and processed through the process of learning. To understand how behavioural change results from learning experience it is necessary to look into theories related to behavioural change. The most renowned theories on behavioural change are the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980) and the theory of planned behaviour (TPB) (Ajzen, 1991). Ajzen and Fishbein (1980:5) explain in the TRA, that human beings (tourists) are rational and make systematic use of the information available to them. In other words, people (tourists) consider their actions before they engage in a given behaviour or not (Ajzen & Fishbein, 1980:5). The TPB (Ajzen, 1991), on the other hand, states that behaviour will be driven by three factors (Sparks, 2007:1182): attitudes (degree of favourable or unfavourable evaluation of behaviour), subjective norms (perceived social pressure to perform behaviour) and perceived control (ease or difficulty of performing behaviour) (Ajzen, 1991:188; Powell & Ham, 2008:472). These theories therefore explain that tourists' behavioural change is influenced by (i) information presented via interpretation to them, but is also driven by their (ii) attitudes, subjective norms and perceived control. The literature chapter will go into more detail with regards to the different theories and the relation to interpretation.

Based on the discussion above, Figure 1.1 summarises interpretation in a conceptual framework.



**Figure 1.1: Components of interpretation**

**Source: Author's own compilation**

Figure 1.1 is a conceptual framework of the related theories and components for interpretation. A great deal of interpretation research reports on only one form of interpretation such as training of tour guides and the use of podcasts on nature-based destination's websites (see Table 1.1). Even though interpretation has made its first appearance in the work of Enous Mills in the 1900s (Ward & Wilkinson, 2006:6) and a lot of research has been done on the topic since then, very little literature up until now incorporates all theory related to interpretation. Currently interpretation textbooks focuses mainly on the definition of interpretation as well as Tilden's (1977) interpretation principles (i.e. interpretation should relate; - is an art; - should present a whole rather than just a part; - to children and adults should differ; information is not interpretation; and the chief aim is provocation) and Ham's (1992) EROT model or guidelines

(interpretation should be **E**njoyable, **R**elevant, **O**rganised, and **T**hemed) that focuses on the interpretive approach to the communication component whereas other interpretation related research reports on one or two components of interpretation. Orams (1994, 1995) for example was the first to elaborate on education as a component of interpretation as interpretation is an education based management strategy. Orams (1994:22) suggests that research and theory associated with education and environmental education is relevant for the development of interpretation programmes. Powell and Ham (2008), on the other hand, explain behavioural theory (TRA and TPB) within the framework of interpretation to develop successful interpretation strategies. The only research found that briefly explains all three components of interpretation (communication, education and behavioural change) is by Moscardo *et al.* (2004). Figure 1.1 however provides more clarity by providing a conceptual framework (which will be discussed in more detail in the literature chapter) that incorporates all the components -, theory related to - and the goals of interpretation. From the previous discussions it is clear that interpretation can in a sense be viewed as a system: communication leads to learning which, in turn, involves a change in behaviour. These components cannot be viewed in isolation as they have to work together to achieve certain goals (see Figure 1.1).

Moscardo (1999:5) declares that interpretation should result in an enjoyable experience and a positive change in behaviour towards the conservation of natural resources. Tubb (2003:476) explains that the increase in knowledge from interpretation leads to a change in visitors' actions in the park to be more in line with respect for the environment. Gilmore and Simmons (2007:194) state that national parks ultimately exist to preserve unique environments and, since conservation management is one aspect of park management (Saayman, 2009:358), it is clear that interpretation can contribute to this management aspect. Conservation, however, is not the only goal of interpretation. A few authors (Lewis, 1980:31; Ham, 1992:4; Ham *et al.*, 2005:3; Ward & Wilkinson, 2006:16) have argued that the goals of interpretation are to enhance visitor experience; protect resources; protect visitors from hazards; and broaden visitors' perspectives about a place or idea. National parks that deliver successful interpretation services may therefore reap more than just conservation benefits and this is therefore a crucial factor to consider. Table 1.1 summarises the research and findings on interpretation within national parks and nature-based destinations.

**Table 1.1: Interpretation studies in National Parks**

Authors	Study	Findings
Christie and Mason (2003)	Transformative tour guiding: training tour guides to be critically reflective practitioners.	<ul style="list-style-type: none"> <li>• The Kakadu National Park in Australia is used as a case study for a proposed model of training to improve the quality of the ecotour guiding.</li> </ul>
Tubb (2003)	An evaluation of the effectiveness of interpretation within the Dartmoor National Park in reaching the goals of sustainable tourism development.	<ul style="list-style-type: none"> <li>• The study determined the effectiveness of interpretation (visitor centre) within the Dartmoor National Park in reaching the goals of sustainable tourism development.</li> <li>• Results indicate that interpretation is capable of contributing to the goals of sustainable tourism development by achieving knowledge restructuring and resulting behavioural intentions of tourists.</li> </ul>
Madin and Fenton (2004)	Environmental interpretation in the Great Barrier Reef Marine Park: an assessment of programme effectiveness.	<ul style="list-style-type: none"> <li>• The study sought to determine how the Great Barrier Reef's visitor environmental interpretation programmes could be assessed to determine their effectiveness in educating about the reef environment and conservation issues.</li> <li>• Findings indicate that reef-based interpretation programmes can effectively change visitor understanding of key reef topics and issues; and that the evaluation can be done through self-administered questionnaires.</li> </ul>
Hwang, Lee and Chen (2005)	The relationship among tourists' involvement, place attachment and interpretation satisfaction in Taiwan's national parks.	<ul style="list-style-type: none"> <li>• Research focused on reserved trailed group (personal) interpretation.</li> <li>• Results indicate tourists' involvement has a positive significant effect on perceived interpretation service quality, as does place attachment; and indirect positive significance from place attachment to interpretation satisfaction.</li> <li>• The study proposes management suggestions: promote place attachment; increasing chances for tourists' involvement; and improving interpretation satisfaction.</li> </ul>
Chen <i>et al.</i> (2006)	Visitors' characteristics of guided	<ul style="list-style-type: none"> <li>• The study researched tourists' characteristics and satisfaction on guided interpretation tours (personal interpretation).</li> </ul>

Authors	Study	Findings
	interpretation tours.	<ul style="list-style-type: none"> <li>• Suggests interpretation service variety; interpretation service uniqueness; interpretation service package; and strategic alliances with other businesses to design interpretation services and quality image promotions for Taiwan National Parks.</li> </ul>
Taljaard (2008)	An investigation into the development of environmental education as a field of practice in South African National Parks.	<ul style="list-style-type: none"> <li>• The study determined how environmental education (EE) is developing in South African National Parks as a field of practice in relation to national and organisational policy frameworks.</li> <li>• Findings indicate that changes in environmental education and related topics expanded EE over time; SANPark policy formulation contributed to EE being a field of practice; changed Head office policies; created uncertainty and complexity for EE; EE is prolific across parks; the biophysical component of the environment is still dominant in EE; holistic and contextual strengths can progressively develop EE programmes and practices, as well as partnership programmes.</li> </ul>
Wiener, Needham and Wilkinson (2009)	Hawaii's real life marine park: interpretation and impacts of commercial marine tourism in the Hawaiian Islands.	<ul style="list-style-type: none"> <li>• The research highlights the lack of environmentally orientated interpretation and explores possible links between depreciative behaviour and interpretation within the Hawaii's commercial marine tourism (snorkelling, diving, wild dolphin swims, and whale watching).</li> <li>• Findings suggest that more needs to be done to improve Hawaii's boat operator practices and interpretation in the state.</li> </ul>
Boemah (2011)	Factors determining the interpretation effectiveness of ecotour guides in South African National Parks.	<ul style="list-style-type: none"> <li>• The study's aim was to develop a conceptual model for effective interpretation by tour guides employed by South African National Parks.</li> <li>• The components for the model include the following: park policies and requirements; park managers' support for effective interpretation; knowledge and application of interpretive delivery techniques; evaluation; continuing education and training; and the role of effective interpretation with regard to ecotourists.</li> </ul>
Henker and Brown (2011)	As good as the real thing? A comparative study of interpretive	<ul style="list-style-type: none"> <li>• The study compared three interpretive formats: online podcasts, the same podcasts viewed at the Canyonlands National Parks' visitor centre, and traditional ranger talks.</li> <li>• Results indicate that the online interpretive programmes are as effective a means of fostering viewers' connections</li> </ul>

Authors	Study	Findings
	podcasts and traditional ranger talks.	to park resources as traditional ranger programmes.
Kang and Gretzel (2012)	Effects of podcast tours on tourists experiences in a national park.	<ul style="list-style-type: none"> <li>• This study examines the influence of podcast tours (on MP3 players) on tourist experience in the Padre Island National Seashore in Corpus Christi, Texas.</li> <li>• Results indicate that even if communicated only through audio media, the human voice creates a positive social context for meaningful interaction which influences the experience of the tourists as well as their stewardship.</li> </ul>

**Source: Author's own compilation from literature review**

Only two studies relating to interpretation within national parks in South Africa (Taljaard, 2008; Boemah, 2011) are highlighted in Table 1.1. Furthermore, all of the studies in the table focused on only one form of interpretation (attended or unattended; personal or non-personal; hard / soft; primary, secondary, or tertiary). None of the studies highlighted in the table aimed to incorporate all the components and forms of interpretation. Various studies have been done on the Kruger National Park. These topics include community studies (Brondon, 2007; Chaminuka, Groeneveld, Selomane & Van Ierland, 2012); visitor preferences or motivations (Saayman & Slabbert, 2007; Van der Merwe & Saayman, 2008; Kruger & Saayman, 2010; Leberman & Holland, 2011); and economic impacts (Turpie & Joubert, 2004; Saayman & Saayman, 2006; Strickland-Munro, Moore & Freitag-Ronaldson, 2010). However, little research has to date been done with regards to interpretation in the Kruger National Park.

### 1.3 PROBLEM STATEMENT

Since the main emphasis of ecotourism is on education (Kara *et al.*, 2011:146) and education forms part of the definition of interpretation (Tilden, 1977:8), national parks should be the forerunners in incorporating interpretation in their services. Given that Engelbrecht (2011:74) found a gap between expectations and actual experience with the Kruger National Park's interpretation services and the environmental education of SANParks indicated a decline of 4,2% overall (SANParks, 2011:33), interpretation is a problem that needs to be addressed. Because national parks are predominately visited by higher-educated individuals whose travel is orientated towards intellectual enrichment (Khan, 2003:112; Eagles, 2004:19; Jurdana, 2009:270) and this is also true

for the Kruger National Park's tourists (Kruger *et al.*, 2012:42) it is important to determine tourists' interpretation preferences. Tourists to the Kruger National Park are motivated by education to travel to the park (Kruger *et al.*, 2012:43) and determining their preferences for interpretation may assist the park to cater for tourists' needs and deliver a satisfying experience. However, delivering interpretation services will also help the park to comply with their original goal of preserving the environment as well as to achieve other goals such as broadening tourists' knowledge of the park and protecting the tourists.

Even though the importance of interpretation is highlighted in the literature, parks, such as the Kruger National Park, do not pay enough attention to interpretation. The framework developed on the concepts of interpretation (see Figure 1.1) will be tested by addressing certain questions to provide a final interpretation framework. How do the tourists perceive the interpretation services of the Kruger National Park? What are the gaps between expectations and the actual experience with the interpretation services of the Kruger National Park? Is there a difference between the interpretation services in the northern and southern regions of the Kruger National Park? Are there market segments that have different interpretation needs? Do the interpretation services of the Kruger National Park create a change towards conservation behaviour? With these questions in mind, the main question that this study addresses is: **What aspects should be included when an interpretation framework is developed for the Kruger National Park?**

## **1.4 GOAL OF THE STUDY**

The following section provides the primary and secondary objectives of the study.

### **1.4.1 Aim of the study**

To develop an interpretation framework for the Kruger National Park.

### **1.4.2 Objectives and sub-objectives of the study**

The following objectives as well as sub-objectives were set for this study:

- Objective 1

To conduct a literature analysis on the components -, theories -, and goals of interpretation in ecotourism related products.

- Objective 2

To explore the methodological considerations for the three articles of the study.

- Objective 3

To determine the interpretation expectations and experiences of visitors to the Kruger National Park.

- Sub-objective 1: To identify the interpretation services expected by visitors to the Kruger National Park for a quality experience.
- Sub-objective 2: To evaluate how visitors experienced the interpretation services offered by the Kruger National Park.
- Sub-objective 3: To compare the expected with the experienced interpretation services of the Kruger National Park.
- Sub-objective 4: To determine whether there are differences in perceptions of visitors towards the interpretation services in the northern and southern regions of the Kruger National Park.

- Objective 4

To identify market segments of the Kruger National Park based on expected interpretation services.

- Sub-objective 1: To identify the interpretation services that visitors to the Kruger National Park expect for a quality experience.
- Sub-objective 2: To evaluate how well the visitors experienced the interpretation services the Kruger National Park has to offer.
- Sub-objective 3: Identify the different motives of visitors to visit the Kruger National Park.
- Sub-objective 4: To identify different market segments based on expected interpretation services.
- Sub-objective 5: To determine the differences between market segments based on the expectations of interpretation, experiences with interpretation and socio-demographic and behavioural characteristics.

- Objective 5

To determine whether the Kruger National Park's interpretation services have an impact on the visitors' behaviour to be more in line with the park's conservation practices.

- Objective 6

To draw conclusions from, and to make recommendations based on, the results of the study in order to propose an interpretation framework for the Kruger National Park.

## **1.5 METHOD OF RESEARCH**

The research method is discussed under the (i) literature review and (ii) empirical survey.

### **1.5.1 Literature review**

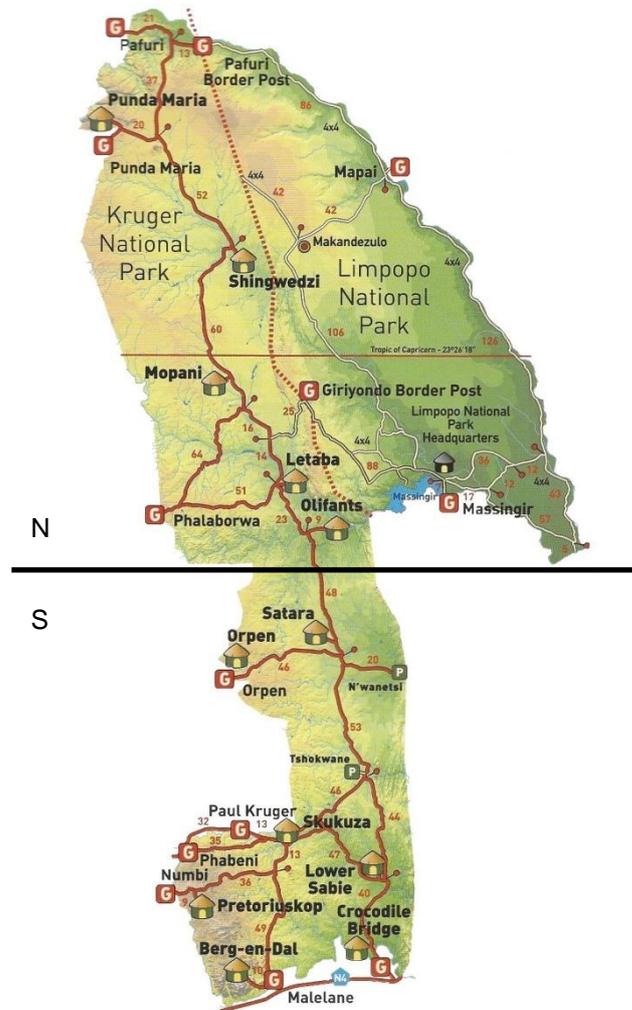
The literature study was based on the following keywords: *Kruger National Park, national parks tourism, ecotourism, interpretation, experience, expectations, mindfulness, conservation tourism, market segmentation, theory of planned behaviour, cognitive dissonance theory, attitudes, and behaviour*. Journal articles, books, newspaper articles, reports and other tourism-related literature were consulted. Information searches was mainly conducted through the library's catalogues and indexes and made use of the internet. Scientific databases (such as Science Direct, Emerald and EBSCOhost) as well as relevant websites (such as [www.sanparks.org.za](http://www.sanparks.org.za)) were used to obtain relevant, recent publications and information. These sources aided in a thorough information search, which assisted the research on interpretation. This research also made use of an empirical study (see section 1.5.2) which was facilitated by using questionnaires.

### **1.5.2 Empirical survey**

The following section explains the methods chosen to conduct the empirical analysis.

#### **1.5.2.1 Research design and method of collecting data**

This study made use of quantitative research defined by Maree and Pietersen (2007a:145) as a process that is systematic and objective in its ways of using numerical data from only a selected subgroup of a universe (or population) to generalise the findings to the universe being studied. Quantitative data have been collected in the northern and southern regions of the Kruger National Park (see map 1.1) by means of distributing questionnaires to overnight visitors (i.e. the population) in two phases:



**Map 1.1: Kruger National Park**

**Source: Tinker (2014) as cited in Tinker and Tinker (2011:4)**

#### 1.5.2.1.1 Phase one

Questionnaires were distributed by the research unit TREES (Tourism research in Economic Environs and Society) of the North-West University, Potchefstroom campus in the **southern region** of the Kruger National Park from December the 27<sup>th</sup> 2011 to January the 3<sup>rd</sup> 2012. Fieldworkers distributed the questionnaires to overnight visitors (one questionnaire per travel group) in Satara, Skukuza, Lower Sabie and lastly Berg and Dal rest camps (see Map 1.1). Two nights per rest camp were allocated to distribute the questionnaires. As the distribution of questionnaires progressed, fieldworkers were also instructed to only distribute questionnaires to overnight visitors who have not yet completed the questionnaire. A total of 463 usable questionnaires were obtained.

### 1.5.2.1.2 Phase two

The research unit TREES of the North-West University, Potchefstroom campus once again distributed questionnaires in the Kruger National Park, however this time questionnaires were distributed in the **northern region** of the Kruger National Park from the 24<sup>th</sup> of June 2012 to 2<sup>nd</sup> of July 2012. Questionnaires were distributed by the fieldworkers to overnight visitors (one per travelling group) in Olifants, Letaba, Mopani, Shingwedzi and Punda Maria rest camps (see Map 1.1) where a total of two nights were spent in the first three rest camps and one night in the last two rest camps. Once again, fieldworkers were instructed to only distribute questionnaires to overnight visitors who have not yet completed the questionnaire as the distribution of questionnaires progressed throughout the northern region of the park. A total of 392 usable questionnaires were obtained.

In both phases, the fieldworkers were allocated to a specific area of each rest camp to distribute questionnaires. Fieldworkers were briefed beforehand on the goal as well as the content of the questionnaire. Fieldworkers were instructed to communicate the goal of the study, the time to complete the questionnaire, voluntary participation, and anonymity to respondents who would potentially fill in the questionnaire.

### 1.5.2.2 Sampling method

A probability sampling method, random sampling, was applied to conduct the survey which, according to Maree and Pietersen (2007b:172), means that each element in the population has a known, non-zero probability of being selected and completely random. To calculate the appropriate samples Krejcie and Morgan's (1970:607) sampling formula was used:

$$s = [x^2 NP(1 - P)]/[d^2(N - 1) + x^2 P(1 - P)]$$

Krejcie and Morgan's (1970:607) formula indicates that **s** is the required sample, **X<sup>2</sup>** the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841), **N** the population size, **P** the population proportion (.50), and **d** the degree of accuracy, in other words the confidence level, expressed as a proportion (.05). The required sample for a population of 1 000 000 according to Krejcie and Morgan (1970:608) should be 384. Since the fieldwork was conducted in two phases, the sampling is explained for both.

#### 1.5.2.2.1 Sampling for phase one

The total number of overnight visitors to the Kruger National Park for the year 2011 was 1 386 287 (N) (SANParks, 2011:28-29) with an average travelling group of 3.88 (calculated by obtaining the average from survey's number of people travelling in group). Since the questionnaires were distributed to one person per travelling group, the total population is divided by 3.88. This results in 357 290 (new N) tourists.

According to the formula of Krejcie and Morgan (1970) for a population (*N*) of 357 290 tourists to the Kruger National Park, with a 95% confidence level and a 5% sampling error [*d* is in other words expressed as (.05)] a sample of 384 is required to validate analysis. In total 463 questionnaires were obtained during the December survey which is more than the required sample.

#### 1.5.2.2.2 Sampling for phase two

The total number of overnight visitors to the Kruger National Park for the year 2012 was 1 411 796 (N) (SANParks, 2012c:39) with an average travelling group of 4.62 (calculated by obtaining the average from survey's number of people travelling in group). Since the questionnaires were once again only distributed to one person per travelling group, the total population was divided by 4.62 and resulted in 305 584 (new N) tourists.

For a population (*N*) of 305 584 tourists to the Kruger National Park, with a 95% confidence level and a 5% sampling error [*d* is in other words expressed as (.05)] a sample of 384 is also required to validate analysis for June (Krejcie & Morgan, 1970). A total of 393 questionnaires were obtained in the June survey which was also more than the required sample.

#### 1.5.2.3 Development of the questionnaire

A structured questionnaire based on previous research (see discussions below) was developed by the author with the close collaboration of TREES from the North-West University, Potchefstroom campus (see Appendix A). The questionnaire consisted of six sections, consisting of open- and closed-ended questions as well as Likert scale-type questions, as discussed below:

**Section A:** This section captured questions relating to respondents' socio-demographic profile, such as age, gender, number of people in the household and when the decision to take a holiday took place. These questions kept the anonymity of respondents and can in no way be traced back to any respondent. The different demographic characteristics were used in Chapter 5 (Article 2) to profile market segments of the Kruger National Park's visitors. These questions were both open –and closed-ended questions.

**Section B:** This section of the questionnaire was primarily used for the study (Chapters 4 to 6) and contained questions regarding the (i) importance of interpretation for a quality experience in the park, (ii) the actual experience with interpretation in the park, as well as (iii) respondent's behaviour as a result of the park's interpretation initiatives. Respondents indicated the importance of interpretation for a quality experience in the park, their actual experience with the park's interpretation, as well as their behaviour as a result of the park's interpretation on separate five-point Likert scales. The questions were based on the following author's works: Thorndike (1911); Ajzen (1988); Orams (1994; 1996); Lee and Balchin (1995); Moscardo (1998); Stewart *et al.* (1998); Kuo (2002); Tubb (2003); Frauman and Norman (2004); Madin and Fenton (2004); Hwang *et al.* (2005); Periera (2005); Reisinger and Steiner (2006a); Ward and Wilkinson (2006); Ham and Weiler (2007); Ballantyne, Packer and Hughes (2008); De Rojas and Camarero (2008); Mitsche, Reino, Knox and Bauernfeind (2008); Powell and Ham (2008); Zeppel and Muloin (2008); Lee (2009); Lee, Lee, Kim and Mjelde (2010); Ballantyne *et al.* (2011); and Henker and Brown (2011).

**Section C** focused on questions regarding respondent's spending habits in the park, whether they own a Wildcard (loyalty card to SANParks), how many times they have visited the park as a day – or overnight visitor, their favourite animal in the park, and lastly where they have heard about the park. These questions are open – and closed-ended questions.

**Section D** contained questions pertaining to respondents' travel behaviour where respondents rated their agreement of the different travel behaviour options on a five-point Likert scale.

**Section E** captured questions regarding respondents' conservation behaviour [this was used for chapter 5 (Article 2) to help profile the different market segments of the Kruger National Park] as well as questions determining the economic value respondents attached to the Big Five.

**Section F** focused on the Kruger National Park's service quality where respondents rated their agreement with the different service options on a six-point Likert scale (not included in this study).

Section B formed part of a standardised Kruger National Park questionnaire (i.e. sections A and C to F) developed by TREES that have been used for the last ten years (Kruger *et al.*, 2012:42-53).

#### **1.5.2.4 Data analyses**

The captured data were statistically analysed by means of SPSS (SPSS, 2013) as well as AMOS (AMOS, 2013). The statistical services of the University of South Africa were consulted in the process of analysing data into relevant information concerning the empirical study. Conclusions and recommendations from the study were then drawn from the analysed data. The following statistical measures were used to analyse data and are covered in more detail in Chapters 3 to 6:

**Chapter 4** (Article 1) made use of factor analyses (principal axis factoring) to identify expected – and experienced interpretation factors for a quality experience in the Kruger National Park and was specifically compared for the northern and southern regions of the park. A factor analysis is a prototypical multivariate, interdependence statistical method which test or confirm generalisations by means of reducing and identifying internal relationships between a set of variables (Child, 2006:1; Agresti & Finlay, 2009:532; Zikmund, Babin, Carr & Griffin, 2010:593; Pallant, 2011:181). A reliability coefficient (Cronbach's alpha) was calculated for each factor to estimate the internal consistency. In addition, the average inter-item correlations were also calculated as a further indication of reliability. To compare significant differences between the expected – and experienced interpretation services, as well as determine these differences for the northern and southern regions, paired sample t-tests were also conducted. Paired sample t-tests are used when the mean scores of the same group of participants on two different occasions are compared (Pallant, 2011:239).

**Chapter 5** (Article 2) made use of various statistical analyses. Firstly, factor analyses were conducted for the expectations of, experiences with interpretation services as well as motivations to visit the park. As indicated in the paragraph above the Cronbach alphas as well as the inter-item correlations were also calculated to test the reliability of the scales for these three factor analyses. Secondly this chapter identified segments for the Kruger National Park's visitors by means of cluster analysis with expected interpretation services. The purpose of clustering methods is to maximise homogeneity of observations within a segment and simultaneously maximise heterogeneity between the segments (Schmidt & Hollensen, 2006:327; Malhotra, 2007:636; Hair, Black, Babin & Anderson, 2010:508; Zikmund *et al.*, 2010:597). A conjoint approach of hierarchical and non-hierarchical cluster analysis was followed. Seeing as non-hierarchical procedures require the researcher to indicate number of clusters to retain (Schmidt & Hollensen, 2006:246; Sharma & Kumar, 2006:376), the initial clustering solution can be calculated from the hierarchal cluster procedure and specified in the non-hierarchical procedure (Malhotra, 2007:642; Hair *et al.*, 2010:536). Thereafter both ANOVAs (analysis of variance) as well as chi-square tests were calculated to differentiate between the market segments based on different socio-demographic- and behavioural characteristics as well as motivations to visit the Kruger National Park. According to Pietersen and Maree (2007a:229), analysis of variance is a technique used when there are more than two dependent groups that need to be compared on a single quantitative measure or score. Chi-square tests, on the other hand, determine the relationship between two categorical variables (Pallant, 2011:217).

**Chapter 6** (Article 3) made use of structural equation modelling (SEM). Structural equation modelling is defined by Byrne (2001:3) as a statistical methodology that takes a confirmatory approach to the analysis of a structural theory bearing on some phenomenon. A SEM is thus a procedure that estimates a series of dependence relationships between a set of constructs represented by multiple measure variables and incorporated into an integrated model (Malhotra, Baalbaki & Bechwati, 2013:710). The continuing expansion of SEM capabilities has however made the boundaries between SEM and other statistical analyses hard to define (Hoyle, 2011:2). Nevertheless, as stated by the definition, the main difference between SEM and other advanced statistical analyses is that SEM is a confirmatory analysis rather than an exploratory analysis (Byrne, 2001:3; Salkind, 2008:278). This chapter therefore

determined whether the Kruger National Park's interpretation services have an impact on visitors' behavioural change.

## **1.6 DEFINING THE CONCEPTS**

The following concepts have been used throughout this chapter and will be discussed in more detail in Chapter 2:

### **1.6.1 National Park**

An apt definition of a national park is provided by the Protected Areas Act (57 of 2003) which states that a national park is an area specifically assigned to either protect the area which has a national or international biodiversity importance or contains a viable, representative sample of South Africa's natural systems, scenic areas or cultural heritage sites or to protect the ecological integrity of one or more ecosystems in the area. Furthermore national parks should prevent exploitation or occupation inconsistent with the protection of the ecological integrity of the area; provide spiritual, scientific, educational, recreational and tourism opportunities which are environmentally compatible; and should contribute economic development where feasible (Protected Areas Act 57 of 2003).

### **1.6.2 Kruger National Park**

The Kruger National Park is located in the far north-eastern corner of South Africa which shares a long eastern border with Mozambique (Nairaland Forum, 2014). The Kruger National Park covers nearly two million hectares (SANParks, 2014a) of undisturbed savannah, woodland, riverine forest and craggy mountain ranges (Braack, 2009:5). The Kruger National Park is regarded as the flagship of the South African National Parks with 336 tree -; 49 fish -; 34 amphibian -; 114 reptile -; 507 bird -; and 147 mammal species (SANParks, 2014a). Accommodation facilities in the Kruger National Park consist of 13 main camps (Berg-en-Dal; Crocodile Bridge, Letaba, Lower Sabie, Mopani, Olifants, Orpen, Pretoriuskop, Punda Maria, Satara, Shingwedzi, Skukuza and Tsendze); 5 Bushveld camps (Bateleur, Biyamiti, Shimuwini, Sirheni and Talamati); 2 overnight hides (Sable and Shipandani); 2 bush lodges (Boulders and Roodewal); and 9 luxury lodges (Imbali Safari Lodges; Jock Safari Lodge; Lukimbi Safari Lodge, Rhino Walking Safaris, Shishangeni Private Lodge, Singita Lebombo Private Game Lodge, The Outpost, Tinga Private Game Lodge and Pafuri Camp) (SANParks, 2014b).

### 1.6.3 Interpretation

Moscardo and Ballantyne (2008:239) define interpretation as “information-focused communication activities that are designed to facilitate a rewarding experience that encourages visitors to be receptive to management or sustainability messages”. Since this study will be conducted in an ecotourism environment, a more appropriate definition should be included. Tilden (1977:8) and Moscardo (1999:5) define interpretation as a firsthand experience (education activity), the process of explaining (communicating) the significance of the place that people (tourists) are visiting, and therefore have an enjoyable visit and have a behavioural change towards the conservation of natural resources. Interpretation’s aim as stated by Moscardo *et al.* (2004:231) concurs with the definitions of interpretation when they state that interpretation aims to stimulate interest, promote learning, guide visitors in appropriate behaviour for sustainable tourism and encourage enjoyment and satisfaction. From the definitions and the aim it is evident that three concepts should be present for interpretation to occur: communication, education and behavioural change.

### 1.6.4 Communication

Communication is the process of expression and interpretation of *messages* (the process of imparting ideas) between communicator (*sender*) and *receiver*, with the aim of arriving at mutual understanding on certain subject matter (De Wet, 2010:2). Schiffman and Kanuk (2007:276) refer more to the components of communication in their definition which states that communication is the transmission of a message from the sender through a medium to the receiver of which the receiver should give feedback that alerts the sender that the intended message was received. Verderber and Verderber (2005:4) explain that all of these components (message, sender, medium, receiver and feedback) work together in a process of creating or sharing meaning in informal conversation, group interaction or public speaking. In literature, many authors refer to interpretation as persuasive communication. De Wet (2010:4) explains that persuasion is a process of communication where the sender succeeds in voluntarily forming, sustaining or changing the attitudes or behaviour of the receiver in accordance with what the sender *intends* by his/her message. However, the term education rather than persuasive communication will be the preferred term to use for the purpose of this study (see sec 1.6.4).

### 1.6.5 Education

Since pure persuasion does not require the recipient (in this case the tourists) to understand why they have to do what they do, education (a form of persuasion) is the preferable term to use in interpretation as education helps the tourist to understand (De Wet, 2010:5). Moscardo *et al.* (2004:242) explain that learning results from the active mental processing of information (send from the sender to the receiver) which brings some change in the cognitive schemata of the receiver.

### 1.6.6 Tourist behaviour change

**Consumer behaviour** refers to the behaviour of a consumer in searching for, purchasing, using, evaluating, and disposing of products and/or services that they will expect to satisfy their needs (Schiffman & Kanuk, 2007:3). Moutinho, Ballantyne and Rate (2011:83) refer to consumer behaviour as a process of acquiring and organising information in the direction of a purchase decision and of using and evaluating products or services. Tourist behaviour can therefore be defined as the behaviour that a tourist displays in acquiring information in the direction of purchasing and using, evaluating, and disposing of products or services he or she expects to satisfy his or her needs.

The Oxford Dictionaries (2014) define **change** as to make or become different; whereas the Free Dictionary (2014) defines it as the act, process, or result of altering or modifying.

**Tourist behaviour change** can therefore be defined as the act, process, or result of altering or modifying the behaviour that a tourist displays in acquiring information in the direction of purchasing and using, evaluating, and disposing of products or services he or she expects to satisfy his or her needs.

### 1.6.7 Ecotourism

The earliest definition of ecotourism was Ceballos-Lascurain's (1987:14) definition where he defined ecotourism as travelling to relatively undisturbed or uncontaminated natural areas for studying, admiring and enjoying the scenery and its wild plants and animals or any past and existing cultural manifestations found in the area. Even though a definition was provided in 1987, ecotourism has no universal definition; however for the purpose of this study ecotourism is defined as a sustainable form of natural resource-based tourism that focuses primarily on experiencing and learning about

nature and should contribute to the conservation of such areas (Fennell, 2003:25). Verma (2008:1-2) states that though there is no universal definition of ecotourism, its general characteristics include nature-based; generally (but not exclusively) organised for small groups; contain educational and interpretation features; supports the protection of natural areas; and minimises negative impacts upon natural and social-cultural environments.

## **1.7 PRELIMINARY CHAPTER CLASSIFICATION**

This study consisted of seven chapters. The following section gives a brief outline of what the reader can expect from each of the chapters.

**Chapter 1** (Introduction, problem statement, objectives and method of research) includes the introduction, problem statement, primary and secondary objectives, method of research and definitions of key concepts. The aim of this chapter was to give an overview of the growth in tourism and ecotourism worldwide and in South Africa and specifically in the Kruger National Park. This chapter suggested that since there is a fast pace in growth for ecotourism businesses that eco-destinations are becoming more competitive and paying more attention to deliver a quality product to visitors. One way of conserving the environment as well as addressing visitors' expectations for a quality ecotourism product is by means of delivering interpretation services. However the Kruger National Park's interpretation services are not yet fully developed.

**Chapter 2** (A literature analysis on interpretation) contains a literature analysis investigating the origin, components, theories and goals of interpretation.

**Chapter 3** refers to all the relevant methodological considerations for the three article chapters (Chapters 4 to 6) that follow.

**Chapter 4** (i.e. Article 1) determined the expected–and actual experience of visitors to the Kruger National Park and furthermore determined whether there are differences between the northern and southern regions of the park.

**Chapter 5** (i.e. Article 2) identified market segments for the Kruger National Park based on expected interpretation services and differentiated between the market segments

based on socio-demographic-, and behavioural characteristics as well as motivations to visit the park.

**Chapter 6** (i.e. Article 3) assesses the impact of the Kruger National Park's interpretation services on visitors' behavioural change.

**Chapter 7** (Conclusions and Recommendations), the final chapter captures conclusions based on the previous chapters. Recommendations are formulated based on the results of the study and an interpretation framework for the Kruger National Park is proposed.

## CHAPTER 2: LITERATURE ANALYSIS OF INTERPRETATION

*“Through interpretation, understanding;  
through understanding, appreciation;  
through appreciation, protection.”  
(Tilden, 1977:38)*

### 2.1 INTRODUCTION

This chapter gives an in-depth discussion of the concept of interpretation. To provide an in-depth overview of what is meant by interpretation and what interpretation entails, this chapter starts off with the historical overview of the founders of interpretation. Ward and Wilkinson (2006:1) state that “knowing the historical evolution of interpretation helps build a foundation of understanding”. The founders captured in Table 2.1 make it clear that interpretation developed from merely a word used for the first time in 1938 (Ward & Wilkinson, 2006:7) to a concept that is included at local, regional, state and national levels to protect the environment.

**Table 2.1: Founders of interpretation**

Founder	Year	Impact on interpretation
Enos Mills	1870-1922	Enos Mills is considered as one of the founders of the interpretation profession when he started to interpret what later became Rocky Mountain National Park. He started one of the first programmes to train interpreters and authored more than 15 books on interpretation.
Freeman Tilden	1883-1980	Freeman Tilden is considered as the father of interpretation. Unlike Mills, Tilden was not a naturalist or interpreter but a writer and reporter hired by National Parks to write on their interpretative services. In his most known book, <i>Interpreting Our Heritage</i> , he developed basic principles of interpretation that are still used today.
John Muir	1838-1914	John Muir’s role was less obvious than Mills and Tilden’s, but he was credited as the first one to use the term ‘interpret’.
Stephan Mather	1867-1930	After Stephan Mather stumbled across Loye Miller (a paleo-ornithologist) and Harold Bryant (educational director of California Fish and Game Commission) who educated audiences with entertaining presentations,

Founder	Year	Impact on interpretation
		Mather knew exactly what he wanted to do. Mather convinced Miller and Bryant to go work at Yosemite National Park, where Mather was director, to ensure nature guiding became essential to park management.
William Penn Mott Jr.	1909-1992	William Penn Mott Jr. influenced interpretation on all levels, including local, regional, state and national. He was always concerned about educating the public to facilitate protection of the environment.

**Source: Adapted from Ward and Wilkinson (2006:6-8)**

After the incorporation of interpretation into different levels of governance, increasing research on interpretation has been done. Some of the well-known researchers on the topic of interpretation are Ham (1992; 2007); Orams (1994; 1995; 1996); Moscardo (1998; 1999); Moscardo *et al.* (2004); Ham *et al.* (2005); Ballantyne *et al.* (2007); Ham and Weiler (2007); Ballantyne *et al.* (2008); Moscardo and Ballantyne (2008); Powell and Ham (2008); Weiler and Smith (2009); and Ballantyne *et al.* (2011). These authors' research is discussed throughout the rest of this chapter's outline.

For clarity reasons, the rest of the chapter examines the various (i) definitions of as well as the (ii) types or classifications of interpretation that have been provided over the years. Thereafter the (iii) theory and literature related to the different components identified in the definitions (i.e. communication, persuasive communication, mindfulness, education and behavioural change) are also discussed whereafter the explanation of the (iv) goals of interpretation is provided.

Seeing that interpretation is an integral part of ecotourism (parks) and plays an important role in the quality of a park (Hwang *et al.*, 2005:1) along with the fact that this study focuses on the Kruger National Park, literature pertaining to interpretation within national parks was consulted. As a guideline, the figure used in Chapter 1 to illustrate the components of interpretation is also used in this chapter. This figure leads the reader chronologically through the functioning of interpretation by identifying the relevant components.

## 2.2 DEFINING INTERPRETATION

As explained in the literature review of Chapter 1, an excellent place to start with exactly what interpretation means is to start with the definition. A few definitions of interpretation however exist.

The father of interpretation, Tilden, defined interpretation as “an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experiences, and illustrative media, rather than simply to communicate factual information” (Tilden, 1977:8). Ham (1992:3) explains that environmental interpretation involves translating the natural sciences or related field’s technical language into terms and ideas that any person can understand. Orams (1996:44) agrees and asserts that “interpretation is a term traditionally used to describe the process of translating meaning from one spoken language to another; interpretation of the natural environment is a similar kind of communication”. Orams (1996:45) agrees with Tilden (1977) when the author explains that interpretation is a particular type of education that focuses on meanings and relationships and that it is the communication and learning of ideas and concepts to convey appreciation for the natural environment. Moscardo (1999:5) pointed out the term communication when the author clarified that interpretation is communicating the significance of the place people are visiting so that they have an enjoyable visit to contribute towards conservation. Ward and Wilkinson (2006:2) agree and define interpretation as an artful form of communication that rather focuses on ideas and relationships than factual information through the use of hands-on approaches, first hand experiences and the use of physical objects.

Moscardo and Ballantyne (2008) highlight the fact that definitions of interpretation can be centred on visitors or management. The authors explain that visitor-centred definitions have a focus on people understanding the world or environment as a whole which features words such as *communication*, *understanding*, *significance* and *changes in perceptions*; whereas management-centred definitions tend to focus on specific sites and include words like *education*, *appreciation*, *protection* and *changes in behaviour* (Moscardo & Ballantyne, 2008:239). However most of the definitions include both visitor and management aspects as pointed out above. Seeing that interpretation is mostly performed in ecotourism settings, interpretation’s definition broadened to include the natural environment and the conservation thereof. Moscardo and Ballantyne (2008:239) defined interpretation as a set of information-focused communication

designed to facilitate a rewarding visitor experience and encourage visitors to be interested in sustainable messages.

Since conservation or sustainability has become more evident in the definition of interpretation, Moscardo *et al.* (2004:231) suggest that interpretation should be defined from a persuasive communication perspective since the aim is to encourage the development of a conservation ethic. As a result, a few authors (Ballantyne & Hughes, 2006; Ward & Wilkinson, 2006; Ballantyne *et al.*, 2007; Hughes, Ham & Brown, 2009) have more recently included persuasive communication within their interpretation research. Considering that the various definitions of interpretation include both visitor and management approaches, Frauman and Norman (2004:381) and Frauman (2010:226) propose that mindfulness should be used as a tool to meet the needs of both the visitor and management in educational efforts. Consequently, authors (see Moscardo, 1999; Tubb, 2003; Moscardo & Ballantyne, 2008; Kang & Gretzel, 2012) included the mindfulness theory within their interpretation research. To provide a current and more comprehensive definition, it is therefore plausible to expand the words or concepts that should be incorporated in the definition of interpretation to include concepts like *persuasive communication* and *mindfulness*.

After comparison of all the definitions, it is apparent that certain concepts can, or should be, included in the definition of interpretation. These concepts are *communication*, and specifically *persuasive communication*, *mindfulness*, *education*, and *behavioural change towards conservation*. In the theory and literature of the rest of this chapter's outline it will be clear that that a more comprehensive definition of interpretation is needed. Considering all the various definitions of interpretation discussed above the following definition for interpretation is proposed:

***“Educating visitors through persuasive communication and first hand experiences to mindfully reveal the significance and relationships of the place they are visiting so that visitors may have an enjoyable experience and reveal behaviour that is in line with conservation practices”.***

An in-depth literature analysis in the sections below examines all the concepts revealed in this definition.

## 2.3 TYPES OR CLASSIFICATIONS OF INTERPRETATION

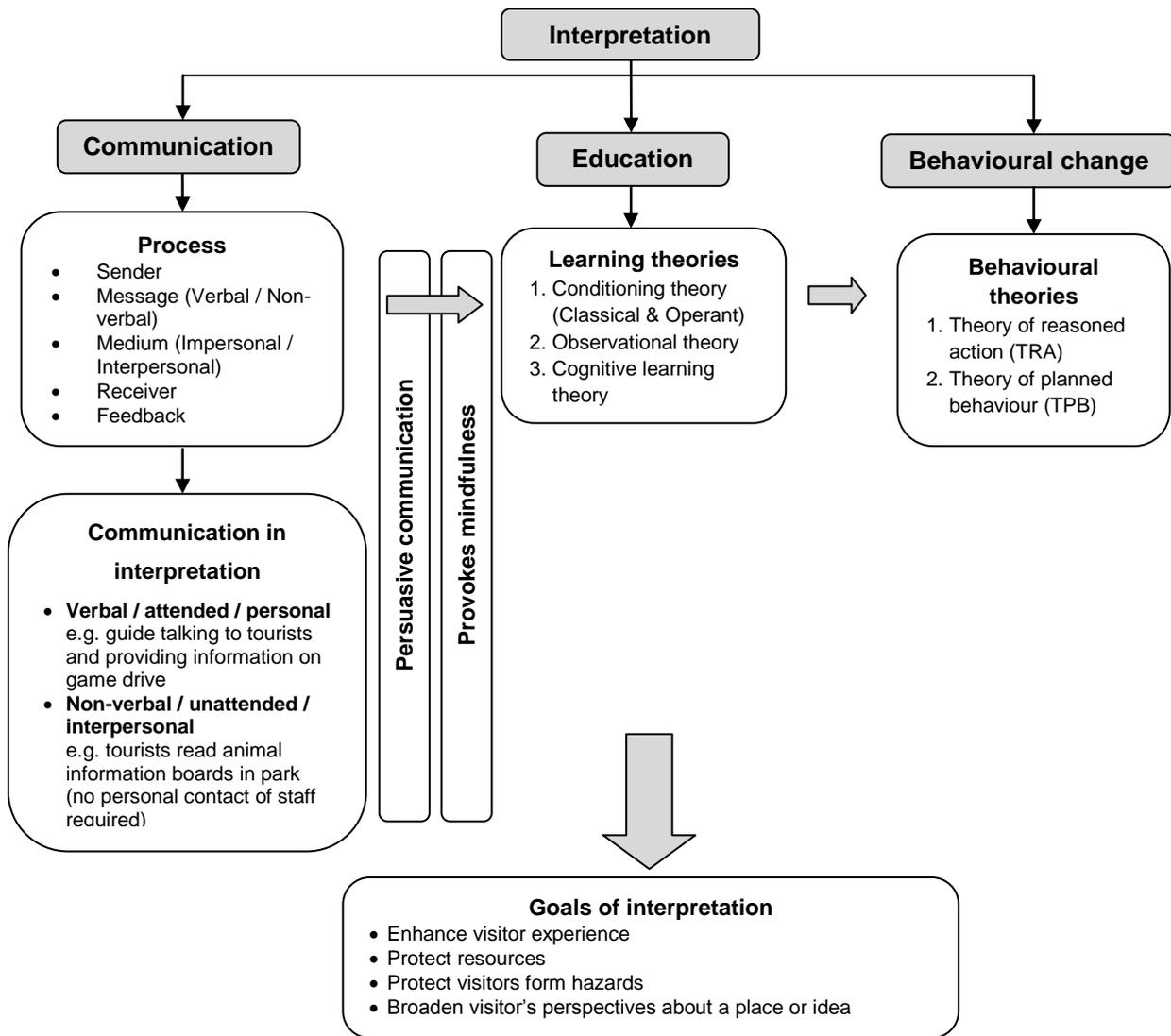
There are a few authors who classified different types of interpretation. Tilden (1977) classified interpretation as **attended** where services include information provision in person, conducted activities, lectures and discussions, and living interpretation; and **unattended** services that include signs and labels, self-guided trails, motor tours, exhibits, publications and visitor centres. Attended interpretation services fit well with Ward and Wilkinson's (2006:4) **personal** channel of interpretation (that involves direct person-to-person contact with the visitor) and unattended interpretation services with a **non-personal** channel of interpretation (that involves any information, orientational, and educational message provided for visitors without the use of direct personal contact). Kuo (2002) on the other hand concluded that there are hard and soft interpretation based on Orams' (1996) ecotourism management strategies. **Hard** interpretation includes management strategies such as physical strategies (e.g. structures like animal viewing platforms to manage human interaction with animals), regulatory strategies (rules and regulations) and economic strategies (using prices as incentives or disincentives to modify visitor behaviour) (Kuo, 2002:89-91; Orams, 1996:42-44). **Soft** interpretation refers to educational management strategies that include directional, behavioural, and educational interpretive information to support the hard interpretation management strategies of the park (Orams, 1996:44; Kuo, 2002:92-95). Stewart *et al.* (1998:260) distinguished between **primary** interpretation (visitor centres, displays, audio-visual, staff assistance, models, on-site panels, an interpretive shelter, leaflets, guide books), **secondary** interpretation (verbal and written commentary offered on concessionaire activities, commentary offered on transport to and from the site) and **tertiary** interpretation (advertising on posters on and off-site, TV, radio, merchandise, pictorial books; informal conversation with park staff, other visitors or accompanying friends and family). Stewart *et al.* (1998:260) explain that primary interpretation can be described as conspicuous, noticeable and immediately recognised as interpretation; whereas secondary interpretation is auxiliary to a wider activity and not readily identified as interpretation but still an integral feature of the activity; and tertiary interpretation as hidden, obscure and indistinct as an interpretive activity that is not always considered to be interpretation. From the discussion above, it is noticeable that some of the classifications give the impression that they refer to the same type of interpretation. Figure 2.1 sheds some light on the different authors' identifiable types of interpretation and where these types of interpretation overlap.



Figure 2.1 demonstrates the different types of interpretation from the work of Tilden (1977), Stewart *et al.* (1998), Kuo (2002) and Ward and Wilkinson (2006) and how their classifications are related or overlap. A clear distinction (see the thick horizontal line) can be made between interpretation that is readily identifiable (those that include education as the definition suggests) and others that seem quite strange to the untrained eye. Primary and soft interpretation examples (that are immediately recognised as interpretation) can either be Tilden (1977) and Ward and Wilkinson's (2006) attended and personal or unattended and impersonal interpretation. Stewart *et al.* (1998:261) explain that even though tertiary (and hard) interpretation is not always considered to be interpretation, seeing that it is hidden and obscure, it may impact on the tourist's experience with the more identifiable interpretation forms. This will become clearer once the components of interpretation are discussed in section 2.4. If parks, such as the Kruger National Park would like to achieve interpretation's goals (see section 2.5) it is important to rather consider the more comprehensive types of interpretation by Stewart *et al.* (1998) and Kuo (2002) for the purpose of this study. Hard and tertiary interpretation are therefore above the horizontal line. There is, however, some confusion to secondary interpretation. On the one hand, Stewart *et al.* (1998:260) explain that secondary interpretation is auxiliary to a wider activity and therefore not readily identifiable as interpretation but, on the other hand, an integral feature of the activity and enhances the experience of the activity. Hence this type of interpretation occurs on both sides of the horizontal line.

## **2.4 COMPONENTS OF INTERPRETATION**

As indicated in Chapter 1 and in section 2.2, it is clear from the definitions of interpretation that there are several components that should be focused on to understand interpretation in more detail. These are *communication, persuasive communication, mindfulness, education and behavioural change*.



**Figure 2.2: Components of interpretation**

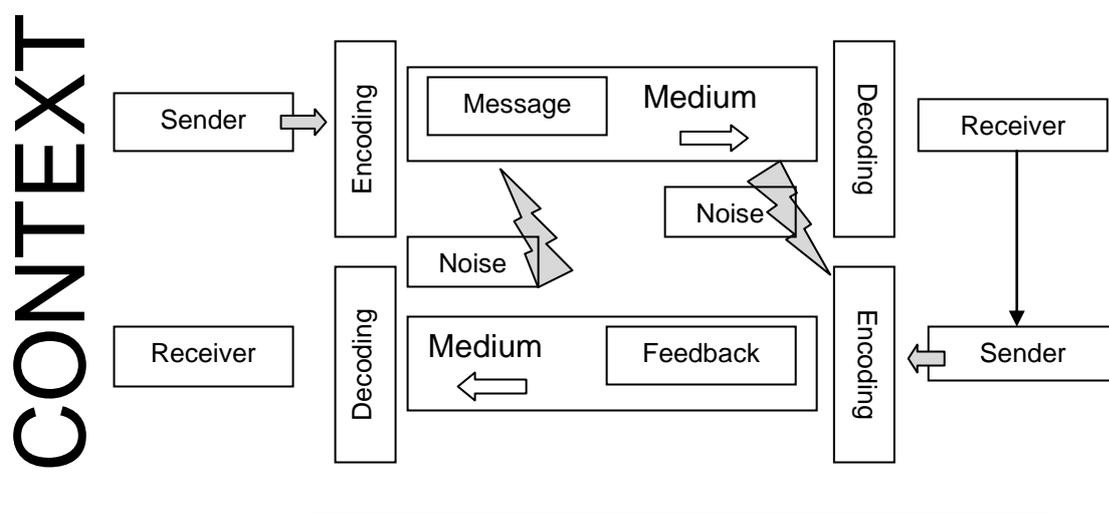
**Source: Author's own compilation**

Figure 2.2 is a conceptual framework of the related components of interpretation as indicated by the definitions and associated theories. From the discussions that follow, it will become clear that interpretation can, in a sense, be viewed as a system that starts with persuasive communication, provokes a mindful state that enable tourists to learn and, in turn, results in a change in behaviour. The first concept for discussion is communication as it is the basic foundation of all interpretation (Ward & Wilkinson, 2006:32).

### 2.4.1 Communication

Communication can be defined as the process of creating or sharing information, ideas and meaning in informal conversation, group interaction, or public speaking (Verderber

& Verderber, 2005:4; Hybels & Weaver, 2007:8). Pearson and Nelson (2000:6-7) elaborate on the definition of communication and state that it is a *process* since it is an activity, an exchange or a set of behaviours and that this process requires *understanding* which means to perceive, interpret, and comprehend the meaning of the verbal and non-verbal behaviour of others. Furthermore, communication is *sharing* or a *transaction* which is an interaction between people to exchange meaning; and lastly, communication is *meaning*, which is the shared understanding of the message (Pearson & Nelson, 2000:6-7). Figure 2.3 gives an illustration of the communication process.



**Figure 2.3 Communication process**  
*Adapted from: Eunson (2008:13)*

The **context** depicted in Figure 2.3 is the physical, social, historical, psychological, or cultural settings in which communication may occur (Verderber & Verderber, 2005:5; Hybels & Weaver, 2007:12). Figure 2.3 indicates that, in most cases, the communication is a two-way process denoting that the sender and receiver switch roles (Eunson, 2008:13). Hybels and Weaver (2007:8) explain that communication is, in fact, a two-way process rather than a one-way process since both the **sender** and **receiver** send and receive at the same time and that the sender and receiver share meaning by encoding and decoding the messages (Baran, 2007:5).

Communication is mostly observed at behavioural level; however it is largely initiated and controlled at the cognitive level (Radhaswamy & Zia, 2011:53). The process starts

where the sender sends a **message** to the receiver by **encoding** the message in an understandable sign and symbol system (Baran, 2007:5). According to Eunson (2008:14-15), messages:

- can be sent in secret codes (for example an accent) which can be decoded (for example technical language) by the receiver who knows the code, transforming the content in a qualitative manner.
- are sometimes pre-edited, filtered or shaped (for example topic avoidance) and thus the content of the message is transformed in a quantitative manner.

Hybels and Weaver (2007:10) include that messages (the ideas or feelings) can only be communicated by

- concrete (a word that represents something for example “tree”) or abstract (a word that stands for an idea that conveys different understandings; for example “conservation”) **verbal** symbols, and
- **non-verbal** symbols, to which people attach different understandings (e.g. a yawn may indicate boredom or a frown for confusion).

Messages are therefore both a verbal and non-verbal form of an idea, thought, or feeling that the sender wishes to communicate to the receiver (Pearson & Nelson, 2000:11) that travels through the sensory route used to transmit the message (**channel/medium**) which may use all five senses (Verderber & Verderber, 2005:7). The use of the senses (i.e. listening or reading) is known as **decoding** the message (Baran, 2007:5). For the sender to identify that the message has been received, the receiver has to give **feedback**, changing the one-way communication into two-way communication, and changing his/her role from the receiver to the sender, and vice versa. Nevertheless, **noise** may also occur in this two-way communication that may keep the message from being understood or accurately interpreted (Hybels & Weaver, 2007:11). Noise is any interference in the encoding and decoding processes that reduces the clarity of the message (Pearson & Nelson, 2000:13). According to Hybels and Weaver (2007:11-12) noise can be classified as:

- external noise from the environment (e.g. hot sun can make the communication uncomfortable or can be interrupted by a group of people);
- internal noise occurs in the minds of the sender-receiver when thoughts or feelings are focused on something else; and
- semantic noise caused by emotional responses to certain words (e.g. words that are offensive).

Now that the process of communication is broadly understood it is necessary to examine it within the interpretation context.

#### **2.4.1.1 Communication in the tourism interpretation context**

Interpretation has certain qualities (pleasurable, relevant, organised and has a theme) which distinguishes interpretation from other forms of information transfer and is therefore more clearly defined as communication (Ham, 1992:8). The use of communication is consistent with the definition of interpretation as Moscardo (1999:5) explains that communication refers to giving information, creates understanding, and making connections between managers and tourists. Ham (1992:3) also confirms that interpretation is an approach to communication which transfers ideas and relationships as to isolated facts and figures. Interpretation incorporates all the various ways in which attraction (or destination) managers seek to communicate with their visitors (Moscardo & Ballantyne, 2008:238).

Since communication is always carried out in a given environment (context) and, in this case, a natural environment that needs interpretation, the 'context' impacts the sender, the message used and the capacity of the medium (Schindler, Ruoppolo & Barillari, 2010:164). Kuo (2002:96) states that effective interpretation does not occur unless all the components of communication function successfully. Hence, each of these components is discussed within the interpretation context in the following sections.

##### **2.4.1.1.1 Sender in interpretation**

Periera (2005:1) states that one of the main players or senders in ecotourism is the naturalist guide who has the potential to add considerable value to an eco-tour both in economic and conservation gains. Literature uses the terms non-formal environmental educator, interpretation guide, eco-tour guide and naturalist guide interchangeably to make reference to the same field of activities (Periera, 2005:1; Skanavis & Giannoulis, 2010:55). According to Skanavis and Giannoulis (2010:55) an environmental interpreter is someone who practises the art of environmental interpretation who is usually specified as a non-formal environmental educator / outdoor educator or informal educator. Since the visitors' social attitudes and expectations change constantly, more importance is placed on the actual role of the interpreter as an intermediary between the visitor (tourist) and, for example, the exhibit (Ryan & Dewar, 1995:4).

At the most basic level, according to Ham *et al.* (2005:4) planning for interpretation involves the theme or message, the medium and the audience or tourists.

#### 2.4.1.1.2 Message of interpretation

Ward and Wilkinson (2006:35) confirm that the message of interpretation is the reason for communication. Considering that communication is creating or sharing meaning (Verderber & Verderber, 2005:4) or the transfer of information as Buckley (2010:316) puts it, the message is of particular importance to interpretation. The message within interpretation refers to a particular **theme**. According to Ham (1992:34) the topic and theme are used interchangeably but are very different since a topic refers to the subject matter (e.g. rhinos) but the theme refers to the message about the topic (e.g. rhinos are endangered). Interpretation is therefore not an instruction or the communication of facts, but, as the definition portrays, reveal meanings (Tilden, 1977:8) that focus on ideas and relationships (Ward & Wilkinson, 2006:2).

#### 2.4.1.1.3 Medium of interpretation

The message and medium within interpretation are very closely related. The medium is the physical space, means of sending information or the route travelled by the message (Baran, 2007:6; Hybels & Weaver, 2007:10; Schindler *et al.*, 2010:164). Ham *et al.* (2005:17) explain that the medium is a vehicle through which the theme is delivered to audiences.

Devito (2003:7) explains that communication rarely takes place over only one medium or channel and may be accomplished through various mediums or channels simultaneously. Communication occurs within three types of mediums or channels: intrapersonal (within a person e.g. what the person thinks), interpersonal (to communicate between people) and mass or impersonal communication (brochures or maps) (Biagi, 2005:7). Within the interpretation context it makes more sense to only focus on interpersonal and impersonal mediums as destination managers can only use these two mediums for interpretation.

#### 2.4.1.1.3.1 Interpersonal medium

The first way of communicating verbally, which has already been discussed (see section 2.4.1.1.1), is by means of the 'live' interpreter who has an important impact on the total visitor experience (Ryan & Dewar, 1995:3). Even though tourists may use impersonal

(unattended) interpretation (signage, brochures and exhibits) more at destinations, Rabotić (2010:1162) indicates that personal (attended) interpretation is the most efficient method of achieving visitors' expectations. This may be because the knowledge of one another in personal communication enables the communicator to experiment with different approaches and tailor the message as narrowly as possible and, as a result, is personally relevant (Baran, 2007:7). Messages can also be communicated non-verbally (without words) and may communicate the same meanings as verbal messages (Devito, 2003:134). This may be accomplished through the facial expressions of a game ranger when he communicates the importance of conservation.

#### 2.4.1.1.3.2 Impersonal medium

The other medium also popularly used in natural setting's interpretation is the impersonal medium. This medium refers to mass media or electronic media (Schiffman & Kanuk, 2007:278) like labels, signs, exhibits, publications and visitor centres. This medium delivers messages to large numbers of people at once (Biagi, 2005:8). Even though impersonal communication is more strained than interpersonal communication as the feedback comes too late to enable corrections it is equally effective to shape understanding (Baran, 2007:9).

It is not the intent of this chapter to compare the effectiveness of the different types of mediums since various authors (see Moscardo *et al.*, 2004:243; Moscardo & Ballantyne, 2008:244; Weiler & Smith, 2009:102; Frauman, 2010:232) have suggested that a diverse range of mediums should be used in interpretation as the authors have found that this had a greater impact on the visitors. This may be since it is impossible to accurately predict visitors' preferences. However, the visitor self-selects the preferred medium (Ham *et al.*, 2005:18). It is noteworthy that each medium has its own implications. Verbal mediums depend on eye contact, gestures and fluency; written mediums depend on the brevity of the content and how meaningfully the words are put across; whereas electronic and web mediums are similar to verbal and written mediums but more susceptible to noise that may influence the impact on the visitor (Radhaswamy & Zia, 2011:54).

Since interpretation refers to all the various ways in which a destination wants to communicate to visitors, it is clear from the discussion above that the types of interpretation (see section 2.3) refer to the different components of communication (i.e.

sender, message and medium) as a whole. It is therefore important to note that communication examples will be provided if one refers to interpretation examples.

Not only should interpretation focus on communication but, as indicated earlier, interpretation should also be defined from a persuasive communication perspective.

#### **2.4.1.2 Persuasive communication**

Even though education and behavioural change will be discussed later in sections 2.4.3 and 2.4.4, it is crucial to understand that, in the interpretation context, once the message is delivered active mental processing of new information needs to be accepted by the receiver (Moscardo *et al.*, 2004:243). It is also necessary to understand that interpretation cannot force people to change their behaviour but rather seeks to persuade voluntary behaviour change (Orams, 1995:89). The concept that is concerned with the acceptance of information and the influence of behavioural change is persuasive communication.

Persuasive communication is a process of communication in which the sender succeeds in voluntarily forming, sustaining or changing the attitudes or behaviour of the receiver in accordance with what the sender intends with his/her message (De Wet, 2010:4). Gass and Seiter's (2007:33-34) definition corresponds with De Wet's definition when they define persuasive communication as an activity of creating, reinforcing, modifying, or extinguishing beliefs, attitudes, intentions, motivations, and/or behaviours within the constraints of a given communication context.

If one compares the definitions of persuasive communication and interpretation there are certain concepts that associate in the definitions:

- Tilden (1977:8) explains that interpretation is not simply communicating factual information, but rather to reveal meaning and relationships through the educational activity. Moscardo (1999:8) also stresses this when he states that interpretation communicates the significance of a place or object that people visit so that they enjoy it more. Ham (1992:8) also explained that one of the factors that should be included in the interpretive approach to communication is the use of a theme rather than a topic (see section 2.4.1.1.2 for other factors). This theme is a specific message that the sender wishes to communicate to the audience (Ham, 1992:34). Furthermore, Ham *et al.* (2005:3) explain that interpretation is strategic

communication since it has an intended outcome (e.g. protecting resources). The above associates well with the predetermined message of persuasive communication (De Wet, 2010:4). This also links with communicating information in a conditional way as suggested in the mindful-mindless theory (see section 2.4.2).

- De Wet (2010:5) and Gass and Seiter (2007:21) explain that education is one form of persuasion which, according to Tilden's (1977:8) definition of interpretation, is an educational activity and therefore the second component of interpretation (discussed in section 2.4.3 of this chapter).
- The purpose or outcome of persuasive communication is exactly what the definition of interpretation intends. De Wet's (2010:4) definition of persuasive communication refers to behavioural change which correlates with Moscardo's (1999:8) definition of interpretation when he explains that interpretation should develop a positive attitude (behavioural change) towards conservation. Behavioural change is therefore the third component of interpretation (discussed in section 2.4.4).

Since the message of interpretation is the reason for communication (Ward & Wilkinson, 2006:35) it is necessary to have a closer look at the message of persuasive communication in the interpretation context.

#### 2.4.1.2.1 The message of persuasive communication

The most effective message, according to De Wet (2010:54), is one that is conveyed at the appropriate time and that captures the attention of the recipient. There is, however, debate about whether explicit (directly stated) or implicit (indirectly stated) messages are the most effective. Little research has been done on this topic within the interpretation context; however, Gass and Seiter (2007:204) conclude that, depending on the audience's (receiver or tourist) characteristics, it is sometimes better to deliver explicit messages rather than implicit messages in persuasion. If one refers to the definition of interpretation as stated by Tilden (1977:8) one can argue that, within the interpretation context, messages should rather be implicit to "reveal meanings and relationships". Ballantyne and Hughes (2006:244) found that messages that aim to target incorrect beliefs that state *why* the particular behaviour is incorrect are the most persuasive messages and lead to the use of implicit messages.

Even though behavioural change will be discussed later in this chapter, it is important to note that there are two factors that are difficult to influence in persuasive

communication. The first is habitual beliefs (such as speeding, the use of a seat belt or littering) that refer to actions that have become so routinised through frequent repetition that reasoning no longer precedes behavioural decisions (Hughes *et al.*, 2009:40). The other factor is attitudes, since the behaviour of a person (persuaded behaviour) is controlled by the attitudes the person may have towards the aspect under consideration (De Wet, 2011:59). These two factors make the design of interpretation messages based on the theory of reasoned action (see section 2.4.4.1) as well as the theory of planned behaviour (see section 2.4.4.2) quite difficult and pose a challenge for park managers. Hughes *et al.* (2009:41) propose enforcement of policy violations and patrolling management approaches to overcome habitual beliefs. Interestingly, these management approaches link directly with Kuo's (2002) hard interpretation (i.e. regulatory management). This approach leads to cognitive dissonance (see section 2.4.3.3.1) since the behaviour that these visitors have to comply with can ultimately alter their attitudes to be pro-conservation.

Given that there is a predetermined message in persuasive communication, it should be noted that not all communication is persuasive (De Wet, 2010:4). An informal conversation with the neighbour camper for instance does not have a predetermined message. If the sender (national park) communicates with a receiver (tourist) with the intent that the tourist should support recycling efforts, then the communication can be regarded as persuasive. However, in pure persuasion terms, the recipient does not have to understand why they do what they do but education, which is one form of persuasion, revolves around helping the recipient to understand (De Wet, 2010:5). When one thus refers to persuasion within the interpretation context one is actually referring to education.

According to Moscardo *et al.* (2004:243) persuasive communication (thus education) encourages more active, detailed, cognitive processing of information and therefore encourages mindful information processing. This leads to the next concept: mindfulness-mindlessness.

#### **2.4.2 Mindful and mindless tourists**

For communication (or interpretation) to be an effective tool to enhance visitor experience and assist in managing tourism impacts, mindfulness should be stimulated (Moscardo, 1999:26).

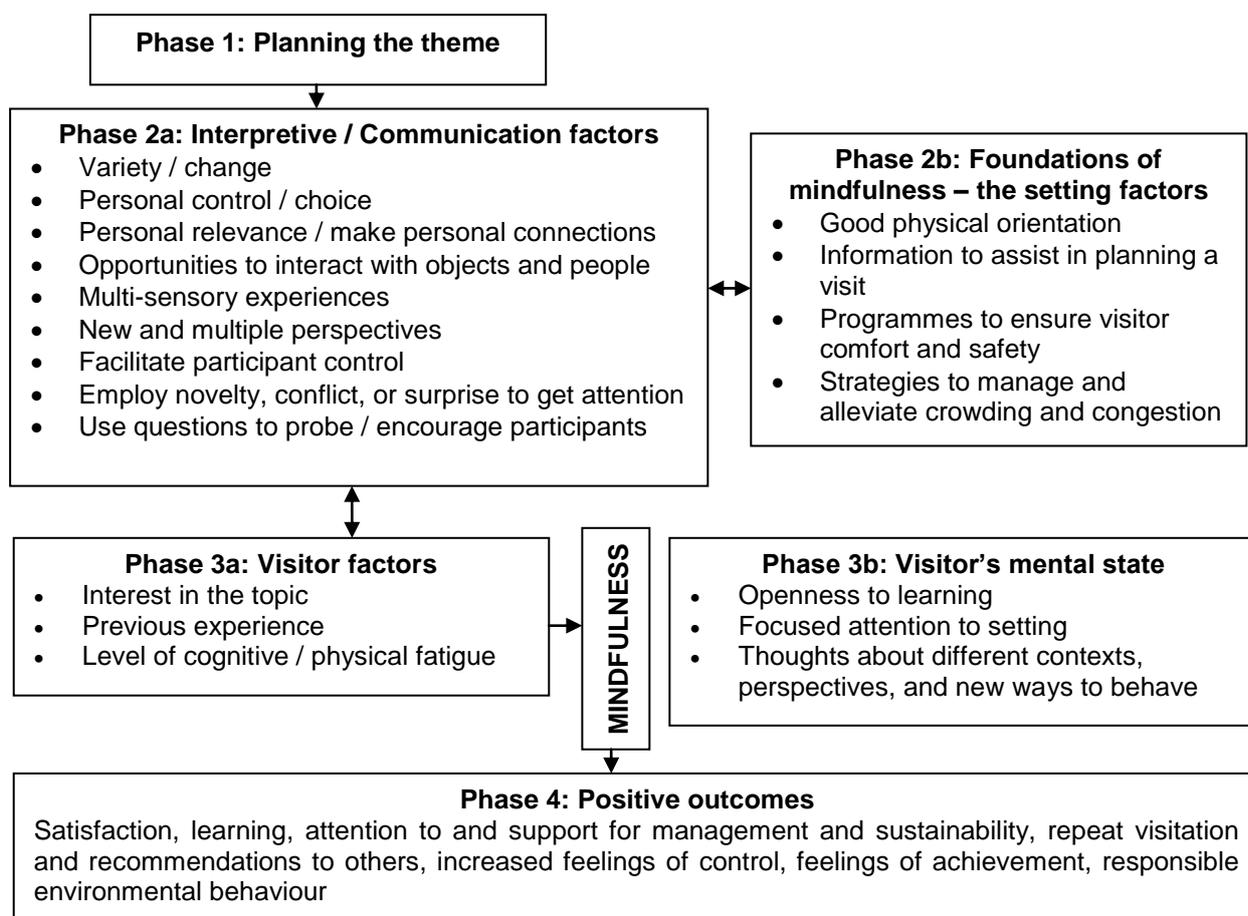
Much of the interpretation literature refers to the fact that interpretation should aim at the creation of mindful tourists. The rationale behind this is explained by Ham (1992:6-7) when he states that park tourists are non-captive audiences which do not have to pay attention to information presented and will switch their attention when they are bored. This confirms De Wet's (2010:54) argument that an effective message of persuasive communication to capture the attention of the receiver applies perfectly within interpretation. However the theory related to capturing the attention of the receiver is Langer's (1964) theory of mindfulness-mindlessness.

The mindfulness-mindlessness theory states that, in any given situation, a person may be mindful or mindless (Langer, 1964) or, more simply, it is different ways of thinking (Moscardo, 1999:21). Neither mindfulness nor mindlessness requires effort (Langer, 1964:154) it is simply a state of mind. Mindfulness is not a type of cognition or mental processing, but can rather be considered as a psychological state that increases the readiness for cognitive processing (Kang & Gretzel, 2012:441). The theory states that a mindful individual is in a state of alertness, allowing the creation of categories and distinctions whereas in a mindless state the individual relies on categories that have already been formed (Langer, 1964:138-139). Christie and Mason (2003:4) put it clearly and assert that to be mindful is to appreciate the possibilities of the way the world works (i.e. creating new categories) as to be trapped by existing preconceptions (i.e. relying on misguided categories). Mindfulness specifically refers to activities rooted in consciousness, attention and awareness (Brown, Ryan & Creswell, 2007:212; Kang & Gretzel, 2012:441). Moscardo and Ballantyne (2008:243) explain that mindful people pay attention to information presented, react to new information and learn; whereas mindless people follow established routines for behaviour and pay minimal attention to new information. Chanowitz and Langer (1981:1052) explain that people may be mindless when they are presented with information that is apparently irrelevant to them and therefore have no reason to critically examine the information.

It is difficult to clarify precisely where in the process of interpretation mindfulness should be explained. Moscardo (1999:26) explains that mindful tourists are more likely to learn from the interpretation, be interested in discovering more about a topic of the destination and derive greater satisfaction from their visit to a site. Frauman and Norman (2004:387) confirm this in their study and found that visitors (tourists) who are mindful,

are more open to information services designed and offered in a way to further facilitate or induce mindful behaviour than someone who is not very mindful. However Frauman and Norman (2004:382) argue that, although it is plausible that tourists to natural settings are more attentive, it may make sound management sense to provide mindfully orientated services and activities not only to capture the attention of the mindful tourists but also potentially inducing mindfulness in those tourists who may not be very mindful. This seems to be in agreement with the work of Langer (1964:142) arguing that when an environment is characterised by novelty, surprise, complexity and/or has ambiguous qualities, this could induce a person to become more mindful. Regardless of where mindfulness fits into the interpretation process, mindfulness is a state of active cognition or mental processing (Moscardo & Ballantyne, 2008:253) and it is therefore important that interpretation activities aim for the attainment of mindful tourists to make sure that the message is correctly received (Stewart *et al.*, 1998:258).

Burgoon, Berger and Waldron (2000:107) state that communication (see section 2.4.1), may catalyse mindful or mindless states since the interaction can alter the level of mindfulness with which information is processed. To create mindful tourists, four skills should be evoked: observation, describing, acting with awareness and accepting without judgement (Baer, Smith & Allen, 2004:193-194). Moscardo (1999:27) and Moscardo and Ballantyne (2008:244) suggest a mindfulness model for communicating with tourists in interpretative settings as shown in Figure 2.4.



**Figure 2.4: A mindfulness model for effective outdoor interpretation**

**Source: Adapted from Moscardo (1999:27); Moscardo and Ballantyne (2008:244) and Frauman (2010:232)**

At the heart of effective outdoor interpretation, as indicated in Figure 2.4, is planning for a theme. The theme (message of communication) is emphasised by Ward and Wilkinson (2006:35) as the reason for communication. Once the theme is determined, the second phase is planning the communication or interpretation. The communication factors refer to several principles for effective interpretation that could be applied in brochures, maps, and signs. These factors compare well with the factors suggested by Tilden (1977:9), Ham (1992:8), Moscardo *et al.* (2004:243), Ham *et al.* (2005:7) as well as Ballantyne *et al.* (2011:778) who concluded that effective interpretation should be presented in a variety of presentations, have personal relevance, be enjoyable, provide time for reflection, use all senses, provoke visitors to think deeply and to draw their own conclusions, provide the significance of the place they are visiting and provide personal control to the visitor. Hand-in-hand with planning the interpretation or communication is the setting factors which are mostly under the control of the destination's managers. If, for instance, the theme and planned communication requires that an interpretation

centre should be build, this centre needs schedules and opening times. If the theme will be best communicated through informative speeches, experts in the field need to be contacted and the time of the event should be communicated to visitors. Moscardo and Ballantyne (2008:244) recommend that managers pay attention to the settings factors as well, since visitors need to be able to find their way around, understand how to plan their visit and be comfortable to focus on the interpretive experience. A closer look at these setting factors reveals that they correspond with Kuo's (2002) hard interpretation (physical management strategies). (This may reveal the necessity of more detailed classifications of interpretation for this study.)

The other factors indicated in Figure 2.4 that impact visitors to be mindful are visitor factors in phase 3. Visitors to national parks seek information-rich experiences (Khan, 2003:112; Eagles, 2004:19; Jurdana, 2009:270) and are therefore more mindful (Frauman & Norman, 2004:382). However, phase 3 of the mindful model is the most unpredictable since participants may come to a programme very interested, well rested and cognitively clear, or the inverse may appear (Frauman, 2010:234). The visitor and interpretative or communication factors combine in a number of ways to produce tourists' cognitive state for an openness to learning (mindfulness), focused attention and thoughts on new ways to behave (Frauman, 2010:232).

Although the theory of planned behaviour will be discussed later (see section 2.4.4.2) it is imperative to understand the influence of mindfulness on planned behaviour. Chatzisarantis and Hagger (2012:671) confirm that a mindful state is characterised by a heightened state of attention and awareness and is positively correlated with behavioural intention since mindfulness strengthens a person's ability in terms of self-control. According to the theory of planned behaviour, three factors predict behavioural intentions. These are attitude, subjective norms, and perceived control (Crisp & Turner, 2007:87; Sparks, 2007:1182). Since the visitor has more perceived control, the visitor's intentions to behave, in other words buy souvenirs and participate in activities, can therefore lead to the positive outcomes stipulated in phase 4 of Figure 2.4. The positive outcomes also seem to correspond well with the goals of interpretation which will be discussed in more detail in section 2.5.

The contrary is also true - a person might be mindful at first but later becomes mindless which confirms the unpredictability of phase 3 in Figure 2.4. Chanowitz and Langer

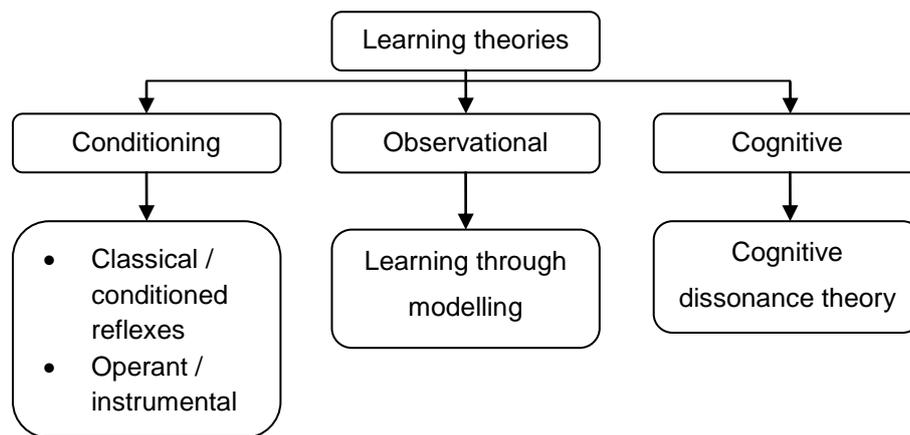
(1981:1052) explain that repeated exposure to a setting also creates mindlessness that, even though the situation or environment may be altered, the person will not realise the change. Burgoon *et al.* (2000:109) agree and state that if schemata are over learned and activated in an automated fashion, people may become routinised and not pay attention. Mindlessness can therefore be triggered in two ways: (i) over exposure (individuals use cues or phrases of the information presented that allow them to borrow script from elsewhere), and (ii) individuals may make premature cognitive commitments that the information is not relevant and disregard the information (Chanowitz & Langer, 1981:1052; Moscardo, 1999:25). Langer (1964:155) highlights that one of the major points of the mindfulness-mindlessness theory is that information that has been mindlessly accepted could be reconsidered as mindful if it occurred to the person to do so. Interpretative efforts should therefore not over expose tourists to the same information but rather change the efforts continuously. As explained previously, people may prematurely reject information if it is not relevant to them, thus creating mindlessness. Langer and Piper (1987:285) found that conditional learning is a solution to premature cognitive commitments that mediate mindlessness. The authors introduced information in a conditional way by using language such as “could be” rather than “is” in the absolute way and resulted in participants using the objects more creatively and making them their own.

As explained earlier, persuasive communication has a specific intent which encourages mindful information processing. This is better understood with the term education within the tourism interpretation context.

### **2.4.3 Education**

The aim of interpretation in psychological terms is to achieve learning (Lee & Balchin, 1995:283). This is better understood as education.

Orams (1994:21) stresses that, since the relationship between learning and behavioural change is greatly ignored, literature from educational psychology, particularly which relates to learning, needs to be consulted to develop effective interpretation techniques. Modern theories of learning fall into three categories (conditional, observational and cognitive) as illustrated in Figure 2.5 and will be discussed in more detail in sections 2.4.3.1 to 2.4.3.3.



**Figure 2.5: Classification of learning theories**

**Source: Author's own figure based on the literature review**

The following section will discuss each of these categories of learning in more detail.

### 2.4.3.1 Conditioning

Conditioning theories can be classified into classical and operant or instrumental conditioning theories that will be discussed in the following two sections.

#### 2.4.3.1.1 Classical conditioning / Conditioned reflexes

The term *classical conditioning* is derived from the works of Ivan Pavlov (1849-1936) who extensively studied the process of conditioning and discovered the first model of associative learning (Hockenbury & Hockenbury, 1998:160; Myers, 2010:298, 301). In classical conditioning experimental procedures, the organism (i.e. the dogs in Pavlov's experiments) has no control over the stimuli to which it is exposed (Domjan, 1998:123) that naturally evokes a response (Crisp & Turner, 2007:77). Pavlov's (1958) basic procedure in the study of conditioned salivation is well known and has elicited the discovery of a *learned* stimulus. When the dogs salivated in response to a *natural stimulus* (giving the dogs food) which they had not required through learning, is an *unconditioned response*. On the other hand, if the dogs learned to salivate to a *neutral stimulus* (Pavlov walking by) that usually does not normally produce the automatic response, is called a *conditioned response*. Classical conditioning often involves reflexive or respondent behaviours and is thus also known as conditioned reflexes (Hockenbury & Hockenbury, 1998:161).

#### 2.4.3.1.2 Operant conditioning / Instrumental conditioning

In contradiction to classical conditioning, *operant conditioning* refers to learning situations where the stimuli are a direct result of the organism's behaviour (Domjan, 1998:123; Crisp & Turner, 2007:78). The organisms thus associate their own actions with consequence (Myers, 2010:301). The two scientists whose research resulted in the development of operant / instrumental conditioning were Thorndike (1911) and Skinner (1935). Thorndike (1911) proposed the Law of Effect which states that behaviours that were followed by a satisfying effect were more likely to be repeated (association between stimulus and response is strengthened), whereas behaviours followed by an unsatisfactory effect were less likely to be repeated (association between stimulus and response is weakened) (Hockenbury & Hockenbury, 1998:167; Domjan, 1998:125). Skinner (1935) however drew and elaborated upon the earlier works of Thorndike and coined the term *operant* to describe active behaviours that operate upon the environment to generate consequences (Hockenbury & Hockenbury, 1998:167; Myers, 2010:301). Activities that have the same environmental effect are thus considered to be instances of the same operant (Domjan, 1998:128).

#### 2.4.3.1.3 Conditioning and tourism interpretation

Orams (1994:30) explains that different management strategies comply with the operant conditioning theory with regards to interpretation. These strategies may include rules and regulations enforced by means of punishment (conditioning with a negative stimulus); rewards for positive behaviour (conditioning with a positive stimulus); and indirectly by means of easier access of following paths and roads (Orams, 1994:30). These suggestions seem to correspond with Kuo's (2002) hard interpretation examples. Kuo (2002:89-91) based his hard interpretation classification on Orams' (1996:42-44) physical (e.g. structures like animal viewing platforms to manage human interaction with animals), regulatory (rules and regulations) and economic (using prices as incentives or disincentives to modify visitor behaviour) management strategies. All these strategies condition the visitor to make use of certain areas, probe better behaviour and induce visiting periods.

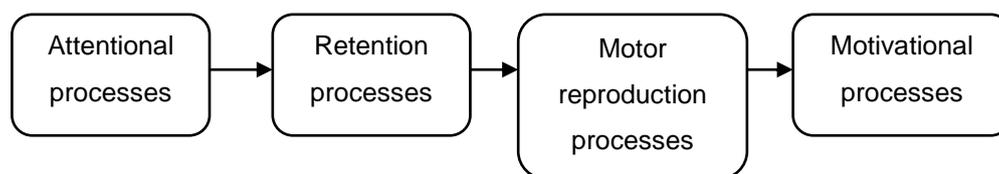
People however do not only learn through direct experience but also by means of observation.

### 2.4.3.2 Observational theories

The psychologist mostly associated with observational learning is Bandura (1977) who believed that observational learning is the result of cognitive processes that are actively judgemental and constructive and not merely mechanical copying (Hockenbury & Hockenbury, 1998:183). Bandura (1977:16) explained that people are not equipped with inborn repertoires of behaviour; they learn them by either direct experience (as discussed under *classical* and *operant* conditioning) or by observation through the process of modelling (Myers, 2010:315).

#### 2.4.3.2.1 Learning through modelling

Bandura (1977:22) explained that, from observing other people, one forms an idea of how new behaviours are performed and this coded information later serves as a guide for action or imitation.



**Figure 2.6: Processes governing observational learning**

**Source: Adapted from Bandura (1977:23)**

Figure 2.6 illustrates how the imitation process takes place. First, the person should pay *attention* to another person's behaviour (Hockenbury & Hockenbury, 1998:184). Bandura (1977:24) explains that people cannot learn much by observation unless they pay close attention (this strengthens the mindful argument discussed earlier). Secondly, the person should remember the other person's behaviour (*retention*) and therefore the responses should be presented in memory (see section 2.4.3.3.2) in symbolic form (Bandura, 1977:25). Thirdly, the person should be able to transform this mental representation (symbolic form) into actions (*motor reproduction*) that they are capable of reproducing (Hockenbury & Hockenbury, 1998:184). Lastly, there must be some sort of *motivation* to imitate the behaviour if it results in outcomes valued by the individual rather than unrewarding or punishing effects (Bandura, 1977:28).

#### 2.4.3.2.2 Observational theory and tourism interpretation

Tourists may learn through observing the tourism destination as a role model that adopts environmentally sound practices such as waste disposal strategies and the

training of staff to conduct themselves in an environmentally responsible manner (Orams, 1994:30). Wiener *et al.* (2009:495) explain that companies who employ conservation messages should practice what they preach and refrain from confusing visitors that then may discard any conservation message. It is therefore imperative that a destination does not only employ learning opportunities through communication messages or interpretation themes, but that the destination as a whole also operates in an environmentally friendly manner. This, in essence, is what a national park is supposed to be – conserving the environment.

#### **2.4.3.3 Cognitive learning**

Hockenbury and Hockenbury (1998:179) state that the behavioural perspective maintains that learning (classical, operant and observational) is accomplished without the involvement of mental or cognitive processes. According to the cognitive perspective however, mental processes as well as external events are important components of learning (Hockenbury & Hockenbury, 1998:179). The most widely accepted theory of learning is Piaget's (1972) cognitive learning theory. This theory states that knowledge structures, also called schemas, adapt to environments (Goswami, 2008:374). Piaget (1972:7-8) suggests that the cognitive system naturally seeks equilibrium through adaption by two processes: assimilation and accommodation. Assimilation is when new information is deduced to be consistent with existing schemas (Orams, 1994:23; Goswami, 2008:274) that have been built up over time through experience (Moscardo *et al.*, 2004:243); the incorporation of objects into the patterns of behaviour as Piaget (1972:8) puts it. Accommodation, on the other hand, is when the individual never suffers from the impact of surrounding stimuli but modifies the assimilatory cycle by accommodating himself (Piaget, 1972:8). In other words, accommodation is the adaption of existing cognitive schemas (Goswami, 2008:374) to be consistent with the new information because the new information is so different and has sufficient credibility that it cannot be assimilated (Orams, 1994:23). Orams (1994:23) explains that assimilation and accommodation work against each other as new information is received and the individual searches for equilibrium first through assimilation until the weight of evidence of the information creates disequilibrium and accommodation results.

Another theory associated with cognition and maintaining the equilibrium is the cognitive dissonance theory.

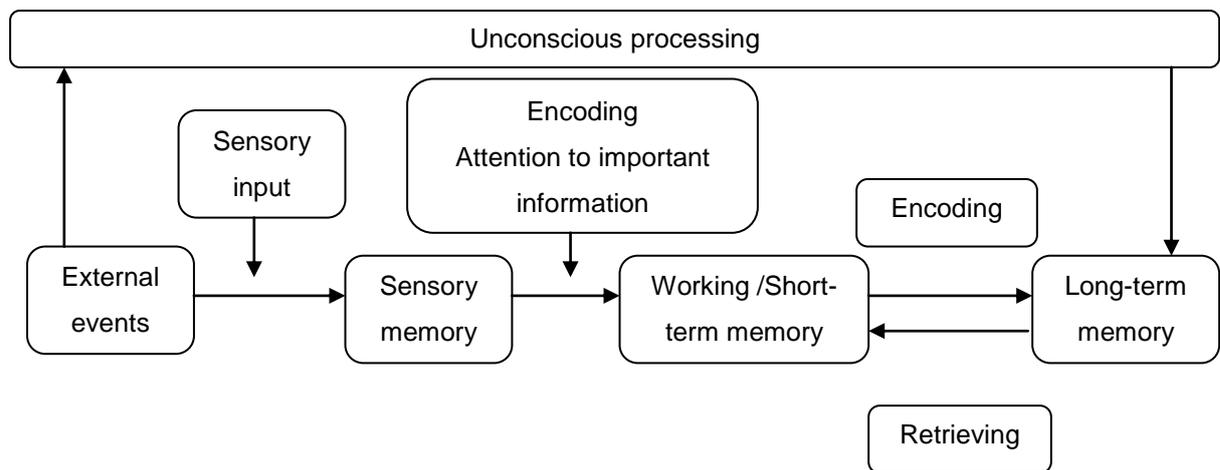
#### 2.4.3.3.1 Cognitive dissonance theory

Leon Festinger (1957) coined the term cognitive dissonance (Eunson, 2008:431). The cognitive dissonance theory suggests that (i) dissonance is psychologically uncomfortable to motivate people (tourists) to achieve consonance; and (ii) in a state of dissonance, people (tourists) will avoid information and situations that might increase dissonance (Stone, Singletary & Richmond, 1999:183). In other words, the term cognitive dissonance is used to describe an uncomfortable feeling that a person (tourist) may experience when that person (tourist) holds two or more inconsistent beliefs and then behaves in a way that is inconsistent with the way the person (tourist) has behaved before (Eunson, 2008:431). Eunson (2008:431) describes how people confronted with dissonance in certain situations can either change their behaviour or can rationalise their refusal to change their behaviour. (Examples of the cognitive theory within the tourism interpretation context are available in section 2.4.3.3.3).

Cognitive theories are about how people use information from their environment and their memories (Orams, 1994:23) and therefore assign a prominent role to memory (Schunk, 2008:18).

#### 2.4.3.3.2 Memory

Memory is storage of accumulated learning (Myers, 2010:323,324) – the ultimate outcome to be achieved by interpretation. Memory refers to the mental process that enables us to acquire, retain and retrieve (recall) information (Hockenbury & Hockenbury, 1998:196; Myers, 2010:324). It is not the intent of this study to provide an in-depth explanation of exactly what memory entails, but just to provide a brief explanation of the memory process to understand the recall of learned information.



**Figure 2.7: Modified three-stage model of memory**

**Source: Adapted from Myers (2010:325)**

Figure 2.7 is an illustration of the modified three-stage model of memory according to Atkinson and Shiffrin (1968). The three stage model of Atkinson and Shiffrin (1968) proposed that memory occurs in three stages: record information in the sensory memory; process or encode information in the short term memory; and, lastly, information moves to the long-term memory. The modified model of memory, however, accommodates two important new concepts (Myers, 2010:325-326):

- Unconsciously, some information is directly stored into the long-term memory and thus skips the first two stages of Atkinson and Shiffrin’s three-stage memory model (i.e. sensory memory and short term memory);
- A newer understanding of Atkinson and Shiffrin’s (1968) second stage is the working memory that concentrates on the active processing of information since we cannot focus all our attention on all the information that our senses receive.

Regardless of whether information is stored directly in the long term memory or processed through the three stages, the retrieval of this stored information in the long term memory is the same.

#### 2.4.3.3.3 Cognitive theory and tourism interpretation

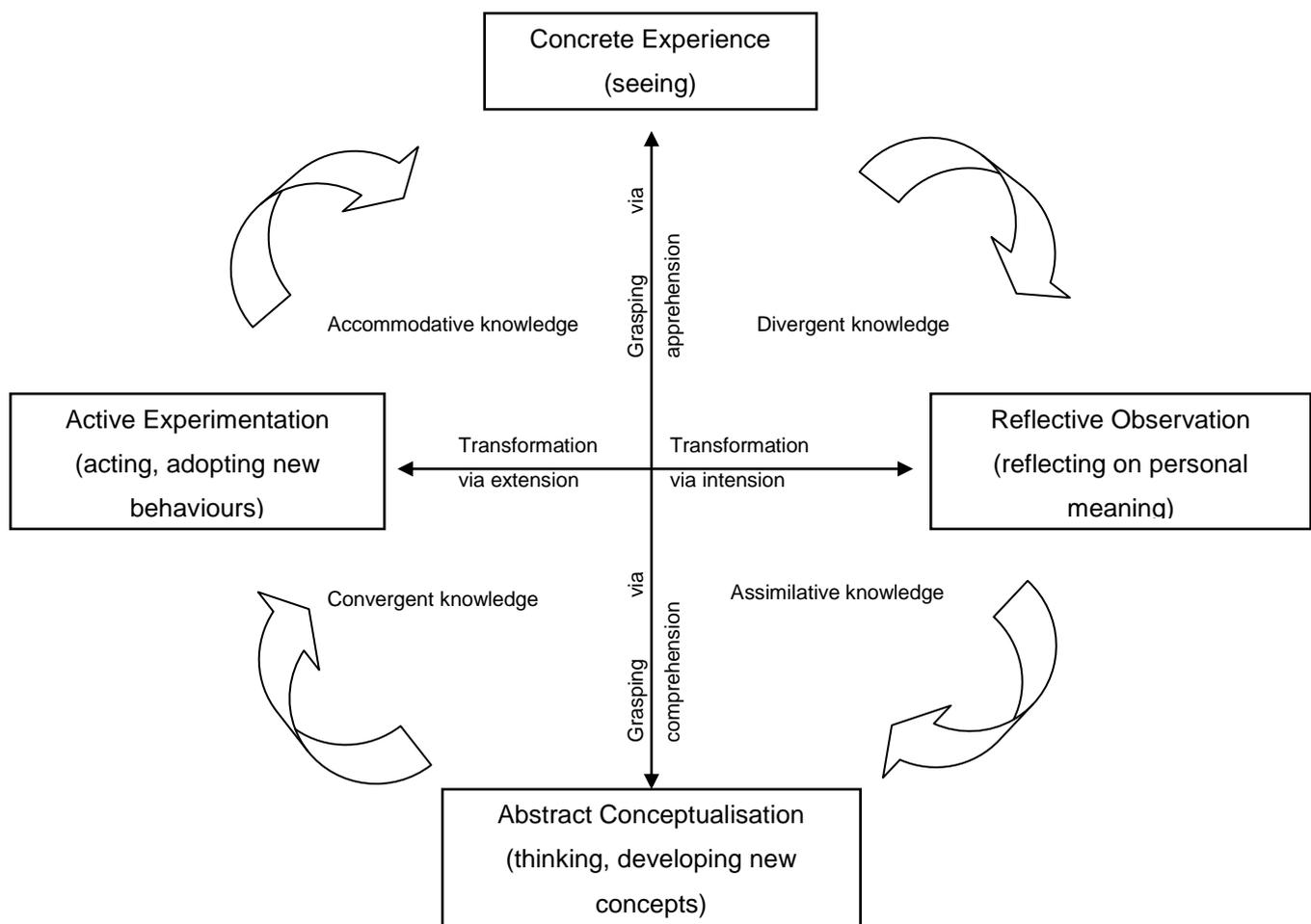
The tourism destination accomplishes cognitive learning by delivering a deliberate and structured interpretation programme that creates cognitive dissonance to affect a change of behaviour (Orams, 1994:30). Programmes that challenge the tourist’s belief system, thus throwing the tourist off balance by putting questions in their mind, would achieve cognitive dissonance (Christie & Mason, 2003:5). For instance if the tourists have always littered and an interpretation programme communicates that littering in the

park has a negative impact on the environment, these two elements are inconsonant (Orams, 1994:24) and this therefore creates dissonance. If the tourist did not litter before experience with the interpretation programme, the elements would be in consonance and hence no dissonance will occur. In other words, no learning or behavioural change will follow. Tubb (2003:480) states that simply presenting information is not enough; visitors need to be stimulated to search for new information and encouraged to actively process information.

There is a general acceptance that learning is a result of combinations of the above conditioning, observational and cognitive processes (Orams, 1994:30) and that the link between learning and behavioural change is a strong one (Orams, 1994:27). This is better understood with Kolb's (1984) experiential learning as explained in the next section, behavioural change (the last construct indicated by the definition of interpretation).

#### **2.4.4 Behavioural change**

There is an assumption that increased knowledge leads to a change in attitudes and this, in turn, drives behaviour (Orams, 1994:27). From the learning theories discussed above, it is clear that learning includes two main criteria: (i) learning involves some change in behaviour and that this change in behaviour is (ii) a result of some experience (Hockenbury & Hockenbury, 1998:158; Myers, 2010:287). This could be more clearly understood with Kolb's (1984) experiential learning cycle as illustrated in the four stages.



**Figure 2.8: Experiential learning cycle**

**Source: Adapted from Kolb (1984:42)**

Kolb (1984:20) explains that the experiential learning process, depicted in Figure 2.8, is called this since it ties in well with the intellectual origins of Dewey (1938), Lewin (1951) and Piaget (1972) where experience has a central role in the learning process. The aim of this cycle is not to provide an alternative to behavioural or cognitive learning theories but a holistic integrative perspective on learning that combines experience, perception, cognition and behaviour (Kolb, 1984:21). Experiential learning is a four-stage cycle involving (i) concrete experience that provides a basis for (ii) reflective observation that educes personal meaning for the person's experience, followed by (iii) abstract conceptualisation where the person develops new concepts, where these new concepts have implications for the action that will be taken in the process of (iv) active experimentation that, in turn, leads to the next concrete experience (Kolb, 1984:40; Ballantyne *et al.*, 2011:777). A person's learning process lies in the transactions among these four adaptive modes and the way in which the adaptive dialectic orientations (concrete experience and abstract conceptualisation - identified on the vertical axis of

Figure 2.8 and active experimentation and reflective observation - identified on the horizontal axis of the figure) get resolved (Kolb, 1984:41). A simple experience cannot lead to learning (something needs to be done with it) and, similarly, transformation cannot lead to learning (something needs to be transformed) since the one is dependent on the other (Kolb, 1984:42). The concrete experience and abstract conceptualisation represent the adaptive dialectic orientations which consist of two opposing processes of grasping the experience in the world [i.e. apprehension (reliance on tangible, felt qualities of immediate experience) and comprehension (reliance on conceptual interpretation and symbolic representation)] whereas the active and experimentation and reflective observation dialectic represent two opposing ways of transforming the grasp of the experience through intention (i.e. internal reflection) or extension (i.e. external manipulation of the world) (Kolb, 1984:41). Kolb (1984:41-42) thus concluded that knowledge is created through transforming the experience and results in four different forms of knowledge:

- Divergent knowledge: experience is grasped through apprehension and transformed through intention.
- Assimilative: experience is grasped through comprehension and transformed through intention.
- Convergent: experience is grasped through comprehension and transformed through extension.
- Accommodative: experience is grasped through apprehension and transformed through extension.

Two other theories exist to explain a person's behavioural choices (Powell & Ham, 2008:472): Ajzen and Fishbein's (1980) theory of reasoned action (TRA) and Ajzen's (1988, 1991) theory of planned behaviour (TPB).

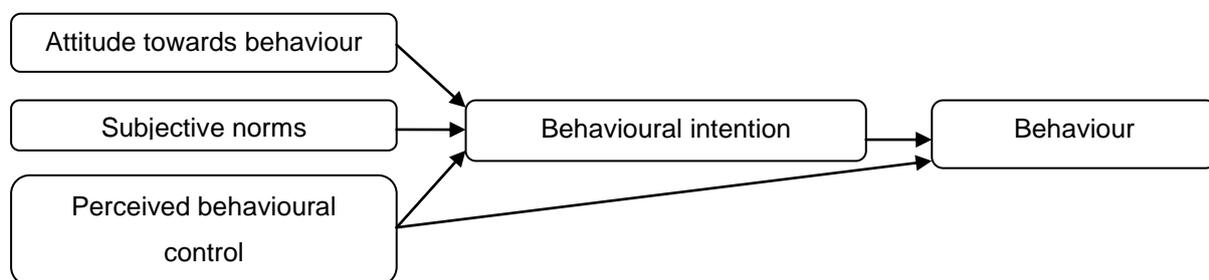
#### **2.4.4.1 Theory of reasoned action (TRA)**

The theory of reasoned action (TRA) is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them (Ajzen & Fishbein, 1980:5). Ajzen and Fishbein (1980:5) explain that people consider the implications of their actions before they decide whether or not to engage in a given behaviour and therefore called this "a theory of reasoned action". Powell and Ham (2008:472) elaborate that TRA as well as TPB (see section 2.4.4.2) contend that behaviour and behavioural intentions rely on a person's attitudes towards the behaviour,

their knowledge or beliefs related to the likely outcomes of that behaviour as well as on social norms and pressures. The attitudes towards the behaviour refers to the person's judgement whether performing the behaviour is good or bad (behavioural beliefs) and that the social pressures are only perceived perceptions and therefore the factor is termed *subjective norm* (Ajzen & Fishbein, 1980:6).

#### 2.4.4.2 Theory of planned behaviour (TPB)

As an extension of TRA, Ajzen's (1991) theory of planned behaviour (TPB) proposes that behavioural intentions are the most proximal determinant of behaviour and that three factors, attitude, subjective norms, and perceived control predict the behavioural intentions (Crisp & Turner, 2007:87; Sparks, 2007:1182).



**Figure 2.9: The theory of planned behaviour**

**Source: Adapted from Ajzen (1991:182) and Crisp and Turner (2007:87)**

As indicated in Figure 2.9, Ajzen (1988:4; 1991:188), Crisp and Turner (2007:87) and Powell and Ham (2008:472) explain that:

- *attitude* refers to the degree to which a person has a favourable or unfavourable evaluation of the behaviour in question;
- *subjective norm* (also known as locus of control) refers to the perceived social pressure to perform or not to perform the behaviour (the influence of others to engage in behaviour); and
- *perceived behavioural control* refers to the perceived ease or difficulty of performing the behaviour which is also presumed to reflect past experience as well as anticipated impediments and obstacles.

These three factors combine in an interactive manner to determine the behavioural intention and, in turn, determine the behaviour of a person (Crisp & Turner, 2007:87). The more favourable the attitudes, subjective norms and perceived control, the stronger the individual's intention to perform the behaviour (Ajzen, 1991:188). The theory also indicates that perceived behavioural control and behavioural intention can be used

directly to predict behaviour (Ajzen, 1991:184). Crisp and Turner (2007:88) explain that even though a person's attitudes might be positive, for example to stop smoking, and the person has support from family to stop smoking (subjective norm), the perceived control to think he or she actually can stop smoking might be low. Only perceived control can therefore be directly linked to behavioural intention as well as the actual behaviour.

Brock and Green (2005:51) point out that certain kinds of *attitudes* (i.e. direct experience and how accessible attitudes are from memory) and *situations* (i.e. absence of subjective norms and time pressure) relate to behaviour. It is therefore important to measure attitudes since these can predict behaviour and it is also important to know whether attitudes change in response to persuasion (Brock & Green, 2005:19). Ajzen (1991:206) explains that even though attitudes, subjective norms, perceived control and the intention to behave reveal different aspects of behaviour, each of these can serve as a point of attack to change behaviour.

#### 2.4.4.2.1 Attitudes and interpretation

Specific attention should be paid to attitudes within the interpretation context. As previously indicated, an attitude is a positive or negative evaluation of something (Ham, 2007:42). Attitudes are more enduring and have a tendency to respond in a given way; these responses can be cognitive (thinking), affective (feeling) and behavioural or conation (De Wet, 2010:43) as illustrated in Table 2.2.

**Table 2.2: Responses used to deduce attitudes**

Response mode	Response category		
	Cognition	Affect	Conation/behaviour
Verbal	Expressions of beliefs about attitude object	Expressions of feelings toward attitude object	Expressions of behavioural intentions
Non-verbal	Perceptual reactions to attitude object	Physiological reactions to attitude object	Overt behaviours with respect to attitude object

**Source: Adapted from Ajzen (1988:5)**

Table 2.2 indicates that there are three responses that can be understood from attitudes that can either be responded verbally or non-verbally. Ajzen (1988:5) explains that the first category (cognition) reflects perceptions and information about the attitude object

(for example littering in the park). A positive verbal cognition response may be that the tourists' beliefs are that littering is wrong and would be convinced by how well anti-littering programmes work; a positive non-verbal response may be that tourists will have a low threshold for positive stimuli and would appreciate anti-littering programmes. The second category (affective) reflects evaluations and feelings towards the attitude object (Ajzen, 1988:6). If tourists have a positive verbal affective response, tourists will have expressions of admiration, for example of the park that employs the anti-littering programme; a positive non-verbal response will be in the tourists' facial expressions or bodily reactions towards the anti-littering program such as an enhanced heart rate. The third response category (conation) refers to behavioural inclinations, intentions commitments, and actions with regard to the attitude object (Ajzen, 1988:6). Tourists with a positive verbal conation attitude will say they will participate in or plan to participate in anti-littering programmes under the appropriate circumstance. A positive non-verbal conation response of tourists would be to encourage other people to participate in, or indicate readiness to participate in the anti-littering programmes of the park.

Surely a negative response to all the cases presented above will definitely not, as the theory suggests, result in pro-conservation behaviour. This, within the interpretation context, is a daunting task to undertake. Within interpretation, it is questionable whether a pure educational programme that produces large increases in visitor knowledge would impact visitor's behaviour. Ham (2007:43) explains that the interpretation programme is much too brief to expect strong and enduring *attitude change*. The only things that this brief period of interpretation can induce is (i) strengthening certain attitudes that visitors already hold and (ii) bringing about a completely new attitude through new and fascinating ideas that the visitor has never considered (Ham, 2007:43). Ajzen (1991:206) explains that even though *attitudes*, *subjective norms*, *perceived control* and the *intention to behave* reveal different aspects of behaviour, each of these can serve as a point of attack to change behaviour.

It is thus not surprising that the direction is reversed that our attitudes can be created from observations of our own behaviour (Crisp & Turner, 2007:91). This is more clearly explained by the cognitive dissonance theory (see section 2.4.3.3.1). Hockenbury and Hockenbury (1998:409) explain that cognitive dissonance occurs in situations where our behaviour and attitudes are in conflict; in other words you are holding two conflicting

cognitions. Forcing tourists to participate in a recycling project to which they have a negative attitude may alter their negative attitude to a positive attitude. The negative attitude and forced participation towards conservation is seen as conflicting cognitions. In this scenario, the tourist cannot go back to change his/her behaviour and thus change their attitudes (positive towards conservation) to make it consistent with their behaviour. As Crisp and Turner (2007:91) explain, people feel bad when they perform an action that is inconsistent with their attitudes and avoid the dissonance and adapt their attitude to the behaviour. The one (e.g. attitude) therefore influences the other (e.g. behaviour) and can therefore not be seen in isolation.

## **2.5 GOALS OF INTERPRETATION**

There is no consensus on the number of potential goals of interpretation. However, a few authors (Lewis, 1980:31; Ham, 1992:4; Kuo, 2002:88; Ham *et al.*, 2005:3; Ward & Wilkinson, 2006:16) correspond on the following four goals:

- enhance visitor experience.
- protect resources.
- protect visitors from hazards.
- add to or broaden visitor's perspectives about place or idea.

Each of these goals is discussed in section 2.5.1 to 2.5.4 in more detail.

### **2.5.1 Enhance visitor experience**

The aim of travelling for each participant is the realisation of wanted and expected experiences (Rabotić, 2010:1158). Tourism is, in essence, a market place of experience and tourists provide the 'mental places' where the tourist experience happens (Volo, 2009:119). Interpretation in tourism is either a necessary component of the visitor experience (e.g. rules and regulations to guide tourists during their experience) or it is the experience (e.g. guided walks) (Moscardo, 1998:5; Kuo, 2002:95). Moscardo (1998:4; 1999:8) recommends three functions of interpretation activity that can contribute to the quality of visitor experience:

1. Directing where visitors go (known as hard interpretation).
2. Informing visitors about appropriate behaviour as well as visitor safety and comfort concerns (known as soft interpretation and also a goal of interpretation).
3. Creating the actual experience known as soft or primary interpretation.

Interpreters who create the actual experiences seek to fulfil recreational experiences with heightened appreciation, deeper understanding, and new ways of seeing the world (Chen, Hwang & Lee, 2006:1168). Periera (2005:1) adds that interpretation by a guide creates or shapes the experience for the tourist by differentiating one episode from another. Ballantyne *et al.* (2011:771) state that educational aspects (see section 2.4.3) in wildlife tourism experiences (such as a park) not only impact on visitor learning and subsequent behaviour, but are also an important contributor to visitor satisfaction with the experience. A study on tourists at several sites within the Panama Canal Watershed reported that interpretative inputs (brochures, maps, and visitor centres) contributed more to visitor's overall satisfaction than non-interpretative services (facilities like restrooms, parking areas and camping areas) and thus contribute more to the Panama Canal Watershed tourists' experience since it captures their enjoyment (Ham & Weiler, 2007:12). Therefore the interpretive service adds value to an experience that goes beyond visitors' satisfaction with the condition of physical infrastructure (Ham & Weiler, 2007:19). It is the meanings and relationships revealed to a tourist through interpretation that enriches their visits (Periera, 2005:2). The outcome of an enjoyable experience is only one perspective of satisfaction in individuals. Satisfaction can also let individuals perceive their actions to make a difference and therefore become a direct precursor to understanding conservation messages and any potential positive attitudes and behavioural intentions to conservation (Peake, Innes, & Dyer, 2009:110).

Memory (see section 2.4.3.3.2) allows individuals (tourists) to anticipate experiences as well as categorise dissimilar things that allow them to sort the 'anticipated experiences' into those they might seek and those they would avoid (Volo, 2009:120). Satisfaction is a function of expectations and disconfirmation, where tourists use prior expectations as a comparable standard (De Rojas & Camarero, 2008:527). Satisfaction has long been researched and is equally important in tourism interpretation. De Rojas and Camarero (2008:528) state that tourist satisfaction affects the intensification of the visit and tourists are suspected to prolong their stay which will result in the acquisition of material relative to their visit (maps) and miscellaneous souvenirs (key chains or pens). Lee (2009:741) found that satisfaction and the likelihood of future behaviour (like future visitation) increase in the context of high-quality interpretation services. Tourists may form new ideas from interpretation in the context of what they already know and think, and that the attitudes tourists form about them can be regarded as a first impression and thus

contributing to the visitor's experience (Ham, 2007:43). Lee *et al.* (2010:7705) found in their study of bird-watching, that being able to experience the biodiversity through wildlife viewing may increase tourists' willingness to pay for biodiversity and also be willing to pay for interpretive guides. If the interpretation services provided to tourists deliver a satisfactory experience the chances therefore may be that tourists will return their visit at that particular destination (or product) and be willing to pay for other interpretive experiences as well.

### **2.5.1.1 Authentic tourism experience**

The use of authenticity in the tourism context came to light with the work of Trilling (1972) who researched the 'authenticity' of art (whether they are what they appear or claimed to be) within a museum to determine whether the prices asked are worth the admiration that is being given. Thereafter this museum-link was extended to other tourism contexts like festivals, rituals and cuisine (Reisinger & Steiner, 2006b:67) which can be described as authentic or inauthentic based on the criterion of whether they are made or enacted (Wang, 1999:350). The term authenticity within the tourism context is however quite difficult to explain.

Authenticity in tourism can be differentiated into two separate issues that are often confused as one, namely (i) tourist experience (a human attribute that refers to one's true self or being true to one's essential nature), and (ii) toured objects (genuineness or realness of artefacts or events) (Wang, 1999:35; Steiner & Reisinger, 2006:299). Further research has however concluded that the concept related to genuineness of objects should be abandoned because of the different values and perspectives on authenticity and activities that are contradictory and irreconcilable (Reisinger & Steiner, 2006b:66). Wang (1999:349) debates that critics question the usefulness and validity of authenticity in tourism since tourists' motivations and experiences cannot be explained in terms of the conventional concept of authenticity. Authenticity has much more to do with the significance and revealing of meanings as the definition of interpretation suggests. The different interpretation definitions indicate the potential of interpretation to facilitate and encourage authentic tourism (Reisinger & Steiner, 2006a:487) and hence may lead to an interesting visit and the potential to be value for money. Even though this might be plausible, little research to date has examined these aspects.

Chambers (2009:355) points out that the interpretation of tourism places has begun to move from authenticity (one real thing or story) to a respect for significance (varied and often competing meanings of a tourism object representing different stakeholders' interests). Wang (1999:365-366) concludes that what tourists seek in nature-based tourism are their own authentic selves and inter-subjective authenticity, and the issue of whether the toured objects are authentic is irrelevant or less relevant. Tourists who therefore opt for authentic tourism are in a quest for personal experience (Reisinger & Steiner, 2006:495) and consequently refer to an authentic tourist experience. The second goal of interpretation is the protection of resources.

### **2.5.2 Protect resources**

One way of reducing the negative impacts on the environment is the adaption of ecotourism principles (Madin & Fenton, 2004:122). Orams (1995:92) argues that an effective interpretation programme may be a means by which nature-based tourism can truly become ecotourism. Kuo (2002:87) states that the quality of resources is often the key element in providing visitors with a rewarding and enjoyable time and therefore the management of visitor activities is as important as the management of resources. Managing visitor activities can be done by providing soft interpretive information (i.e. educational aspects) to support hard visitor management strategies at resource-sensitive tourism destinations (Kuo, 2002:88-89). Moscardo (1998:6-7) claims that interpretation, as part of visitor management, influences where visitors go, provides a substitute experience, informs visitors about appropriate behaviours and develops visitor concern. Ham and Weiler (2006:2) also indicate that interpretation can assist tourists to become aware of, appreciate and understand the site they are visiting and lead them to responsible use. Therefore proper use of park facilities or resources is promoted to reduce behaviour that threatens protected values (Ham & Weiler, 2006:2). Ballantyne *et al.* (2011:777) found that the emotional response caused by interpretation, provoked deeper thought, leading to a concern and respect for the species in the wildlife context as a whole. In addition, Zeppel and Muloin (2008:285) found that the on-site benefits of increased understanding or emotional responses to (marine) wildlife encounters can lead to off-site benefits such as greater environmental awareness, supporting nature conservation work and protecting endangered species. Since interpretation may lead to emotional responses (attitudes), the same off-site benefits can be anticipated for interpretation of wildlife. Zeppel and Muloin (2008:285-286) state that these (marine) wildlife encounters include learning (which is also a component of

interpretation) and thus contributes to pro-environmental attitude and behaviour change (another component of interpretation), and the longer term intention to engage in conservation actions that benefit (marine) wildlife and environments. The above discussion can be better understood as tourists becoming mindful (see section 2.4.2). Since interpretation can also be classified as hard interpretation by restricting where people may go (Kuo, 2002), interpretation can also influence the carrying capacity of an area (Wearing & Neil, 2009:92). The third goal of interpretation is to protect visitors from hazards.

### **2.5.3 Protect visitors from hazards**

Ham and Weiler (2006:2) state that tourists unknowingly behave in ways that threaten their own comfort and safety. Tourists might be attacked by animals since they detect that the tourists have food, because the tourists might have moved too quickly and frightened the animals, some animals even interpret staring as a provocation or challenge, and others respond aggressively to tourists retreating rapidly (Orams, 2002:285). In the Tasmanian thematic interpretation planning manual, Ham *et al.* (2005:9) explain that, in the same way in which tourists lack knowledge about the impacts of their visit on the environment, they also lack knowledge about the ways in which the place can impact on them. National parks therefore need to enforce certain rules and regulations to restrict tourist actions, access, times and numbers which are communicated through signs, notices and included in written material (Orams, 1996:43). These signs or notices serve as reminders to tourists about the dangers they may be unaware of and will not only make a difference in the quality of their experience but will also make a difference in the unfortunate case of a law suit or legal dispute (Ham *et al.*, 2005:9). Kuo (2002:91) explains that restrictions on visitor activities could be perceived as negative and may influence the experience. However, the purpose of these restrictions needs to be communicated to the tourists as they might be more supportive for the resource protection on the site. Moscardo (1999:10) explains that messages should also be directed not only to safety issues but comfort as well. Moscardo (1999:10) adds that simple advice such as the use of mosquito repellent on a boardwalk can make a large difference in the quality of the visitor's experience (see section 2.5.1).

The fourth goal of interpretation is to add or broaden visitors' perspective about a place or idea.

#### **2.5.4 Add to or broaden visitor's perspectives about a place or idea**

Interpretation is frequently used in national parks to inform tourists about the significance or meanings of what the tourists are experiencing (Reisinger & Steiner, 2006a:485). Periera (2005:1) explains that the naturalist guide connects the tourist with the place they are visiting by assisting their understanding and appreciation of that particular place in both the local and global context which affects the tourist to become more aware of cause and effect of their behaviours. Interpreters fill tourists' experience with a heightened appreciation, deeper understanding, and new ways of seeing the world (Chen *et al.*, 2006:1168). Interpretation is a means of tourism management that encourages comprehension, positive impression and admiration while explaining the importance of various natural and cultural attractions at the destination (Rabotić, 2010:1161). Interpretation could let tourists understand the role of a fire (which seems to block their view, an inconvenience or even threaten their perceived safety) in maintaining species, structures and processes and thus vital to the environment (Shultis & Way, 2006:232).

Stewart *et al.* (1998:264) examined the extent of place and interpretation at the Mount Cook National Park and found that, although tourists did not express a traditional sense of place, visitors did express a deep appreciation for the place that they did not have prior to their visit. Powell and Ham (2008:484), on the other hand, examined the Galapagos National Parks' interpretive communication strategy on tourist's knowledge and found that the experience not only influenced the knowledge positively but was also capable of increasing tourists' philanthropic support of conservation towards protected areas. Periera (2005:4) explains that interpretation helps the tourists to see a connection between the place they are visiting and their own practices at home. On-site benefits of increased understanding (to marine wildlife encounters) can lead to off-site benefits such as greater environmental awareness, support of nature conservation work and the protection of endangered species (Zeppel & Muloin, 2008:285). It is, however, very important that interpretation encourages tourists to think deeply about what they have seen or experienced at the destination to make a personal response (Ballantyne *et al.*, 2011:777).

## **2.6 CONCLUSION**

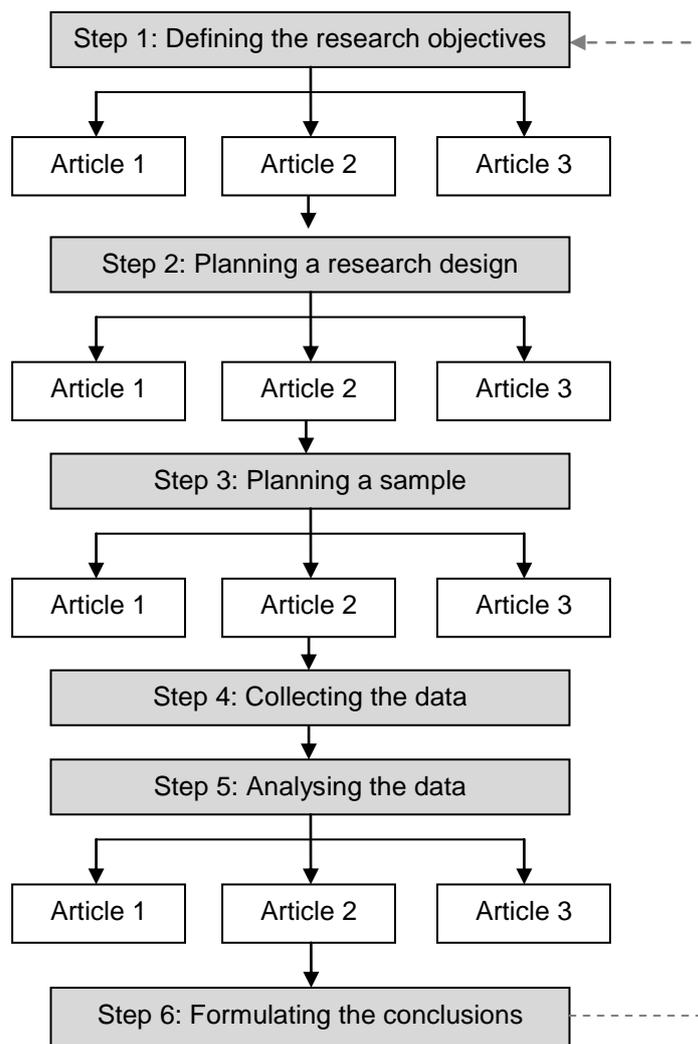
The aim of this chapter was to conduct a literature analysis on the components, theories and goals of interpretation in ecotourism products. This was accomplished by making

use of the conceptual framework used in Chapter 1 to progressively discuss each component and related theories. What was apparent from this chapter, as well as Chapter 1, is that a great deal of interpretation research only reports on one type (such as field guides or podcasts) or component (such as education or persuasive communication) of interpretation. As a result, this chapter combined and explained the functioning of all related components and theories. Moreover, there is a lack of interpretation literature available for the focus of this study - the Kruger National Park. After the method of research chapter (i.e. Chapter 3), the subsequent chapters (i.e. Chapters 4 to 6) will aim to address this literature gap.

# CHAPTER 3: METHOD OF RESEARCH

## 3.1 INTRODUCTION

The aim of this chapter is to provide insight into the research process of this thesis. This thesis is based on an article approach (i.e. three chapters are written in article format) and hence many of the methodological aspects are not covered in much detail in these articles. This chapter therefore examines all relevant research considerations as depicted in Figure 3.1.



**Figure 3.1: Stages of the research process**

*Adapted from: Zikmund et al. (2010:62)*

Figure 3.1 indicates that there are six steps in the research process. This process starts with the research objectives which determine the research design and sample, collecting the data, analysis of the data to realise the objectives and, finally, formulating

conclusions. Each step of the research process is covered in detail in the sections that follow.

## **3.2 STAGES OF THE RESEARCH PROCESS**

This chapter addresses the steps of the research process steps by providing relevant methodological considerations not covered in the following three chapters or articles (e.g. literature for the development of the questionnaire and the motivation for the use of specific data analysis techniques). Since this thesis follows an article approach, some of the research steps provided in Figure 3.1 have been amended to incorporate the article's aspects. For publication purposes, each article is seen in isolation but, in order to address the primary aim of the thesis, the articles should be considered in combination.

### **3.2.1 Step 1: Defining the research objectives**

To address the purpose of this thesis, each chapter can be viewed as a piece of the problem to be solved. Chapter 1 identified the overall goal of the thesis as well as relevant objectives to achieve this particular goal and, in fact, represent the chapters of this thesis. The objectives stated in Chapter 1 are therefore the goals of the following chapters that, in turn, have sub-objectives (i.e. objectives within the chapter) to achieve the goal of the chapter and consequently the overall goal of the study. Since an article has limited space, Chapter 3 provides the supplementary information not covered in the articles in step 5 (data analyses) of this chapter. It is important to read this chapter in combination with the three articles (i.e. Chapters 4 to 6) to understand the methodological considerations and processes conducted in the articles. The last chapter (i.e. Conclusions and Recommendations) should also be read in combination with the articles as this chapter is based on the findings in the articles and therefore provides relevant implications and suggestions that address the aim of the study. Figure 3.2 provides an illustrative representation of the goals, objectives and sub-objectives discussed.

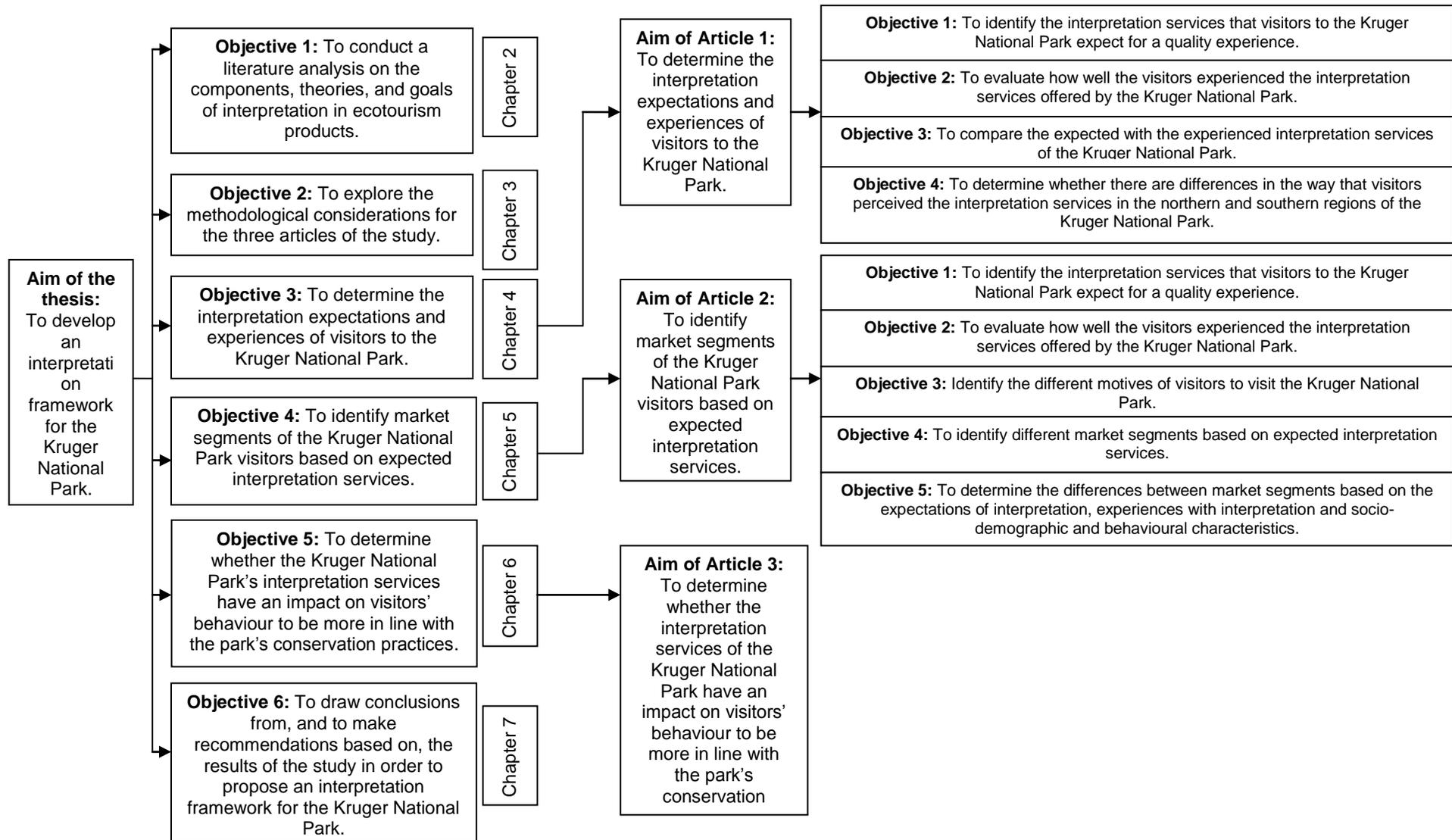


Figure 3.2: Schematic representation of the goals, objectives and sub-objectives of the study

### 3.2.2 Step 2: Planning research design

This study used quantitative research defined by Maree and Pietersen (2007a:145) as a process that is systematic and objective in its ways in using numerical data from only a selected subgroup of a universe (or population) to generalise the findings to the universe being studied. A conclusive rather than exploratory research design was followed where data was collected from the given sample or population at a single point in time (i.e. single cross-sectional design) (Malhotra, 2007:79, 84; Zikmund *et al.*, 2010:197). Data were collected through a survey as a large number of responses regarding visitors' stay at the Kruger National Park were needed (refer to 3.2.3). A questionnaire (rather than interviews) was specifically used to limit the amount of intrusion on the visitors' leisure. The fact that visitors completed the questionnaire in their own time also increased their willingness to participate. Not only are surveys simple to administer, but the data collected are structured in a fixed-response manner that reduces the variability in results as well as simplifying coding, capturing and analysis (Malhotra, 2007:183). The following sections discuss the literature considerations in the design of the questions used for this study.

#### 3.2.2.1 Literature considerations for the development of the questionnaire

The focus of this study was based on Section B of the questionnaire that focused on interpretation services. This section had three Likert scale questions pertaining to (i) expected interpretation services, (ii) experience with interpretation services, and (iii) behaviour as a result of the interpretation in the park as discussed in the sections below.

##### 3.2.2.1.1 Interpretation (Questions 14)

To identify whether the Kruger National Park has some difficulty with their current interpretation services, the questions were formulated by making use of (i) a five-point Likert scale (on the left) which asked the respondents to indicate how important the interpretation variable is for a quality experience in the Kruger National Park (i.e. **expectations**), where 1 = extremely important and 5 = not at all important; and (ii) a five-point Likert scale (on the right) asked the respondents to indicate how well they have **experienced** the particular interpretation variable in the Kruger National Park, where 1 = excellent and 5 = very poor.

**Table 3.1: Types of interpretation variables included in questionnaire**

Q's	Question/variable	Based on author(s)
14.1	Information centres and interpretation centres in specific rest camps	Kuo (2002); Orams (1996); Ward and Wilkinson (2006)
14.2	Identification of trees, e.g. name plates or information boards	Stewart <i>et al.</i> (1998); Ward and Wilkinson (2006)
14.3	Lookout points in the park	Kuo (2002); Orams (1996)
14.4	Bird hides in the parks	Kuo (2002); Orams (1996)
14.5	Auditorium with nature videos	Tilden (1977); Stewart <i>et al.</i> (1998)
14.6	Interpretation activities e.g. slide shows, informative sessions and specialist talks	Tilden (1977); Stewart <i>et al.</i> (1998); Ward and Wilkinson (2006)
14.7	Geological and climatologically displays	Kuo (2002); Orams (1996); Stewart <i>et al.</i> (1998); Ward and Wilkinson (2006)
14.8	Educational displays	Tilden (1977); Stewart <i>et al.</i> (1998); Ward and Wilkinson (2006)
14.9	Information regarding the history of the park	Kuo (2002); Orams (1996); Ward and Wilkinson (1996)
14.10	Educational talks, activities and games for children	Tilden (1977)
14.11	Information boards regarding the fauna/flora of the park	Tilden (1977)
14.12	Informed staff who can handle any queries concerning the interpretation aspects in the park	Tilden (1977); Kuo (2002); Orams (1996)
14.13	Information regarding interpretation in the park available on the web	Kuo (2002); Orams (1996)
14.14	Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio	Kuo (2002); Orams (1996)
14.15	Good layout of the park	Kuo (2002); Orams (1996)
14.16	Accessibility of the park	Kuo (2002); Orams (1996)
14.17	Available route maps with descriptive information	Kuo (2002); Orams (1996)
14.18	Clear directions to rest camps and picnic areas	Kuo (2002); Orams (1996)
14.19	Enforcement of park rules and regulations	Kuo (2002); Orams (1996)
14.20	Interactive field guides on game drives and guided walks	Kuo (2002); Orams (1996); Tilden (1977); Ward and Wilkinson (2006)
14.21	Information boards with animal tracking	Tilden (1977); Ward and Wilkinson (2006)
14.22	Available books, brochures, information pamphlets and park guides (for animals, insects, birds and trees)	Stewart <i>et al.</i> (1998); Ward and Wilkinson (2006)
14.23	Lifelike examples of different animals, insects, birds and trees with descriptive data	Tilden (1977)
14.24	Authenticity of interpretation	Tilden (1977)

**Source: Author's own compilation based on literature**

With all the different types of classifications of interpretation available in literature it is unclear which classification of interpretation should be referred to. As a result, Section B incorporated all the possible interpretation examples (i.e. variables) that can be found in a park (not necessarily available in the Kruger National Park) as illustrated in Table 3.1. Factor analysing these variables (refer to Chapter 4) identified what the different variables of each factor have in common and reveal the classification to be used for this particular study.

### 3.2.2.1.2 Behavioural change (Question 15)

To cover the scope of interpretation (i.e. content validity), Question 15 in Section B of the questionnaire focused on questions pertaining to behavioural change (see Table 3.2). The variables in Table 3.2 were predominantly used for the purpose of Chapter 6 (i.e. Article 3) for structural equation modelling. Refer to Appendix A for the questionnaire.

**Table 3.2: Types of behavioural change variables included in questionnaire**

Q's	Question/variable As a result of good interpretation...	Based on author(s) and their findings	
15.1	"I am more willing to support conservation efforts"	Lee <i>et al.</i> (2010:7705)	Being able to experience the biodiversity through wildlife viewing may increase tourists' willingness to pay for biodiversity and are also willing to pay for interpretive guides.
		Powel and Ham (2008:484)	The interpretation strategy had a significant influence on visitor knowledge, attitudes towards conservation, awareness of conservation, intentions to engage in a range of general environmental behaviours, and attitudes and intentions towards specific philanthropic activities.
15.2	"I implement recycling and energy saving methods at home to lessen my impact on the environment"	Orams (1994:30)	Tourists may learn through observing the tourism destination as a role model that adopts environmentally sound practices such as waste disposal strategies and the training of staff to conduct themselves in an environmentally responsible manner.
		Periera (2005:4)	Interpretation helps the tourists to see a connection between the place they are visiting and their own practices at home.
		Powel and Ham (2008:484)	The interpretation strategy significantly impacted the intentions related to pro-conservation behaviours (i.e. donating money to organisations concerned with conservation, writing letters to government about

Q's	Question/variable As a result of good interpretation...	Based on author(s) and their findings	
			the environment, joining organisations concerned about the environment, avoiding the purchase of certain products because of the product's impact on the environment, recycling, reading about the environment, voting for officials who support environmental protection, attending meetings in community about the environment).
15.3	"I developed a sense of care for the well being of animals and plants by participating in the interpretation activities in the park"	Chen <i>et al.</i> (2006:1168)	Interpreters fill tourists' experience with a heightened appreciation, deeper understanding, and new ways of seeing the world.
Stewart <i>et al.</i> (1998:264)		Interpretation accelerates the process of developing an appreciation for the place they are visiting.	
Henker and Brown (2011:19)		Being in the park heightened the sensitivity to emotional and stewardship elements of interpretation.	
15.4	"I regularly think about my park experience"	Ballantyne <i>et al.</i> (2011:776)	Experiencing a sense of awe, wonder, excitement and privilege contributed to visitors' emotional arousal and producing enduring memories.
De Rojas and Camarero (2008:533)		Interpretation allows the visitor to understand, feel and relive the heritage.	
15.5	"My park experience was more authentic (contact was fun, participatory and immediate)"	Reisinger and Steiner (2006a:495)	Tourists who therefore opt for authentic tourism is in a quest for personal experience.
Orams (1996:39)		Visitors generally respond emotionally to viewing and/or interacting with animals.	
15.6	"I became more interested in learning about environmental issues"	Frauman and Norman (2004:382)	Provide mindfully orientated services and activities not only to capture the attention of the mindful tourists but also potentially inducing mindfulness in those tourists who may not be very mindful.
Tubb (2003:480)		Simply presenting information is not enough; visitors need to be stimulated to search for new information and encouraged to actively process information.	
Madin and Fenton (2004:132)		Visitors reported greater knowledge following exposure to the interpretive programme than visitors who did not have exposure.	

Q's	Question/variable As a result of good interpretation...	Based on author(s) and their findings	
15.7	"I do volunteer work for groups who help the environment"	Zeppel and Muloin (2008:285)	On-site benefits of increased understanding (to marine wildlife encounters) can lead to off-site benefits such as greater environmental awareness, support of nature conservation work and the protection of endangered species.
Powel and Ham (2008:484)		The interpretation strategy significantly impacted the intentions related to pro-conservation behaviours (i.e. donating money to organisations concerned with conservation, writing letters to government about the environment, joining organisations concerned about the environment, avoiding the purchase of certain products because of the product's impact on the environment, recycling, reading about the environment, voting for officials who support environmental protection, attending meetings in community about the environment).	
De Rojas and Camarero (2008:534)		If the visitor is offered adequate interpretation it may increase their ability to preserve the heritage.	
15.8	"I actively search for information about environmental conservation"	Moscardo (1999:26)	Mindful tourists are more likely to learn from the interpretation and be interested in discovering more about a topic of the destination.
Tubb (2003:480)		Simply presenting information is not enough; visitors need to be stimulated to search for new information and encouraged to actively process information.	
Powel and Ham (2008:484)		The interpretation strategy significantly impacted the intentions related to pro-conservation behaviours (i.e. donating money to organisations concerned with conservation, writing letters to government about the environment, joining organisations concerned about the environment, avoiding the purchase of certain products because of the product's impact on the environment, recycling, reading about the environment, voting for officials who support environmental protection, attending meetings in community about the environment).	
15.9	"I watch more environmental programmes on television"	Powel and Ham (2008:484)	The interpretation strategy significantly impacted the intentions related to pro-conservation behaviours (i.e. donating money to organisations concerned with conservation, writing letters to government about the environment, joining organisations concerned about the environment, avoiding the purchase of certain products because of the product's impact on the environment, recycling, reading about the environment, voting for officials who support environmental protection, attending meetings in community about the environment). It may also include that visitors will watch more environmental programmes on television as well.

Q's	Question/variable As a result of good interpretation...	Based on author(s) and their findings	
15.10	"I have a stronger viewpoint on conservation issues"	Ajzen (1988:5)	A positive verbal cognition response may be that tourists' beliefs are that littering is wrong and would be convinced by how well anti-littering programmes work.
Ballantyne <i>et al.</i> (2007:379)		Learning about the environment made visitors receptive of conservation messages and enhanced their experiences.	
Orams (1994:31)		Suggests that a sense of personal responsibility about issues should be created as an important component in developing interpretation.	
15.11	"My children are more knowledgeable"	Lee and Balchin (1995:283)	The aim of interpretation in psychological terms is to achieve learning.
Orams (1994:22)		Interpretation is an education based management strategy	
Ward and Wilkinson (2006:150)		Youth is the most important population to target with interpretation services and need to consider special needs and issues that are not pertinent in adult programmes.	
15.12	"I tend to visit more nature-based products"	Thorndike (1911)	The Law of Effect which states that behaviours that were followed by a satisfying effect were more likely to be repeated.
15.13	"I have a better understanding of SANParks' conservation efforts"	Kuo (2002:91)	Restrictions on visitor activities could be perceived as negative and may influence the experience, however the purpose of these restrictions needs to be communicated to the tourists as they might be more supportive for the resource protection on the site.
Madin and Fenton (2004:133)		As a result of specific interpretation activities' participation, visitors' perceptions of human impacts on the environment increased.	
Tubb (2003:495)		As a result of knowledge gained from the interpretation services, visitors can predict consequences of their actions in future and see the connections between their behaviour and the problems facing the park.	
15.14	"I encourage family and friends to be more conscious about conservation"	Ajzen (1988:6)	A positive non-verbal conation response of tourists would be to encourage other people to participate.
15.15	"I had a better experience/level of satisfaction at the	Ajzen (1988:5)	A positive verbal cognition response may be that the tourists' beliefs are that littering is wrong and would be convinced by how well anti-littering programmes work.
Ballantyne <i>et al.</i>		Educational aspects in wildlife tourism experiences (such as a park) not only impact on visitor learning	

Q's	Question/variable As a result of good interpretation...	Based on author(s) and their findings	
	park”	(2011:771)	and subsequent behaviour, but are also an important contributor to visitor satisfaction with the experience.
		De Rojas and Camarero (2008:533)	Visitor interpretation experiences in cognitive as well as emotional aspects of the interpretation are bases for satisfaction.
		Ham and Weiler (2007:19-20)	Satisfaction with interpretation exerted a positive influence on the tourist experience. Satisfaction with interpretation contributed more to the overall experience than non-interpretive facilities.
		Lee (2009:741)	Interpretation services significantly affect satisfaction.
		Mitsche <i>et al.</i> (2008:425)	Interpretation provision has a direct influence on overall visitor experience satisfaction
15.16	“I am a more loyal supporter of parks”	Thorndike (1911)	The Law of Effect which states that behaviours that were followed by a satisfying effect were more likely to be repeated.
		De Rojas and Camarero (2008:534)	If adequate interpretation is provided the visitors may increase the possibility that the visitors will spend more time at the destination, buy souvenirs and encourage other people to visit.
		Hwang <i>et al.</i> (2005:152)	A positive, significant relationship exists between interpretation satisfaction and place attachment (i.e. symbolic and emotional expressions).
		Lee (2009:741)	Interpretation services influence future behaviour (i.e. intent to visit again, likelihood of choosing the destination in future, recommending the destination to others and relaying positive word-of-mouth to other potential visitors).
15.17	“I have the confidence to express my views concerning conservation on the social media and in conversations”	Ajzen (1988:5)	A positive verbal cognition response may be that the tourists’ beliefs are that littering is wrong and would be convinced by how well anti-littering programmes work.
		Powel and Ham (2008:484)	The interpretation strategy significantly impacted the intentions related to pro-conservation behaviours (i.e. donating money to organisations concerned with conservation, writing letters to government about the environment, joining organisations concerned about the environment, avoiding the purchase of certain products because of the product’s impact on the environment, recycling, reading about the environment, attending meetings in community about the environment).

**Source: Author’s own compilation based on literature**

### 3.2.3 Step 3: Defining a sample

A probability sampling method, random sampling, was applied to conduct the survey which, according to Maree and Pietersen (2007b:172), means that each element in the population has a known, non-zero probability of being selected and completely random. There are a few guidelines or rules of thumb to determine the required sample size for a study. The following sections explain these guidelines or rules of thumb in more detail.

#### 3.2.3.1 Sample size formula

The most obvious way of determining sample size is by means of a sample size formula such as Krejcie and Morgan's (1970:607) sampling formula.

$$s = [x^2NP(1 - P)]/[d^2(N - 1) + x^2P(1 - P)]$$

This formula indicates that:

- **s** is the required sample
- **X<sup>2</sup>** the table value of chi-square for 1 degree of freedom at the desired confidence level (i.e. 3.841)
- **N** the population size
- **P** the population proportion (.50)
- **D** the degree of accuracy expressed as a proportion (.05) (i.e. the confidence level).

As each chapter had different goals and objectives, the sampling was tailored for each chapter. Chapters 1 and 4 needed sampling to be calculated for both the northern - (i.e. phase 2) and southern regions (i.e. phase 1). Chapters 5 and 6, however, made use of the responses of both phases (i.e. regions) to calculate samples.

#### 3.2.3.2 Normal distribution

Normal distribution of data is important in determining which analysis technique to use (see 3.2.5) and occurs with a sample of at least  $n = 30$  or more (Malhotra, 2007:367; Hanna & Dempster, 2012:153). Responses less than 30 therefore are

insufficient for statistical analysis. (Refer to 3.2.5.1 for the discussion of the central limit theorem).

### 3.2.3.3 Testing validity and reliability for factor analysis

According to Gerber and Hall (2013:33-34) the following rules of thumb in Table 3.3 are applied to calculate the required sample size to test validity and reliability of a factor analysis.

**Table 3.3: Rules of thumb for required sample size to calculate validity and reliability of a factor analysis**

	Validity	Reliability
<b>Rule of thumb</b>	Multiply the number of Likert scale levels by the total number of questions in the scale	Multiply the number of Likert scale levels by the number of questions per dimension
<b>Applied to this study</b>	<ul style="list-style-type: none"> <li>Likert scale with the largest number of items: Expected/ experienced interpretation</li> <li>Levels: 5</li> <li>Total number of questions: 24</li> </ul> <p><math>5 \times 24 = 120</math> completed questionnaires</p>	<p>Since this study aimed to explore the underlying structure of the data to see which classification of interpretation to use, the questions pertaining to a dimension cannot have been determined beforehand.</p> <p>A rule of thumb is that a dimension should consist of at least 5 questions.</p> <p>Therefore:</p> <ul style="list-style-type: none"> <li>Levels: 5</li> <li>Questions per dimension: 7</li> </ul> <p><math>5 \times 7 = 35</math> completed questionnaires.</p> <p>[The study however revealed that the largest number of questions to a dimension was 12 items and therefore <math>12 \times 5 = 60</math> completed questionnaires.]</p>

**Source: Adapted from Gerber and Hall (2013:33-34)**

### 3.2.3.4 Type of analyses

The number of responses required can also be determined from the type of analysis that will be conducted. The following table provides a rule of thumb of responses needed for the type of analysis to be conducted.

**Table 3.4: Observations needed for statistical analysis**

Analysis	Rule of thumb	Calculation for this thesis
Chi-square test	The expected or theoretical frequencies in any of the cells should be at least 5	Two largest nominal/ordinal categories: Province (9 categories) and Income (7 categories)  $9 \times 7 \times 5 =$ at least 315 questionnaires needed
Factor analysis	At least five times more observations as there are variables	Largest number of variables on Likert scale: 24  $24 \times 5 =$ at least 125 questionnaires needed
Cluster analysis	According to Dolnicar <i>et al.</i> (2014):  The sample size should at least be 70 times the number of variables used for clustering.	All expected interpretation variables: 24  $70 \times 24 = 1680$  Surrogate expected variables / expected factors: 3  $70 \times 3 = 210$
	According to Qiu and Joe (2014):  At least 10 times the number of variables times the number of clusters [10. <i>d</i> . <i>k</i> ] <i>d</i> = number of variables <i>k</i> = number of clusters.	The authors do not provide a justification for this recommendation and furthermore the number of clusters is also not known in advance (Dolnicar <i>et al.</i> , 2014:298). Even though this rule of thumb illustrates some dilemmas, this recommendation is also calculated:  All expected interpretation variables: 24 $10 \times 24 \times 4 = 960$  Surrogate expected variables / expected factors: 3 $10 \times 3 \times 4 = 120$
	According to Formann (1984):  At least $2^d$ respondents <i>d</i> = number of variables.	This recommendation is provided, however, for a specific context (i.e. goodness of fit) and hence the sample size only applies to model selection and not model estimation (Dolnicar <i>et al.</i> , 2014:298).

Analysis	Rule of thumb	Calculation for this thesis
Correlations	Correlation coefficients become an adequate estimator of the population correlation coefficient when sample size reaches a minimum of 100-200.	
Structural equation modelling	200-400 completed observations; 100 completed observations for small, normally distributed samples. $\leq 5$ constructs, each more than three measured variables and communalities of at least 0.5-0.6, $n=100-200$ ; $\leq 7$ constructs, no under-identified constructs and modest communalities (.5), $n=150$ ; $\leq 5$ constructs, with less than three measure variables or communalities less than 0.5, OR $\leq 7$ constructs, multiple under-identified constructs and lower communalities (.45), $n=300$ ; $> 5$ constructs, less than three measure variables, and multiple low communalities, $n=400-500$ .	

**Source: Adapted from Formann (1984) as cited by Dolnicar, Grün, Leisch and Schmidt (2014:298); Guadagnoli and Velicer (1988:256); Malhotra (2007:475; 613); Qiu and Joe (2014); Hair et al. (2010:662); Hoyle (2011:43;72); Malhotra et al. (2013:717); and Dolnicar et al. (2014:302).**

As indicated in Table 3.4, the largest sample size required is specified by the correlation and structural equation modelling analysis to thus provide significant results for the Kruger National Park. Seeing as this study had a sample of  $n = 855$  the acquired sample is more than sufficient for meaningful analyses.

### 3.2.4 Step 4: Collecting the data

Collecting data for this study refers to two aspects: (i) fieldwork and (ii) capturing the data.

#### 3.2.4.1 Fieldwork

This study was done in close collaboration with TREES from the North-West University, Potchefstroom Campus, which was responsible for selecting fieldworkers for both phases of this study. These fieldworkers were registered as Tourism Honours students who were familiar with the code of conduct of research as these fieldworkers were exposed to either an undergraduate or honours level research module. Nevertheless, fieldworkers were still briefed before the fieldwork on appropriate contact with visitors, explaining the aim of the questionnaire, discussing the content of questions, as well as being instructed to communicate the time to complete the questionnaire, voluntary participation, and anonymity to respondents who would potentially fill in the questionnaire. In both phases, the researcher and

fieldworkers were allocated to a specific area of each rest camp to distribute an even number of questionnaires to all types of accommodation facilities. As the distribution of questionnaires progressed throughout the park and especially for the second phase of distribution, fieldworkers were also instructed to distribute a questionnaire to an overnight visitor who has not yet completed the questionnaire previously.

### 3.2.4.2 Capturing data

Data were captured during the weeks of fieldwork to supervise the fieldworkers' progress and to address necessary issues. The researcher therefore had control over the sample representation and could also measure the number of inappropriate questionnaires (e.g. incomplete or falsified questionnaires) by instructing fieldworkers to obtain more questionnaires to compensate for questionnaires lost.

### 3.2.5 Step 5: Analysing the data

Before the analyses are explained, the general assumptions for analysis techniques should be investigated (see Table 3.5).

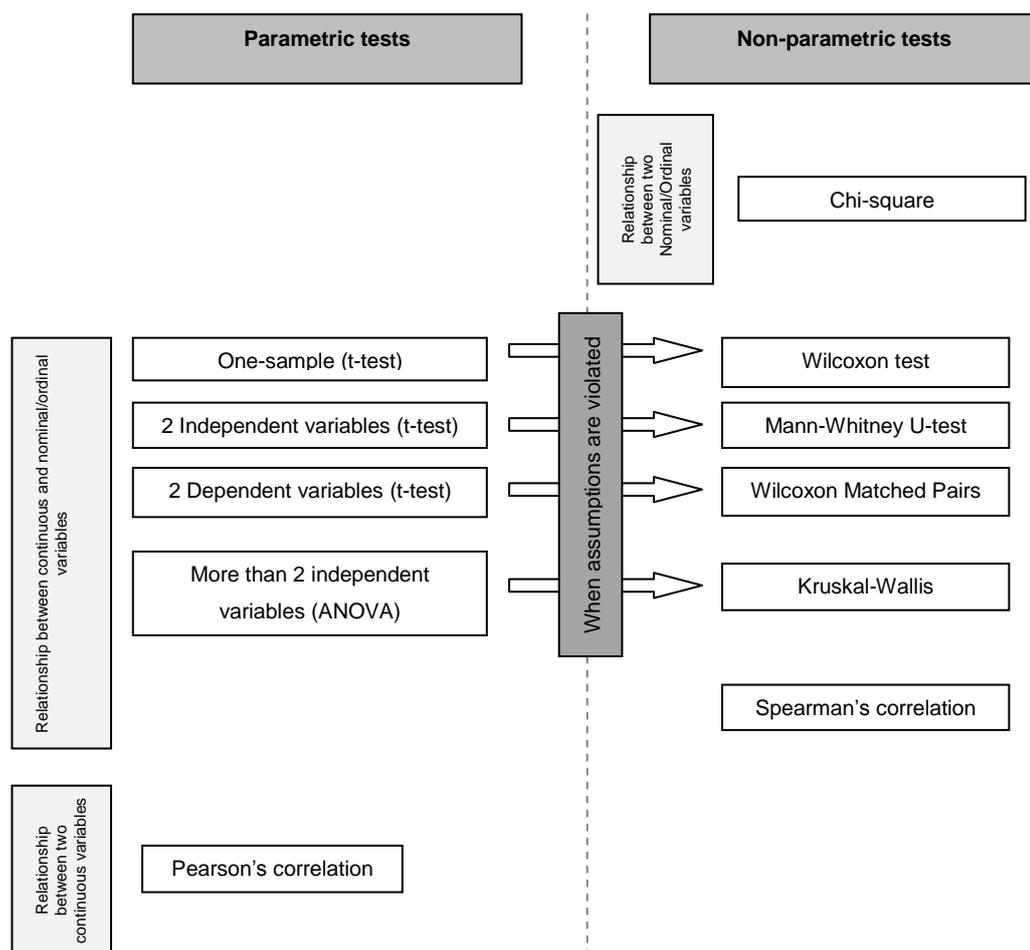
**Table 3.5: Assumptions for data analyses**

Assumptions	Parametric techniques*			Other analyses			
	T-Tests	ANOVA	Correlation	EFA	Cluster analysis	Structural equation modelling	
							CFA
Measurement	x	x	x	x			x
Normally distributed (see central limit theorem)	x	x	x			x (small samples)	
Independence	x	x	x				
Homogeneity of variance	x	x	x				
Sample representativeness					x		
Multicollinearity					x		
Reliability				x			x
Validity				x			x

\*Only techniques used in this thesis included in the table above

**Source: Adapted from Hair et al. (2010:526; 695); Hoyle (2011:43); and Pallant (2011:183; 206-207)**

Table 3.5 indicates the assumptions of the various analysis techniques used for this study. An important probability distribution in statistics is called the **normal distribution** (Pietersen & Maree, 2007b:198) since it is central to the calculation of probability statements about the null hypothesis when conducting statistical tests (Hanna & Dempster, 2012:139). It is particularly important for determining the statistical technique since parametric techniques assume that data is normally distributed (Pallant, 2011:111). If data is not normally distributed, the researcher should convert to non-parametric techniques for analyses. Figure 3.3 provides the parametric and alternative non-parametric tests.



**Figure 3.3: Parametric and non-parametric techniques**

**Source: Adapted from Pallant (2011:204)**

Figure 3.3 indicates possible data analyses for the data. This figure also illustrates the **measurement** (i.e. the type of question) assumption captured in Table 3.5. The chi-square test can be used to investigate relationships between nominal/ordinal with

nominal/ordinal type questions. When the relationship between nominal or ordinal type questions is compared with continuous type questions, the parametric techniques are used when none of the assumptions are violated. In cases where one assumption is violated, the researcher should conduct the non-parametric technique which has fewer assumptions. Lastly, when the relationship between two continuous type questions are examined, only Pearson’s correlation can be used.

Even though there are several assumptions to which the appropriate parametric techniques should adhere, the **central limit theorem** compromises for the normal distribution assumption. The central limit theorem states that, for any population, regardless of its distribution, the larger the sample size, the more the sampling distribution will approximate a normal distribution (Stevens, 2009:221; Zikmund *et al.*, 2010:426; Hanna & Dempster, 2012:153; McDaniel & Gates, 2012:408; Field, 2013:54). Table 3.6 identifies the aspects affected by normal distribution and the central limit theorem.

**Table 3.6: Aspects affected by normal distribution and the central limit theorem**

Aspects affected	Normal distribution	Central limit theorem
Confidence intervals around a parameter estimate	The estimate must come from a normal distribution.	In large samples the estimate will have come from a normal distribution.
Significance test of models	To be accurate, the sampling distribution of what is being tested should be normal.	In large samples this will be true no matter the shape of the population.
Estimates of model parameters	To be optimal, the residuals in the population must be normally distributed. However the method of least squares will always give an estimate of the model parameters that minimises error. There is no need to assume normality to fit a linear model.	

**Source: Adapted from Field (2013:171-172)**

According to Table 3.6, if parameters are estimated for a model, normality does not matter. Normality only matters when confidence intervals and significance test are calculated for small samples but does not affect large samples.

Since a large sample can be regarded as  $n > 30$  for the central limit theorem to be applied (Hanna & Dempster, 2012:153; Field, 2013:172) and seeing that this study has a sample of 855, the following assumption can be made for the data of this study:

***Assumption = data is normally distributed***

All analyses included in this section therefore made use of parametric techniques for data analysis. The other assumptions of each technique therefore guided the decision to which parametric or non-parametric techniques to use. The assumption of ***independence*** means that the errors in the model are not related to each other (Field, 2013:176). Violation of this assumption requires specialist techniques such as multilevel modelling (Pallant, 2011:206; Field, 2013:176). Lastly, the assumption of ***homogeneity of variance*** (i.e. homoscedacity) states that the samples are obtained from populations with equal variances and that the variability of scores for each group is similar (Pallant, 2011:206). A significance level of  $p > 0.05$  indicates equal variances (Pallant, 2011:207). The other assumptions captured in Table 3.5 (i.e. sample representativeness, multicollinearity, reliability and validity) are explained at the applicable data analyses in the following sections.

### **3.2.5.1 Data analyses of Chapter 4 (Article 1)**

Article 1 consisted of two phases. As previously stated (refer to section 3.2), there is currently no consensus as to which typology or classification of interpretation should be used. A factor analysis was therefore conducted in phase 1 on the items in Section B Question 14 by verifying to which the factor loadings leaned the closest to literature classification of the factors. The second phase of the analysis compared the differences between the expected and experienced interpretation as well as these differences between the northern and southern regions by means of paired sample t-tests.

#### **3.2.5.1.1 Factor analysis**

The following steps discuss the steps used to conduct the factor analysis.

**Step a: Determine whether a factor analysis can be conducted**

Bartlett's (1954) test of sphericity ( $p \leq .05$ ) and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (minimum value of 0.6) (Kaiser, 1970, 1974) were performed on both the expectations as well as the experience scales. If the factor analysis indicated  $p > .05$  and  $< 0.6$  for KMO a factor analysis cannot be done.

**Step b: Determine the method of factor analysis**

The two most common factor analyses are principal component (PCA) and common factor analyses (i.e. principal axis factoring). For the purpose of this article, the principal axis factoring (PAF) was preferred since the primary concern is to identify the underlying dimensions of which the common variance is of interest (Malhotra, 2007:616). The method was specifically chosen seeing as it partitions the shared variance from the unique variance and error variance to reveal the underlying factor structure as to the PCA that does not discriminate between shared and unique variance (Costello & Osborne, 2005:2). To assure that each factor has a non-zero, significant, loading for only some of the variables (and likewise with each variable with only a few factors) factors should be rotated (Malhotra, 2007:619). The specific rotation technique used in this article was the oblique rotation. This rotation is when the axes are not maintained at right angles and the factors are correlated and used when the factors in the population are likely to be strongly correlated (Malhotra, 2007:619).

**Step c: Determine smallest number of factors**

The Kaiser Normalisation (eigenvalues above 1.0 or more) guided the decision on the number of factors retained. This resulted in three factors that can be retained and thus it was decided to use the classification by Stewart *et al.* (1998) that classified interpretation into primary, secondary and tertiary interpretation. A closer look at the item loadings, however, revealed that the items did not specifically load according to Stewart *et al.*'s (1998) classification. It was then decided that a factor analysis should retain only two factors where primary and secondary (a combination of secondary and tertiary interpretation) can be revealed.

### **Step d: Identify items to be removed**

The results of the second round of factor analyses for both the (i) expectation as well as the (ii) experience variables revealed that one variable, *informed staff who can handle queries regarding the interpretation of the park* did not load under the correct factor as literature indicates (i.e. primary interpretation) and it was therefore decided to exclude it from the third round of analyses and regard it as an item on its own. The PAF analysis using an Oblimin oblique rotation with Kaiser normalisation on the remaining 23 variables identified two factors for expectations and experiences respectively.

### **Step e: Identify factors**

It was decided to use Stewart *et al.*'s (1998) classification by deciding where each item to load on the right factor. The following items were regarded as:

- **Primary interpretation:** Auditorium with nature videos; Geological and climatological displays; Educational displays; Interpretation activities e.g. slide shows, informative sessions and specialist talks; Educational talks, activities and games for children; Information regarding the history of the park; Information boards regarding the fauna/flora in the park; Lifelike examples of different animals, insects, birds and trees with descriptive data; Information centres and interpretation centres in specific rest camps; Identification of trees, e.g. name plates or information boards; Authenticity of interpretation; Interactive field guides on game drives and guided walks.
- **Secondary interpretation** (combination of Secondary and Tertiary interpretation): Clear directions to rest camps and picnic areas; Good layout of the park, rest camps and routes; Accessibility of the park; Available route maps with descriptive information; Enforcement of park rules and regulations; Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees; Information regarding interpretation in the park available on the web; Lookout points in the park; Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio; Information boards with animal tracking; Bird hides in the park.

The reliability of each item was calculated to determine whether it was necessary to remove any item. The Cronbach alpha of each of these items was calculated to see whether the Cronbach alpha of the construct would increase if the item was deleted. Only reliability coefficients above 0.6 were considered as acceptable for the study since a reliability coefficient below 0.6 indicates that the scale has poor reliability and unsatisfactory internal consistency (Zikmund *et al.*, 2010:306; Malhotra, 2007:285). Another reliability measure, inter-item correlation, was also calculated and should be between 0.2 and 0.4 as recommended by Briggs and Cheek (1986).

### **Step f: Compute new variables**

Once the reliability was established, these factors were computed as new variables [saved as (i) factor loadings and (ii) mean values] to the dataset for further analyses.

#### 3.2.5.1.2 Paired-sample t-tests

The second phase of the analyses aimed to investigate whether any (i) significant differences between expectations of, and experiences with, interpretation in the park exist and, furthermore, whether there are any (ii) differences with the latter between the northern and southern regions. This was accomplished by means of paired sample t-tests which compared the mean scores of the same group of people on two matched pairs (i.e. from expectations to experiences) (Pallant, 2011:239). T-tests were therefore calculated for (i) the park as a whole and (ii) between the northern and southern regions [by means of splitting data by region (new variable was created) that the output presented the t-tests for each region separately].

The *p*-value indicates whether there are significant differences between the expected and experienced interpretation services. Steyn (2012:4) explains that, when very large samples are used, one often finds that the results are statistically significant and hence the reason that all the interpretation services indicated significant differences from expectations to experiences. Carter (2003:638) concurs and clarifies that significant differences only reveal that a sufficient sample size was used and therefore necessitates the calculation of effect sizes to determine the magnitude of differences between mean scores. Rosenthal, Rosnow and Rubin (2000:4) revealed that when results indicate statistical significance but the effect size is too small, that researchers typically mistake statistical significance for practical

significance. The effect sizes (expressed as  $d$ ) can be calculated by means of the following formula (Hanna & Dempster, 2012:167); using the highest standard deviation (i.e. SD) of the two means:

$$\frac{(\mathit{mean}_1 - \mathit{mean}_2)}{SD}$$

The answer obtained can be interpreted as follow (Cohen, 1988; Steyn, 2000:2):

- $d = 0.2$ ; small effect and the research ought to be replicated to determine whether there is an effect or if the result is practically non-significant;
- $d = 0.5$  indicates a medium effect that might point towards practical significance; and
- $d = 0.8$  shows practical significance and therefore practical importance.

Dancey and Reidy (2004:210-211) explain that little differences (i.e.  $d = 0.2$ ) between groups indicate that, when the two groups are plotted, their distributions overlap substantially and when there are large differences (i.e.  $d = 0.8$ ) between the groups, the distributions are further apart. Table 3.7 indicates the percentage of overlap that enables interpretability of findings.

**Table 3.7: Effect sizes' percentage of overlap**

$d$	Percentage of overlap (%)
0.1	92
0.2	85
0.3	79
0.4	73
0.5	67
0.6	62
0.7	57
0.8	53
0.9	48
1.0	45
1.1	42
1.2	37
1.3	35
1.4	32
1.5	29

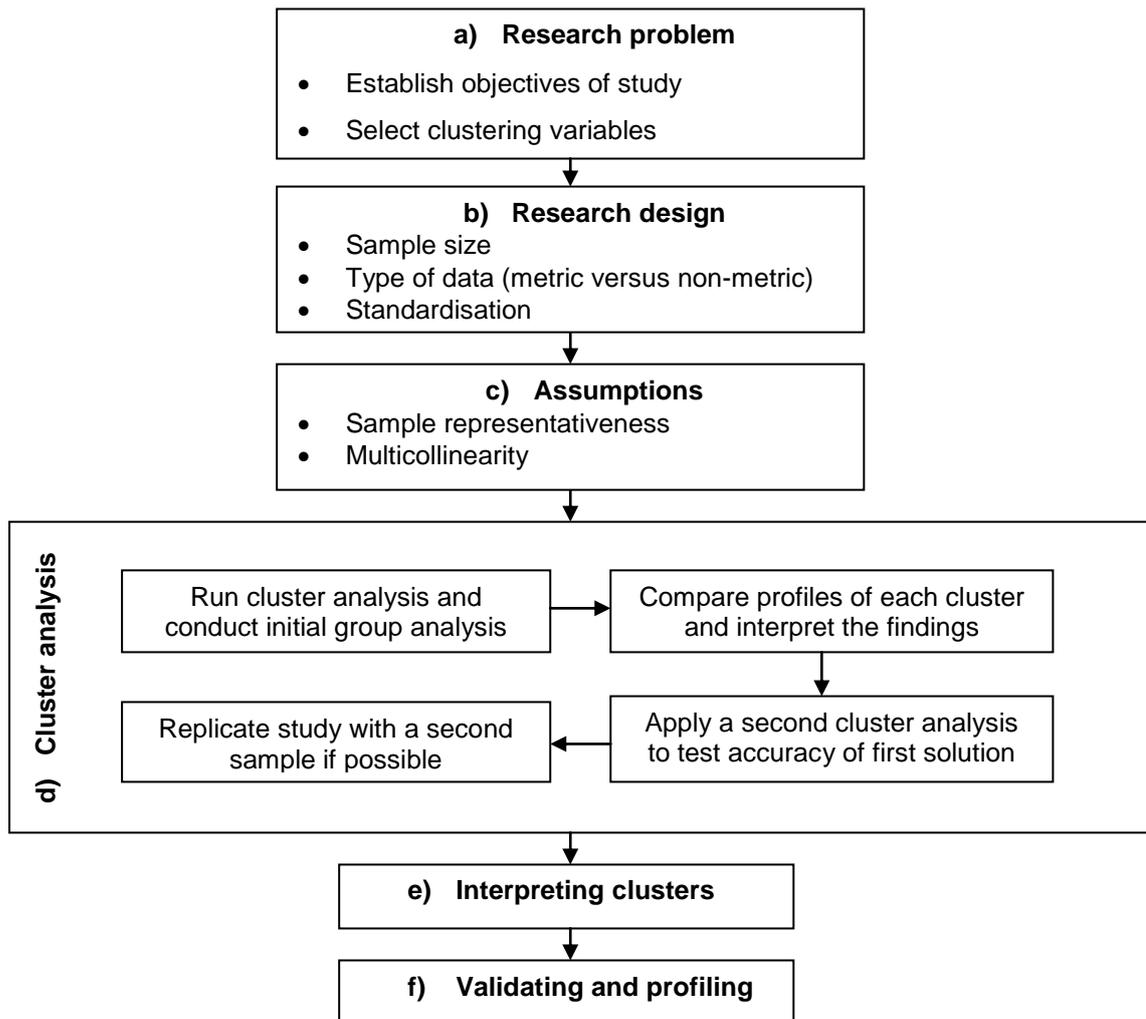
**Source: Adapted from Dancey and Reidy (2004:211)**

Table 3.7 indicates that the larger the effect of the  $d$ -value, the greater the lack of overlap between groups (Salkind, 2008:180) and thus the practical differences.

Using this table as a guideline therefore assists with explaining slight differences between the expectations and experiences of the different interpretation services as discussed in Chapter 4.

### **3.2.5.2 Data analyses of Chapter 5 (Article 2)**

The aim of this article is to determine market segments for the Kruger National Park based on interpretation expectations. There are, however, different techniques available to segment markets. These techniques include ANOVA, cluster analysis, conjoint analysis, correlation, discriminant analysis, factor analysis, multidimensional scaling, multiple regression, path analysis and structural equation modelling (Nykiel, 2007:11-19). Within tourism literature, however, the most popular method to segment markets is by means of a cluster analysis. Dolnicar and Leisch (2008) reviewed tourism market segmentation studies between 2000 and 2005 which were published in three major international tourism research journals. A staggering 33 studies made use of cluster analysis to segment markets and that the majority (58%) of the studies pre-processed data before clustering whereas 39% of these studies segmented markets directly from raw data and that 3% made use of standardisation before clustering (Dolnicar & Leisch, 2008:65-66). Since cluster analysis is such a popular method to use for segmentation, this study also made use of this approach (see Figure 3.4).



**Figure 3.4: Steps involved in a cluster analysis procedure**

**Source: Adapted from Dillon and Mukherjee (2006:540-543); McNabb (2013:279) and Hair et al. (2010:516, 528)**

The procedure of cluster analysis is outlined in Figure 3.4 which is also the order in which the following sections are discussed. As with any analysis, the cluster analysis procedure starts with identifying the research problem as this determines the research design. Certain assumptions are also present in cluster analysis before the analysis can be conducted. Once the preferred clusters have emerged these clusters are profiled and validated. This procedure is discussed in the following sections.

### **Step a: Selecting clustering variables**

Since the objectives of the study are set out in chapter 4, only the variables selected for the study will be discussed in this section.

Cluster analysis is the only multivariate technique where the variant is specified by the researcher (Hair *et al.*, 2010:508) and should thus select the variables with the research objectives as the criterion (Hair *et al.*, 2010:517). This study is based on the expected interpretation services of visitors to the Kruger National Park that consists of 24 variables for analysis. A common method in tourism research is to reduce the number of variables that will be used for cluster analysis by means of factor analysing these variables first (see Table 3.8).

Table 3.8 indicates the most popular and recent research on the segmentation method. The research captured in the Table 3.8 made use of a two-phased approach by first reducing the variables needed for cluster analysis by means of factor analysis. All the approaches made use of the Principal Component Analysis (PCA) and Varimax rotation. The PCA explains the maximum amount of total variance in a correlation matrix by transforming variables into linear components (Malhotra, 2007:616; Field, 2013:667). For ease of interpretability, the variables are then rotated by means of the Varimax rotation (an orthogonal method) that minimises the number of variables with high loadings on a factor (Malhotra, 2007:619; Field, 2013:61).

**Table 3.8: Factor-cluster analysis approach in segmentation tourism research**

Author	Factor analysis	Cluster analysis
Andriotis, Agiomirgianakis and Mihiotis (2008)	Principal component factor analysis Varimax rotation	K-means
Füller and Matzler (2008)	Principal component factor analysis Varimax rotation  Then Confirmatory factor analysis with SEM	Ward (squared Euclidean) K-means
Mehmetoglu (2007)	Principal component factor analysis Varimax rotation	Ward (squared Euclidean)
Molera and Albaladejo (2007)	Principal component factor analysis Varimax rotation	Ward (squared Euclidean) K-means

Author	Factor analysis	Cluster analysis
Tangeland (2011)	Principal component factor analysis Varimax rotation	Ward (squared Euclidean) K-means

**Source: Author's own compilation from tourism literature regarding cluster analysis**

There are, however, a few concerns with using factor analysis in the pre-processing stage of cluster analysis: (i) the data is transformed and segments are based on transformed and not original information; (ii) typically the total variance explained is 50% and indicates that half of the information collected is discarded before segments are identified; (iii) eliminating potential important variables (by means of eigenvalues) for identification of segments; (iv) interpretation of segments based on transformed information is questionable (Dolnicar & Grün, 2008:66); and (v) different rotational methods yield different factor scores which, in turn, yield different cluster solutions (Dillon & Mukherjee, 2006:533). Dolnicar and Grün (2008:70) therefore suggest that clustering should be conducted on the raw data. Some authors therefore made use of TwoStep clustering (Tkaczynski, Rundle-Thiele & Beaumont, 2010), clustering using a silhouette coefficient (Moeller, Dolnicar & Leisch, 2011) or splitting data into equal sizes (Dolnicar & Leisch, 2008).

A few authors have suggested other methods to find middle ground for factor-cluster analysis. Dolnicar, Kaiser, Lazarevski and Leisch (2012:42) have suggested *biclustering* which automatically selects the correct variables for clustering; D'Urso, De Giovanni, Disegna and Massari (2013:4945) referred to *bagged clustering* by bootstrap aggregating and adopting a fuzzy approach that improves the accuracy of prediction.

Malhotra (2007:620) and Hair *et al.* (2010:123), on the other hand, suggest the selection of surrogate variables that represent the original variables in a factor and to use them in subsequent analyses and interpret them in terms of the original factors.

Even though there are a number of problems associated with factor-cluster analysis, it should be noted that cluster analysis is only an exploratory technique (Hair *et al.*, 2010:509). Using factor analysis in the pre-processing of cluster analysis can be

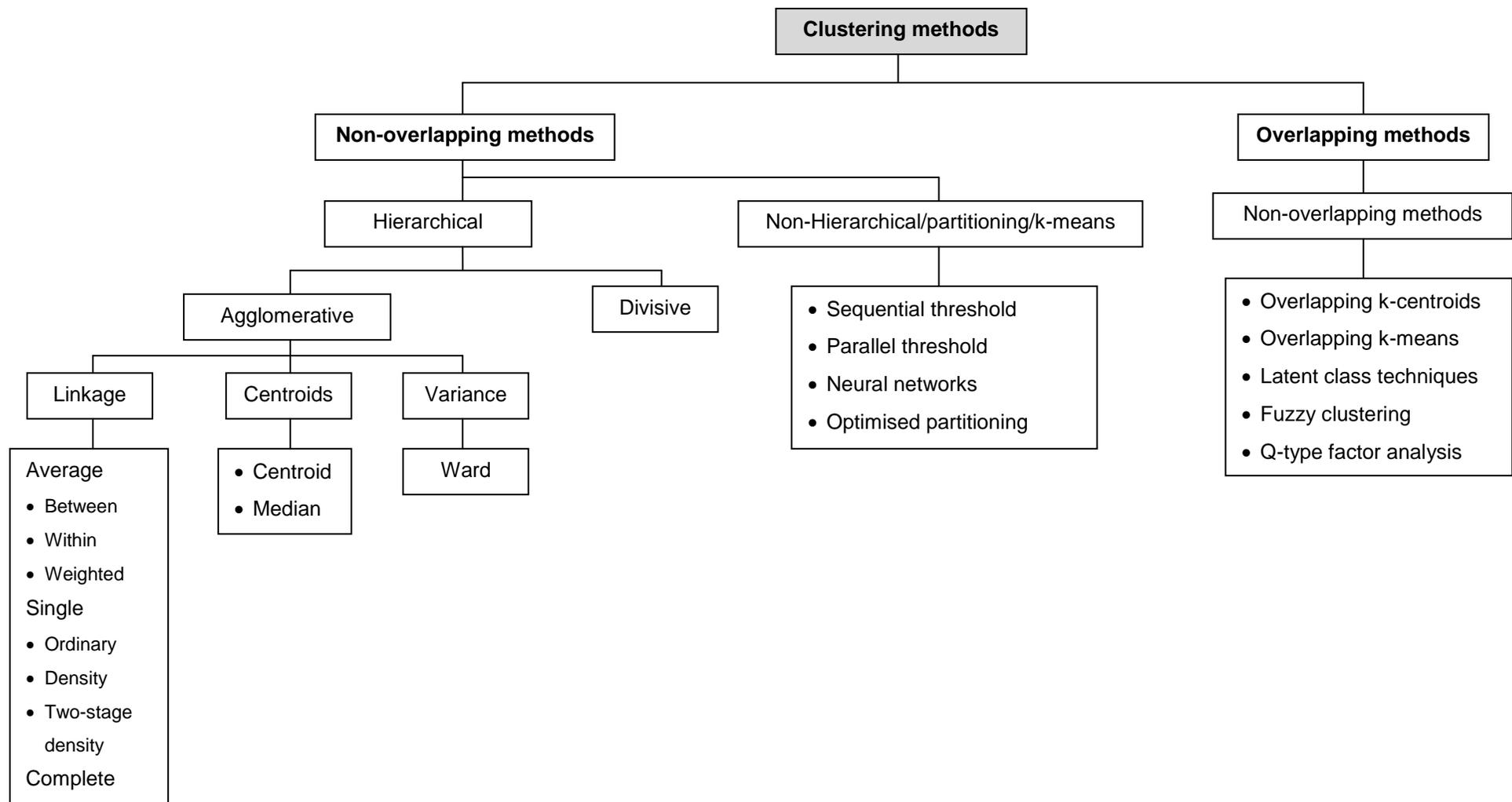
motivated since (i) the factors reflect the latent dimensions on which individuals differ and consequently characterise the structure of the data, and (ii) using factor scores ensures that distances can be calculated without difficulty (Dillon & Mukherjee, 2006:532). As there are contradictions as to which method should be used, this study aims to identify the most suitable method for the study at hand as explained in the following section.

### ***Step b: Research design***

Since visual clustering is not feasible with a large number of tourists (i.e. consumers) and variables (i.e. active variables), analytical methods are a necessity (Sharma & Kumar, 2006:366). There are, however, various types of clustering techniques available as indicated in Figure 3.5.

The first question with which researchers are faced is which partitioning procedure should be used? Figure 3.5 indicates that partitioning procedures can be done through non-overlapping or overlapping procedures. Since each respondent in overlapping procedures has a probability of belonging to a segment (indicated by a weight assigned to them) it causes interpretational problems and is rarely used (Schmidt & Hollensen, 2006:332; Dillon & Mukherjee, 2006:528). Non-overlapping partitioning procedures are therefore the most common segmentation techniques available since each respondent belongs unambiguously to only one segment (Dillon & Mukherjee, 2006:528); allowing heterogeneity.

The second question researchers have to address is which non-overlapping partitioning procedure should be used. Statistical references do not provide rules but provide a few guidelines for which non-overlapping method to use. The first guideline is based on the sample size. According to Malhotra (2007:642) and Schmidt and Hollensen (2006:333; 345) interpretation of hierarchical methods becomes difficult when the sample size exceeds 200 and therefore the smaller the sample size (less than a hundred) the more hierarchical methods would make sense. A suggested rule of thumb is when  $n = 100-200$  to use hierarchical methods and when  $n > 200$  to use non-hierarchical methods. This is, however, each researcher's own preference.



**Figure 3.5: Overview of clustering methods**

*Source: Adapted from Schmidt and Hollensen (2006:331)*

Both hierarchical and non-hierarchical partitioning procedures are commonly used in conjunction (Sharma & Kumar, 2006:379). Since non-hierarchical procedures require the researcher to indicate the number of clusters to be retained (Schmidt & Hollensen, 2006:246; Sharma & Kumar, 2006:376) an initial clustering solution can be obtained from a hierarchical procedure and then the number of clusters can be used as inputs for the non-hierarchical procedure (Malhotra, 2007:642; Hair *et al.*, 2010:536). The choice of hierarchical or non-hierarchical clustering techniques is also influenced by the type of data (i.e. variables selected). Metric data (i.e. continuous data) can either use proximity measures (i.e. distance measures of similarity) or pattern measures (i.e. correlation measure of similarity) whereas non-metric data (nominal or ordinal data) use association of similarity by means of matching coefficients (Hair *et al.*, 2010:516). The cluster procedure and the distance measure are therefore interrelated (Malhotra, 2007:643).

The last consideration for the research design is standardisation. Standardising the variables is particularly important whenever variables used for clustering have different measurement scales (Hair *et al.*, 2010:525). (The standardisation will be discussed under *Step d, Phase 4*).

### ***Step c: Assumptions***

Cluster analysis is based on simple mathematical procedures without support from a large body of statistical reasoning (McNabb, 2013:278). The assumptions of normality, linearity and homoscedasticity therefore have little bearing on cluster analysis (Hair *et al.*, 2010:526). Cluster analysis is, however, impacted by sample representativeness (see section 3.2.3.4) and multicollinearity (see *Step d* where the correct variables are identified for this study).

### ***Step d: Cluster analysis***

Following the same procedures as the majority of the tourism literature, this study used a combination of the Ward hierarchical cluster analysis and K-means non-hierarchical cluster analysis (refer back to Table 3.8). This combination of methods applied is preferred since the hierarchical analysis helps to specify the cluster seed points for the non-hierarchical methods (Hair *et al.*, 2010:528,537) as non-hierarchical methods require pre-specification of the number of cluster centres to be

used (Malhotra, 2007:642). The number of cluster centres can be derived from the hierarchical method's change in percentages from one step to the next. Since a large increase indicates that two quite different clusters are merged together, the researcher typically selects the cluster solution prior to the large increase (Hair *et al.*, 2010:537, 549). The increase in percentages can typically be determined with the following formula where  $a = \text{last coefficient}$  and  $b = \text{previous coefficient}$ :

$$\frac{a - b}{b} \cdot 100$$

Considering the critique against factor analysis in the pre-processing of cluster analysis, it is necessary to determine which choice of variables are the preferred method for cluster analysis that would result in the best method of segmenting visitors to the Kruger National Park. Analyses were therefore conducted on the following three scenarios to determine which scenario is the preferred choice of variables for cluster analysis: (i) cluster analysis on raw data (hereafter referred to as **Raw data**); (ii) cluster analysis on factors obtained from factor analysis (hereafter referred to as **Factors**); and (iii) cluster analysis on surrogate variables obtained from the factor analysis (hereafter referred to as **Surrogate variables**). The results of these three scenarios were then compared by means of box plots to indicate the dispersion of the data. Box plots indicate the spread or variability of the data where the greater the variability the less the scores are similar (Hanna & Dempster, 2012:73) and thus not the appropriate scenario with which to cluster the observations.

Before the analyses on the different scenarios are discussed, it is necessary to have a closer look at the factor analysis used for clustering. As mentioned earlier, most of the tourism research made use of the PCA to reduce variables and therefore the preferred analysis for this chapter as well. Since Chapter 4 made use of the PAF technique to determine the expected (as well as the experienced) interpretation services and Chapter 5 will use the expected interpretation factors as one of the scenarios for cluster analysis, the question to mind is then whether there are any concerns with using PCA rather than the original solution obtained from the PAF for consistency throughout the thesis.

According to Stevens (2009:325) and Field (2013:674) both the PCA and the PAF result in similar solutions. This deduction was specifically obtained from research conducted by Velicer (1974, 1976), Velicer and Fava (1987) and Velicer, Peacock and Jackson (1982). To illustrate the similarity of results for this study, Table 3.9 contains the results for both the PAF and the PCA on the expected interpretation variables.

**Table 3.9: Comparison of the expected interpretation variables' PAF and PCA loadings**

<b>*Factors and variables</b>	<b>#PAF (loadings)</b>	<b>#PCA (loadings)</b>
<b>Primary interpretation</b>		
Interpretation activities e.g. slide shows, informative sessions and specialist talks	.881	.848
Auditorium with nature videos	.845	.827
Geological and climatological displays	.825	.820
Educational displays	.780	.803
Educational talks, activities and games for children	.716	.751
Information regarding the history of the park	.527	.619
Information boards regarding the fauna/flora in the park	.513	.616
Lifelike examples of different animals, insects, birds and trees with descriptive data	.401	.494
Information centres and interpretation centres in specific rest camps	.388	.484
Identification of trees, e.g. name plates or information boards	.366	.473
Authenticity of interpretation	.264	.389
Interactive field guides on game drives and guided walks	.234	.369
<b>Secondary interpretation</b>		
Clear directions to rest camps and picnic areas	.964	.893
Available route maps with descriptive information	.951	.887
Good layout of the park, rest camps and routes	.900	.856
Accessibility of the park	.889	.848
Enforcement of park rules and regulations	.764	.765
Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	.709	.733
Information regarding interpretation in the park available on the web	.626	.666
Lookout points in the park	.567	.607
Marketing of the park, its wildlife as well as activities on the web, in	.523	.578

<b>*Factors and variables</b>	<b>#PAF (loadings)</b>	<b>#PCA (loadings)</b>
magazines and newspapers and on the radio		
Information boards with animal tracking	.515	.563
Bird hides in the park	.324	.390
<b>Total variance explained</b>	<b>55.6%</b>	<b>55.6%</b>

\*The same procedure was followed for both the PAF and PCA. As a result, the item "*Informed staff who can handle queries regarding the interpretation of the park*" was also removed from the second round of factor analysis (refer to section 3.2.5.1.1).

# For both analyses, cases were excluded pairwise. Cases (or objects) were therefore only excluded in the analysis where data was missing (Field, 2013:187).

From Table 3.9 it is clear that both the PAF as well as the PCA result in the same solutions. The solutions of both methods deliver the same order of high to low loadings, no significant differences between the loadings from PAF to PCA, and the same total variance explained. The PCA does, however, provide marginally higher loadings than the PAF and therefore the preferred solution for the second scenario of variables to be used in the cluster analysis.

Since the loadings of both the PAF and the PCA are exactly in the same order from high to low, the variables with the highest loadings on the Primary and Secondary interpretation factors (i.e. "*Interpretation activities e.g. slide shows, informative sessions and specialist talks*" and "*Clear directions to rest camps and picnic areas*") were identified along with the variable "*Informed staff who can handle queries regarding the interpretation of the park*", which was removed from the analysis and used as a factor on its own, as the surrogate variables for the third scenario's variables to be used for cluster analysis.

### **Comparing scenarios:**

The following sections provide the explanation of the phases followed in order to compare the three different scenarios.

**Phase 1:** The first phase of comparing scenarios analysed data with a hierarchical method to determine the number of clusters to retain for non-hierarchical cluster analysis. Since there are three scenarios of variables to be used for cluster analysis, all three scenarios were analysed by means of Ward hierarchical analysis. Ward's

hierarchical method aims at minimising inter-cluster variance (Schmidt & Hollensen, 2006:336; Malhotra, 2007:642) and therefore maximises within-cluster homogeneity (Hair *et al.*, 2010:508) and identifies clusters of nearly equal sizes (Sharma & Kumar, 2006:370,371; Hair *et al.*, 2010:508). Table 3.10 provides the coefficients obtained from the hierarchical clustering procedure of the three different scenarios.

**Table 3.10: Comparison of number of clusters for different scenarios used for clustering**

Cluster	Raw data		Factors obtained from PCA		Surrogate variables obtained from PCA	
	Coefficient	% increase	Coefficient	% increase	Coefficient	% increase
6	7795.664	3.75	434.254	17.95	610.067	15.23
5	8088.703	4.52	512.210	15.40	703.005	16.19
<b>4</b>	8454.249	<b>6.49</b>	591.074	<b>16.19</b>	816.792	<b>16.01</b>
3	9002.870	19.40	686.798	45.51	947.546	44.07
2	10749.410	28.14	999.363	54.65	1365.092	57.55
1	13774.329	-	1545.491	-	2150.725	-

As mentioned earlier, identifying the number of clusters can be calculated with a simple formula. For instance, determining the number of clusters to retain from the Raw data scenario can be calculated as follows:

$$\frac{a - b}{b} \cdot 100$$

$$= \frac{13774,329 - 10749,410}{10749,410} \cdot 100$$

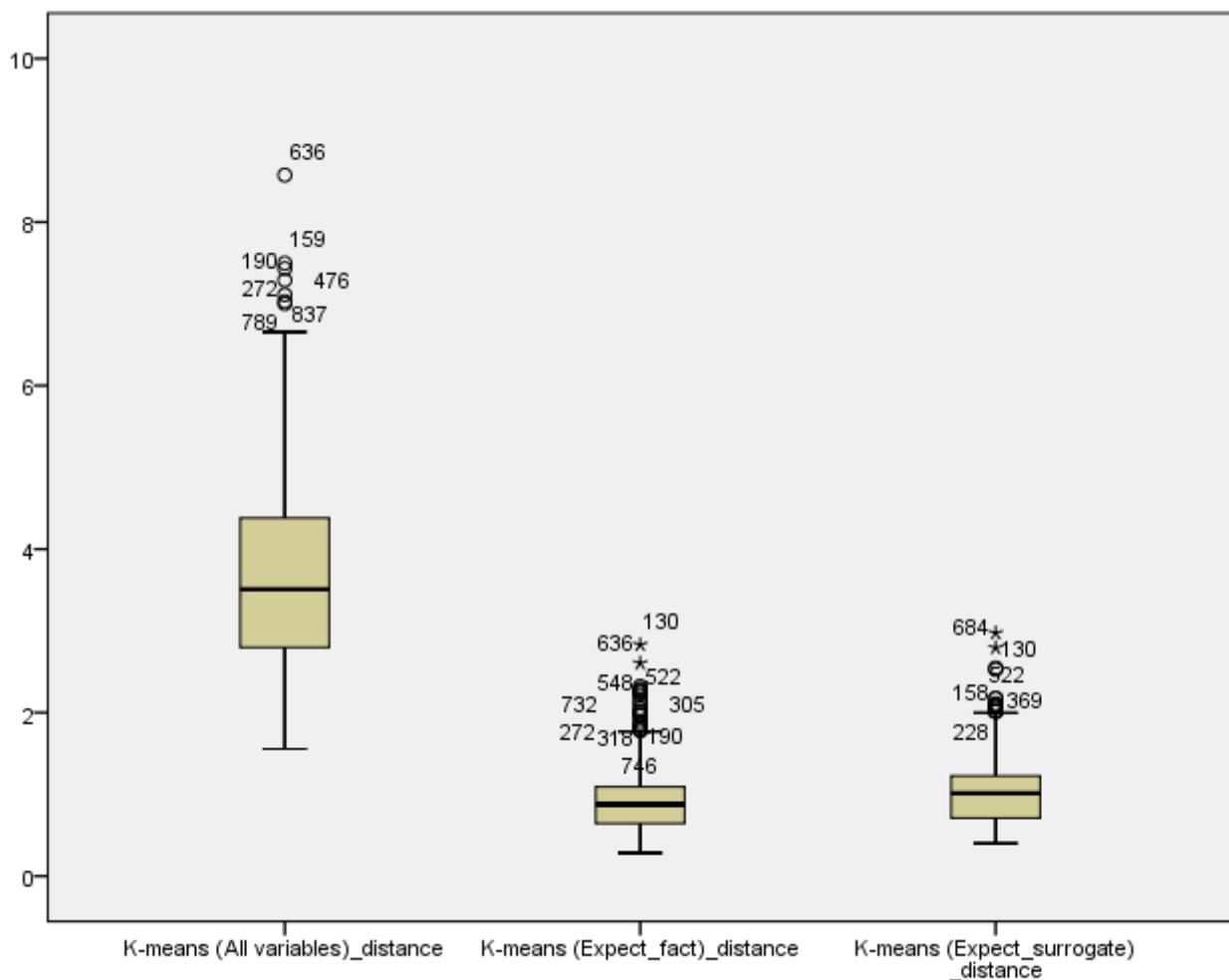
$$= 28.14\%$$

The percentage change from one to two clusters is therefore 28.14%. From here the second last coefficient along with the third last coefficient is then used to determine the percentage change from two to three clusters and so forth. This calculation was performed for all three scenarios to determine the number of clusters to specify for the non-hierarchical cluster analysis for each scenario. Each scenario's percentage change is captured in Table 3.10. It is clear from the table that no matter which

scenario is chosen, all three scenarios identified that four clusters should be specified in the non-hierarchical clustering procedure.

**Phase 2:** The number of clusters determined in the previous phase was then specified for the K-means (i.e. non-hierarchical) clustering technique for all three scenarios. Since the number of cluster centres is pre-specified, the K-means clustering technique selects temporary  $k$  centres and then partitions observations to those centres (Schmidt & Hollensen, 2006:346; Malhotra, 2007:642; Hair *et al.*, 2010:507). The cluster solutions obtained from the K-means clustering were then saved according to each scenario and used in the next phase of analysis.

**Phase 3:** The cluster solutions obtained for all three scenarios were then compared by means of box plots. Box plots are graphical representations of important characteristics of a set of observations (Field, 2013:871) as illustrated Figure 3.6.



**Figure 3.6: Box plot of three different scenarios for cluster analysis**

Figure 3.6 illustrates the box plots of the three different scenarios which gives an idea of the central tendency and dispersion of the three scenarios' variables (Hanna & Dempster, 2012:104). In this case, the box plots are particularly important to identify outliers in the data. Cluster analysis is sensitive to outliers and it is therefore necessary to delete these cases from the sample before the final solutions are presented (Hair *et al.*, 2010:519). The three scenarios' box plots disclose that all the scenarios have potential outliers (indicated with a °) but that the Factors and Surrogate variables scenarios additionally have extreme outliers (indicated with a \*). In view of the fact that the samples are quite large and the number of outliers will not provide significant differences when deleted, it was decided to save a dataset for each of the three scenarios and only delete the extreme outliers from the Factors - (i.e. cases 130 and 636) and Surrogate variables (i.e. cases 130 and 684) scenarios. The above phases were therefore repeated on the different datasets and resulted in Table 3.11 to identify the number of clusters to retain.

**Table 3.11: Comparison of number of clusters for different scenarios used for clustering (extreme outliers deleted)**

Cluster	Raw data		Factors obtained from PCA		Surrogate variables obtained from PCA	
	Coefficient	% increase	Coefficient	% increase	Coefficient	% increase
6	7795.664	3.75	422.931	18.65	601.301	18.29
5	8088.703	4.52	501.795	16.55	711.291	19.29
<b>4</b>	8454.249	<b>6.49</b>	584.861	<b>14.43</b>	848.478	<b>17.67</b>
3	9002.870	19.40	669.264	48.95	998.366	36.33
2	10749.410	28.14	996.864	54.73	1361.101	57.70
1	13774.329	-	1542.435	-	2146.46	-

From Table 3.11, it is clear that even when the extreme outliers are deleted from the data sets, the coefficients from the hierarchical clusters analysis once again determined that four clusters should be retained for further non-hierarchical cluster analysis. The K-means clustering was therefore repeated and the solutions were once again saved on the data sets. Seeing as a box plot does not give precise values of the mean and standard deviation it was decided to rather calculate the

descriptive statistics of the three scenarios to accurately compare the three scenarios (see Table 3.12).

**Table 3.12: Descriptive statistics of the three different scenarios for cluster analysis**

Scenarios	N	Min	Max	Mean ( $\mu$ )	Std. Dev. ( $\sigma$ )	Coefficient of variation ( $C_v$ %)
Raw data	538	1.56	8.57	3.70	1.13	30.54
Factors	536	.30	2.83	.92	.39	42.39
Surrogate variables	687	.40	3.87	1.01	.39	38.61

Table 3.12 captures the descriptive statistics of the three scenarios for comparison. It should be noted here that these three scenarios are measured differently (the Raw data scenario is based on Likert scale ratings and the Factors and Surrogate variables made use of factor loadings) which make comparison on box plots problematic. To accurately compare the dispersion of data therefore necessitates the calculation of the coefficient of variance (i.e.  $C_v$ ) which is a unit-less measure of variability and enables comparability of the scenarios. The  $C_v$  is the ratio of the standard deviation to the mean, that is expressed as a percentage and calculated by

$$\frac{\sigma}{\mu} * 100$$

where  $\sigma$  = standard deviation and  $\mu$  = mean (Malhotra, 2007:462). The best scenario therefore is the one with the least variability between the three scenarios. At first glance this indicates that the Raw data scenario is the best scenario to use. However, multicollinearity among variables indicates that the variables should be independent (Hair *et al.*, 2010:546).

Considering the fact that the scenarios' variables above refer to expected interpretation, one can argue that the variables are correlated to each other and therefore not multi-collinear. When the PCA was calculated, several variables from the range of variables were positively correlated and therefore the variables were grouped together as a factor. It is therefore not surprising to find the same solutions by comparing the variables that were grouped together from the PCA with a simple correlation table. Hair *et al.* (2010:546) explain that when several variables in the set of cluster variables are highly correlated, that the cluster solution is influenced more by these highly correlated variables than the uncorrelated variables. Researchers

should therefore take caution in selecting variables for cluster analysis to concur with the multicollinearity assumption. Even though the PCA did reveal variables that were highly correlated, this approach also identified variables that were the least correlated as well. The variables with the highest loadings of each factor are also the least correlated and can be confirmed by a simple correlation matrix. These variables were chosen for the Surrogate variable scenario and make the most sense to the multicollinearity assumption. The Surrogate variable scenario and, as a result, the Surrogate variables' dataset was therefore chosen for the subsequent analyses.

### ***Step e: Interpreting clusters***

Assigning a label to a cluster is determined by the nature of the clusters (Hair *et al.*, 2010:538); in other words by examining the cluster centroids (Hair *et al.*, 2010:539). In this case, chi-square tests and ANOVAs were used to provide score profiles for clusters and allow for a rich description of profiles and consequently appropriate labels. The interpretation of clusters is therefore discussed in combination with profiling clusters in the next section.

### ***Step f: Reliability, validity and profiling of clusters***

This step of cluster analysis discusses each aspect [i.e. (i) reliability and validity and (ii) profiling of clusters] separately.

#### **(i) Reliability and validity**

Given that cluster analysis is subjective in nature it is imperative to validate the cluster solution to assure that the solutions are representative of the general population and thus generalisable to other objects (Hair *et al.*, 2010:539). Given that the ordering of cases can affect the cluster membership (Malhotra, 2007:647; Hair *et al.*, 2010:557) it was decided to sort the dataset according to **Age**. Performing the cluster analysis on the sorted cases dataset should reveal that members stayed together in a cluster in any other solution.

**Table 3.13: Calculation of the number of clusters to retain of the sorted sample for K-means analyses**

Cluster	Cases sorted by age	
	Coefficient	% increase
6	589.093	18.67108
5	699.083	21.02325
4	846.053	17.46014
3	993.775	36.19833
2	1353.505	58.5853
1	2146.46	-

According to Table 3.13, the number of clusters to pre-specify for the K-means clustering should also be four clusters; the same number specified for the first K-means analysis. The cluster number of the second K-means solution was therefore also saved to the dataset for further analysis. To calculate the cluster stability, the first and second K-means analyses was selected as variables for a cross-tabulation as indicated in Table 3.14.

**Table 3.14: Cross-classification to access cluster stability**

Cluster number from first K-means		Cluster number from second K-means (cases sorted by Age)				
		1	2	3	4	Total
1	1	1	0	84	72	157
2	4	4	380	38	0	422
3	1	1	14	38	16	69
4	26	26	4	0	1	31
<b>Total</b>		32	398	160	89	679

Even though Table 3.14 indicates that cluster 1 of the first K-means analysis becomes cluster 3 of the second K-means analysis and cluster 4 becomes 1 respectively the table indicates the number of observations that were and were not retained in the second K-means analysis. Perfect cross-validation would have been indicated if only one cell in each row or column in the table contained a value (Hair *et al.*, 2010:557). A closer look at the first K-means analysis reveal that 73 of the 157 observations end up not clustering together for cluster 1 when data was sorted according to age. This is also true for cluster 2 where 42 of the 422 did not cluster

together; whereas 31 of the 69 observations did not cluster together for cluster 3; and 5 of the 31 observations did not cluster for cluster 4. In total 151 (18%) observations did not cluster to the original cluster solutions after the cases were sorted according to age. According to Hair *et al.* (2010:540) this solution is considered as a stable solution since it is between 10% and 20% that are assigned to different groups.

Even though not stated as a validation method, the comparison of the three different scenarios to determine the preferred choice in variables for cluster analysis can also be regarded as a further validation technique. Since the highly correlated variables influence the cluster solution more than the uncorrelated variables (Hair *et al.*, 2010:546) researchers should address the multicollinearity assumption by calculating the variables' correlations with each other as well as the dispersion of the variables by means of the coefficient of variance. The reliability of the cluster solution is, however, determined by the validity of the study since validity implies reliability but not vice versa (Malhotra, 2007:287).

## **(ii) Profiling of clusters**

Dillon and Mukherjee (2006:531) explain that not only are active variables important to determine differences between clusters, but non-active variables are equally important in assessing the extent to which segments differ. For this study, both the chi-square test and ANOVAs were used to profile clusters and determine significant differences between clusters.

After the first round of analyses, a few variables were identified for amendments to assist with better profiling of clusters. These amendments include:

- Home language: The "Other" option (i.e. option 3) was re-coded into categories 3 = "Other African Languages" and 4 = "Foreign languages" as indicated by respondents.
- Province: The highest three options, namely Western Cape, Gauteng and Mpumalanga were retained and respectively changed to options 1 to 3. The other provinces were re-coded into 4 = "Other provinces" (which included: 3 = Eastern Cape; 4 = North-West; 6 = Northern Cape; 7 = KwaZulu Natal; 8 =

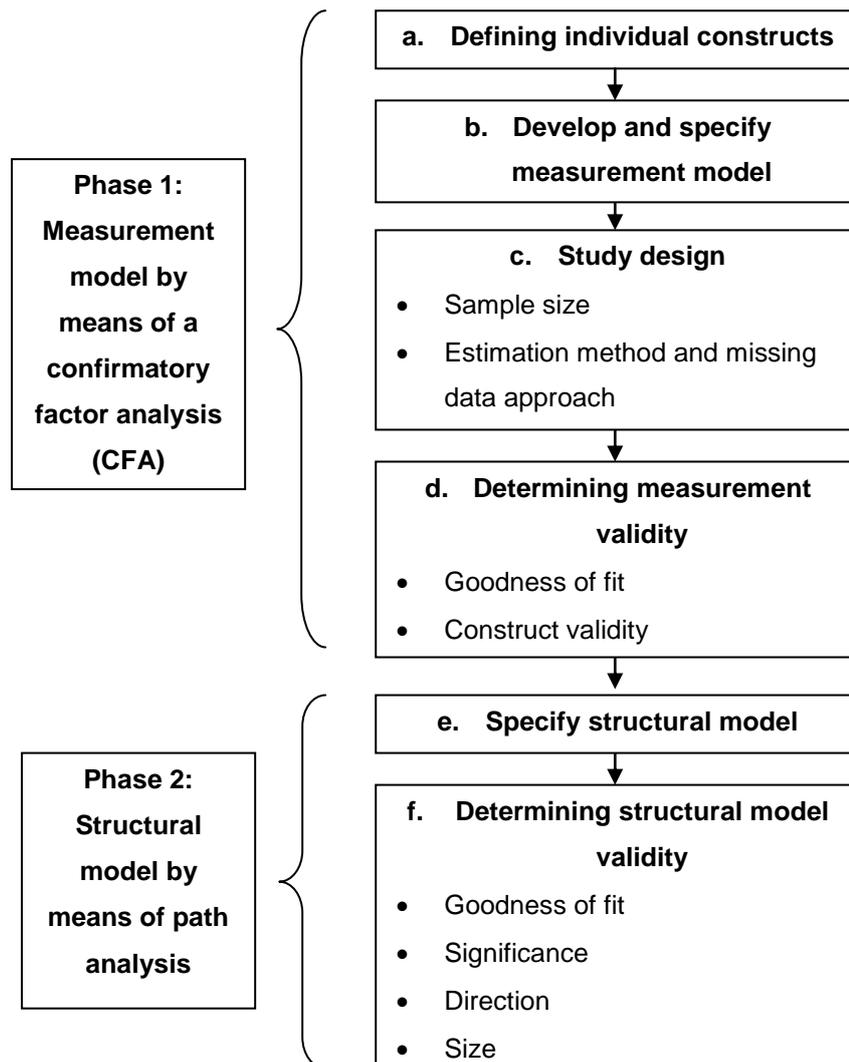
Limpopo; 9 = Free State) and option 10 (i.e. “Outside RSA borders”) were handled as “System missing”.

- Decision to visit the park: option 4 was changed from “Other” to “Approximately a year or more ago” as indicated by respondents.
- Mode of transport: option 6 (i.e. “Other”) was handled as “System missing”.
- Who initiated the visit: option 5 (i.e. “Other”) was handled as “System missing”.

Chapter 5 therefore included the second round of Chi-square tests and ANOVAs.

### **3.2.5.3 Data analyses of Chapter 6 (Article 3)**

The aim of this article is to determine whether the Kruger National Park’s interpretation services have an impact on visitors’ behaviour to be more in line with the park’s conservation practices. As a result, the structural equation modelling (hereafter referred to as SEM) is used since it is defined as “a procedure for estimating a series of dependence relationships between a set of concepts or constructs represented by multiple measured variables and incorporated into an integrated model” (Malhotra *et al.*, 2013:710). The SEM should, however, be conducted in a series of steps as illustrated in Figure 3.7.



**Figure 3.7: Six-stage process for structural equation modelling**

**Source: Adapted from Schmidt and Hollensen (2006:511-512); Blanche, Durrheim and Painter (2006:263); Hair et al. (2010:654); and Malhotra et al. (2013:715)**

Figure 3.7 illustrates the steps involved for developing a SEM. It is important to note that SEM is a confirmatory rather than an exploratory analysis (Malhotra *et al.*, 2013: 713; Cohen, Manion & Morrison, 2011:693) and hence the use of confirmatory factor analysis (CFA). Within exploratory factor analysis (EFA), all the variables have a loading on a specific factor (Hair *et al.*, 2010:641) whereas in the CFA, variables only load on specific factors/constructs (Schmidt & Hollensen, 2006:513) and specifically used in SEM to verify the factor structure of a set of observed variables based on theory (Malhotra *et al.*, 2013:712-713). As depicted in Figure 3.7, the SEM in reality consists of two models specified as (1) the measurement model and (2) the

structural model (Hair *et al.*, 2010:638; Malhotra *et al.*, 2013:712). The measurement model depicts how the measured variables (i.e. items) represent the latent (i.e. unobserved) constructs according to theory and validated by means of CFA. The structural model determines whether the latent constructs are interrelated by means of a path analysis (Hair *et al.*, 2010:638; Malhotra *et al.*, 2013:712-713). Based on the latter, the following sections will be discussed by first determining the measurement model and then proceeding with the structural model.

### **Phase 1: Measurement model**

As previously indicated, the first phase of conducting SEM is to determine the measurement model which is discussed under the following four steps (i.e. a - d).

#### ***Step a: Defining individual constructs***

The constructs used for SEM (i.e. how these constructs will be defined, measured, and interrelationships among them) should be based on theory (Malhotra *et al.*, 2013:715) revealing that these constructs are assembled without any knowledge from an exploratory factor analysis (Schmidt & Hollensen, 2006:513). Stevens (2009:348) explains that the theory can be based on previous empirical research, the current thinking on the particular field, the researcher's own hypotheses about the variables, or any combination of these. Considering the fact that there is no consensus on which classification of interpretation should be used and hence the use of the EFA in Articles 1 and 2, the results from the EFA (i.e. previous empirical research) can be used as a motivation for establishing the pattern of loadings for the confirmatory model (Schmidt & Hollensen, 2006:513-514). This means that Stewart *et al.*'s (1998) classification of interpretation (i.e. *primary*, *secondary* and *tertiary* interpretation) will be used as constructs for Article 3. One should note that the factors reported in Articles 1 and 2 combined secondary and tertiary interpretation into *secondary interpretation*. The other two theories used for the SEM are the *theory of planned behaviour* (TPB) as well as the *cognitive dissonance theory* to help identify other latent constructs for the measurement model. The latent constructs identified for the SEM (which are extensively discussed in chapter 6) are identified as *primary* and *secondary interpretation* as well as *attitudes* and *behaviour*.

### ***Step b: Develop and specify measurement model***

Seeing as SEM is dependent on hypotheses to build and test the measurement model (Hair *et al.*, 2010:638; Malhotra *et al.*, 2013:712) clear hypotheses should be constructed. Hence Chapter 6 followed a hypothesis approach which is different from the previous two articles.

Research reports and articles typically provide the alternative hypotheses ( $H_a$ ) but it is necessary to define the null hypotheses ( $H_0$ ) to clarify what is actually tested in the statistical analysis (Hanna & Dempster, 2012:123). The null hypothesis is what is tested but not the outcome of what is expected; whereas the alternative hypothesis is the statement of what the expected outcome will be (Hanna & Dempster, 2012:124). Plainly stated, when  $H_0: p \leq 0.05$  the null hypothesis is accepted whereas  $H_0: p > 0.05$  the null hypothesis is rejected, the preferred outcome and hence  $H_a$  is accepted. This chapter therefore provides both (i) the null – (not captured in chapter 6) and (ii) the alternative hypothesis (extensively explained in the literature review of chapter 6):

**$H_{01}$ : Attitudes have no influence on behaviour.**

**$H_1$ : Attitudes have an influence on behaviour.**

**$H_{02a}$ : Primary interpretation has no influence on attitudes.**

**$H_{2a}$ : Primary interpretation has an influence on attitudes.**

**$H_{02b}$ : Secondary interpretation has no influence on attitudes.**

**$H_{2b}$ : Secondary interpretation has an influence on attitudes.**

**$H_{03a}$ : Attitudes are not a mediator between primary interpretation and behaviour.**

**$H_{3a}$ : Attitudes are mediator between primary interpretation and behaviour.**

**$H_{03b}$ : Attitudes are not a mediator between secondary interpretation and behaviour.**

**$H_{3b}$ : Attitudes are not a mediator between secondary interpretation and behaviour.**

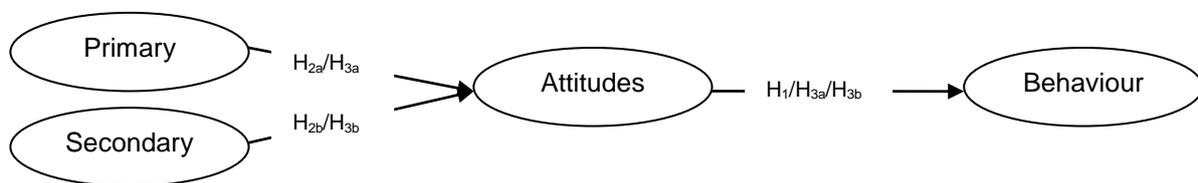
**$H_{04}$ : Behaviour has no influence on attitudes.**

**$H_4$ : Behaviour has an influence on attitudes.**

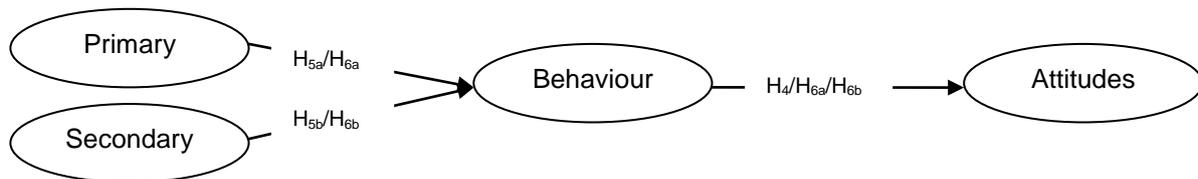
**$H_{05a}$ : Primary interpretation has no influence on behaviour.**

- H<sub>5a</sub>:** *Primary interpretation* has an influence on *behaviour*.
- H<sub>05b</sub>:** *Secondary interpretation* has no influence on *behaviour*.
- H<sub>5b</sub>:** *Secondary interpretation* has an influence on *behaviour*.
- H<sub>06a</sub>:** *Behaviour* is not a mediator between *primary interpretation* and *attitudes*.
- H<sub>6a</sub>:** *Behaviour* is a mediator between *primary interpretation* and *attitudes*.
- H<sub>06b</sub>:** *Behaviour* is not a mediator between *secondary interpretation* and *attitudes*.
- H<sub>6b</sub>:** *Behaviour* is a mediator between *secondary interpretation* and *attitudes*.

These hypotheses are illustrated in the Figure 3.8.



a) Hypotheses from the theory of planned behaviour



b) Hypotheses from the cognitive dissonance theory

**Figure 3.8: Hypothesised models**

Exogenous constructs are independent constructs with no arrow or path coming into them and their observed variables are hence referred to as *X*-variables (Hair *et al.*, 2010:637; Malhotra *et al.*, 2013:713). In Figure 3.8 it is clear the *primary* and *secondary interpretation* can be identified as exogenous constructs in both the TPB as well as the cognitive dissonance theory. *Attitudes* and *Behaviour* are therefore identified as endogenous constructs. Endogenous constructs are dependent on other constructs or variables where their variables are referred to as *Y*-variables (Hair *et al.*, 2010:637; Malhotra *et al.*, 2013:714). The observed variables (question 14 and 15 of the questionnaire) of each of these latent constructs are depicted in Table 3.15.

**Table 3.15: Potential observed and latent constructs for SEM**

Q	Variable in questionnaire	Variable name
<b>Latent construct: Primary interpretation</b>		
14.1	Information centres and interpretation centres in specific rest camps	INFORMATIONCENTRES
14.2	Identification of trees, e.g. nameplates or information boards	IDENTIFICATION
14.5	Auditorium with nature videos	AUDITORIUM
14.6	Interpretation activities e.g. slide shows, informative sessions and specialist talks	INTERACTIVITIES
14.7	Geological and climatological displays	GEOLOGICAL
14.8	Educational displays	EDDISPLAYS
14.9	Information regarding the history of the park	HISTORY
14.10	Educational talks, activities and games for children	EDTALKS
14.11	Information boards regarding the fauna/flora in the park	BOARDS
14.12	Informed staff who can handle queries regarding the interpretation of the park	INFORMEDSTAFF
14.20	Interactive field guides on game drives and guided walks	FIELDGUIDES
14.23	Lifelike examples of different animals, insects, birds and trees with descriptive data	EXAMPLES
14.24	Authenticity of interpretation	AUTHENTICITY
<b>Latent construct: Secondary interpretation (Secondary and tertiary combined)</b>		
14.3	Lookout points in the park	LOOKOUT
14.4	Bird hides in the park	BIRDHIDES
14.13	Information regarding interpretation in the park available on the web	INFOWEB
14.14	Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio	MARKETING
14.15	Good layout of the park, rest camps and routes	LAYOUT
14.16	Accessibility of the park	ACCESSIBILITY
14.17	Available route maps with descriptive information	ROUTEMAPS
14.18	Clear directions to rest camps and picnic areas	DIRECTIONS
14.19	Enforcement of park rules and regulations	ENFORCEMENT
14.21	Information boards with animal tracking	TRACKING
14.22	Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	BOOKS
<b>Latent construct: Attitudes</b>		
15.1	I am more willing to support conservation efforts	WILLING
15.3	I developed a sense of care for the well-being of animals and plants by participating in the interpretation activities in the	CARE

	park	
15.4	I regularly think about my park experience	THINK
15.5	My park experience was more authentic (contact was fun, Participatory and immediate)	AUTHENTIC
15.6	I became more interested in learning about environmental issues	LEARNING
15.10	I have a stronger view point on conservation issues	VIEWPOINT
15.11	My children are more knowledgeable	KNOWLEDGABLE
15.13	I have a better understanding of SANParks' conservation efforts	UNDERSTANDING
15.15	I had a better experience/level of satisfaction at the park	BETTER
15.17	I have the confidence to express my views concerning conservation on the social media and in conversations	CONFIDENCE
<b>Latent construct: Behaviour</b>		
15.2	I implement recycling and energy saving methods at home to lessen my impact on the environment	RECYCLING
15.7	I do volunteer work for groups that help the environment	VOLUNTEER
15.8	I actively search for information about environmental conservation	SEARCH
15.9	I watch more environmental programmes on television	WATCH
15.12	I tend to visit more nature-based products	VISIT
15.14	I encourage family and friends to be more conscious about conservation	ENCOURAGE
15.16	I am a more loyal supporter of parks	LOYAL

It is now necessary to consider model identification which relates to the items per construct. The identification refers to whether sufficient information exists to identify a solution to a set of structural equations or parameters (Hair *et al.*, 2010:698; Savalei & Bentler, 2006:336). To be able to identify a model, two conditions should be satisfied (Savalei & Bentler, 2006:336):

1. The number of unknown parameters should be less or equal to the number of unique values (also known as the degrees of freedom).
  - the unknown parameters to be estimated are (i) the factor loadings, (ii) factor correlations, and (iii) measurement error variances.
  - the number of unique values (i.e. pieces of information) can be deduced from the elements in the covariance matrix (Stevens, 2009:358).
2. Establish a scale of measurement for the latent constructs [setting either the factor loading or the construct variance to 1 (Hair *et al.*, 2010:707)].

As a rule of thumb, Hair *et al.* (2010:702) suggest that a latent construct should be indicated with at least three, but preferably four measured variables to be statistically identified. For this article, however, all cases with missing values for the two Likert scales for analyses were therefore excluded for analysis and the new  $n = 429$ .

Considering the variables in Table 3.15, all the latent constructs have three or more items per latent construct. As discussed earlier, to be able to identify a model, the number of unknown parameters [(i) the factor loadings, (ii) factor correlations, and (iii) measurement error variances] should be less than or equal to the number of unique values (also known as the degrees of freedom). The number of unique values in a covariance matrix can be calculated using the following formula (Stevens, 2009:358); where  $p$  is the number of observed variables:

$$\frac{p(p + 1)}{2}$$

Table 3.16 calculated the unknown parameters as well as the unique values for the two Likert scales in order to identify a model.

**Table 3.16: Calculation for unique values and unknown parameters**

	Variables		Unique values	Estimated parameters	Degrees of freedom
<b>Experienced interpretation</b>		24	<b>300</b> $= \frac{24(24 + 1)}{2}$	<b>49</b> (24 Factor loadings + 24 Error terms + 1 Factor correlations)	<b>251</b> (300 – 50)
Primary	13				
Secondary	11				
<b>Behaviour</b>		17	<b>153</b> $= \frac{17(17 + 1)}{2}$	<b>35</b> (17 Factor loadings + 17 Error terms + 1 Factor correlation)	<b>118</b> (153 - 35)
Attitudes	10				
Behaviour	7				

Since there are positive degrees of freedom for both the Likert scales (see Table 3.16) the CFA can be identified.

### **Step c: Study design**

As explained in Table 3.4, a sample of between 200 and 400 should result in satisfactory results for SEM (Hoyle, 2011:43). Furthermore, Hair *et al.* (2010:662) and Malhotra *et al.* (2013:717) suggest a required sample size based on latent constructs, number of measured variables for each latent construct as well as communalities:

- $\leq 5$  constructs, each more than three measured variables and communalities of at least 0.5-0.6,  $n=100-200$ .
- $\leq 7$  constructs, no under-identified constructs and modest communalities (.5),  $n=150$ .
- $\leq 5$  constructs, with less than three measure variables or communalities less than 0.5, OR  $\leq 7$  constructs, multiple under-identified constructs and lower communalities (.45),  $n=300$ .
- $> 5$  constructs, less than three measure variables, and multiple low communalities,  $n=400-500$ .

Communalities, however, cannot be established before the collection of data and are thus problematic to follow Hair *et al.* (2010) and Malhotra *et al.*'s (2013) suggestion before the study is conducted. This study, however, resulted in 855 questionnaires and is more than sufficient to conduct a SEM.

When weak measurement and missing data occur, one is confronted with sampling error and larger sample sizes are required (Hair *et al.*, 2010:661). Even though Hair *et al.* (2010:660) explain that any of the missing data remedies are appropriate when missing data are random (MAR), are less than 10% of the cases, and factor loadings are high ( $\geq .7$ ), the authors suggest that *pairwise deletion* before the estimation process is recommended when sample sizes exceed 250 and the total number of missing data among the measured variables' cases is less than 10%. The Full Information Likelihood Approach (FIML) can be regarded as an alternative estimate when no remedy for missing data is required (Hair *et al.*, 2010:661) but can only be used when (i) original data set is available and (ii) only provides a smaller subset of fit indices which may not be adequate for complete model evaluation (Hair *et al.*, 2010:659). Since missing data remedies complicate analyses by first determining whether it is missing at random (MAR) which then determine the estimation

procedure, traditionally all missing values are excluded from analyses which will be the case for this study as well.

Previously, the missing data was not deleted from the data set since the techniques in SPSS can specify whether the analysis should exclude cases *listwise* (delete complete case with missing data) or *pairwise* (only use available data where some answers are missing). As the sample size becomes larger the SEM method becomes sensitive and almost any difference is detected, therefore other considerations should be included with the sample size and average error of variance of indicators (Hair *et al.*, 2010:661). One of these considerations includes the estimation method.

A few estimation techniques exist such as Ordinary Least Squares (OLS), Maximum Likelihood Estimation (MLE), Generalised Least Squares (GLS) and Asymptotically Distribution Free (ADF) estimation (Hair *et al.*, 2010:663). The state that the most common estimation procedure used in SEM is the MLE which provides valid and stable results with sample sizes as small as 50 (Hair *et al.*, 2010:661). The properties of the MLE that make it a popular method to use is that the estimates are unbiased, consistent, and efficient; parameter estimates approximate normal distribution as sample size increases; when the MLE function [i.e.  $F_{ML}(\hat{\theta})$ ] is multiplied by  $(n - 1)$  it approximates a  $\chi^2$  distribution under the assumption of multivariate normality and large samples and hence tests overall fit (Wang & Wang, 2012:15).

#### ***Step d: Determining measurement validity***

The validity of the measurement model depends on the (i) construct validity, (ii) reliability as well as (iii) goodness of fit (Malhotra *et al.*, 2013:717).

##### **(i) Construct validity**

The construct validity (i.e. discriminant and convergent validity) as well as the reliability was calculated first with an EFA by means of the Maximum Likelihood analysis and Promax rotation (see Table 3.17). Thereafter the CFA was constructed to determine construct validity as well as reliability.

- Convergent validity

Convergent validity refers to the extent to which the scale correlates with other measures of the same construct (Malhotra, 2007:287; Zikmund *et al.*, 2010:308; Malhotra *et al.*, 2013:720). The factor loadings (at least 0.5 or higher), the average of factor loadings (should at least be 0.7) and the communality of items provides evidence of this. All factor loadings within the EFA resulted in loadings above 0.5 where the items per construct's average in loadings were more than 0.7. The communality is the sum of the squared loadings for a variable thus measuring the percent of variance of the observed variable that is explained by all the underlying latent constructs on which the observed variable is loaded (Agresti & Finlay, 2009:533; Wang & Wang, 2012:41). Variables with communalities more or less equal to 0.5 (i.e. 25% shared variance) were therefore retained for the CFA. Said, Badru and Shahid (2011:1099) explain that results above 0.5 for the average variance extracted (AVE) illustrates convergent validity. Based on the AVE, all interpretation factors revealed convergent validity (primary = 0.49; secondary = 0.56) as well as the behaviour factors (attitudes = 0.47; behaviour = 0.65).

- Discriminant validity

Discriminant validity is illustrated where the construct is distinct from other constructs and individual items therefore only load on one latent construct (Zikmund *et al.*, 2010:308; Malhotra *et al.*, 2013:720). As a result, items that cross-loaded in the EFA were excluded for the CFA. Furthermore, the latent constructs should demonstrate a lack in correlation in the CFA where a correlation above 0.75 illustrates questionable discriminant validity (Malhotra, 2007:287). All the constructs revealed discriminant validity based on the correlation between latent constructs (primary with secondary = .29; attitudes with behaviour = .59). According to Said *et al.* (2011:1099) the discriminant validity (calculated as the square root of AVE) should be less than the AVE (i.e. DV < AVE). For this calculation the discriminant validity of all latent constructs was more than their AVE and thus did not conclude discriminant validity.

(ii) Reliability

As previously explained in section 3.2.5.1, an unreliable construct cannot be valid. Composite reliabilities of 0.7 or higher are considered as reliable constructs

(Malhotra *et al.*, 2013:720). All the latent constructs in the EFA were reliable with Cronbach alpha's above 0.7 whereas the Cronbach alphas of the CFA were above 0.8.

Table 3.17 illustrates the results from the EFA determining the construct validity (i.e. convergent and discriminant validity) as well as the reliability as motivation of items to be used in the CFA.

**Table 3.17: Results from the EFA to test construct validity and reliability**

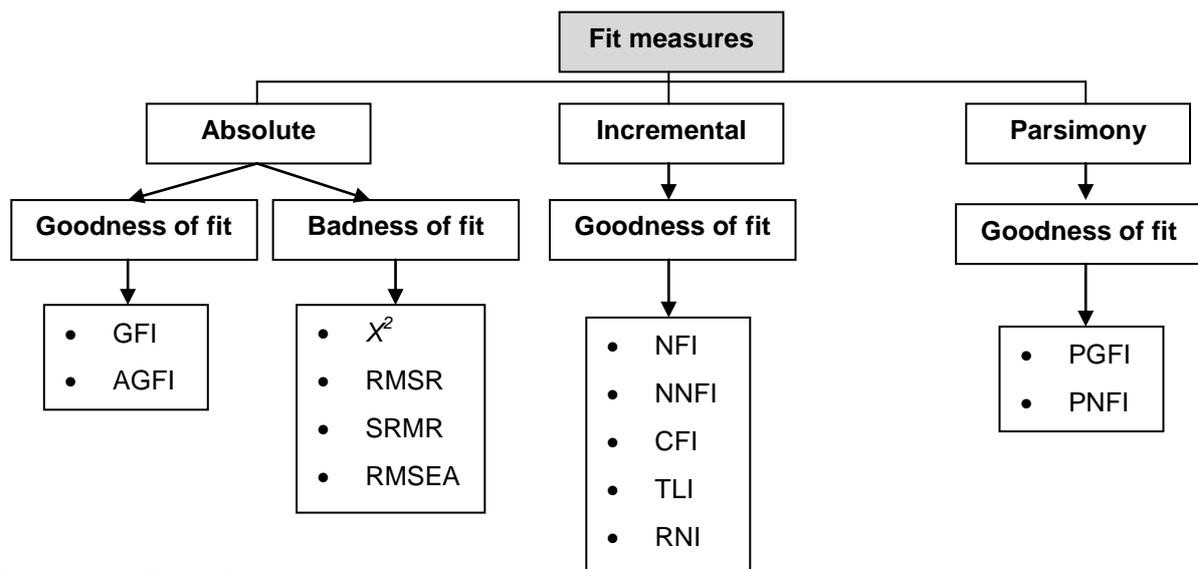
Items retained for CFA and related factors		Commun.	Loading	Average of four highest loadings	Construct Reliability
<b>Factor: Primary interpretation</b>				.79	.90
14.7	Geological and climatological displays	.632	.805		
14.8	Educational displays	.629	.798		
14.10	Educational talks, activities and games for children	.561	.780		
14.6	Interpretation activities	.549	.766		
14.5	Auditorium with nature videos	.471	.693		
14.11	Information boards regarding the faun/flora in the park	.535	.689		
14.9	Information regarding the history of the park	.500	.672		
14.12	Informed staff who can handle any queries concerning the interpretation aspects in the park	.435	.631		
14.4	Bird hides in the park	.310	.411		
<b>Factor: Secondary interpretation</b>				.83	.88
14.18	Enforcement of park rules and regulations	.804	.929		
14.17	Available route maps with descriptive information	.723	.871		
14.15	Good layout of the park, rest camps and routes	.562	.791		
14.16	Accessibility of the park	.625	.726		
14.22	Lifelike examples of different animals, insects, birds and trees with descriptive data	.449	.646		
14.3	Lookout points in the park	.328	.410		
<b>Factor: Attitudes</b>				.75	.91
15.6	I am a more loyal supporter of parks	.563	.842		
15.5	My park experience was more authentic (contact was fun, participatory and immediate)	.446	.729		

Items retained for CFA and related factors		Commun.	Loading	Average of four highest loadings	Construct Reliability
15.10	I have a stronger viewpoint on conservation issues	.599	.720		
15.14	I encourage family and friends to be more conscious about conservation	.604	.690		
15.17	I have the confidence to express my views concerning conservation on the social media and in conversations	.525	.686		
15.12	I tend to visit more nature-based products	.542	.661		
15.15	I had a better experience/level of satisfaction at the park	.352	.640		
15.2	I implement recycling and energy saving methods at home to lessen my impact on the environment	.404	.612		
15.9	I watch more environmental programmes on television	.514	.611		
15.11	My children are more knowledgeable	.392	.607		
<b>Factor: Behaviour</b>					
15.7	I actively search for information about environmental conservation	.792	.906		
15.8	I do volunteer work for groups that help the environment	.488	.730		

(iii) Goodness of fit

The goodness-of-fit results indicate how well the specified model reproduces the observed covariance matrix among the observed variables (Hair *et al.*, 2010:664) and known as the chi-square test which should be non-significant, i.e.  $p > .05$  (Muijs, 2012:377). The CFA of the interpretation as well as the TPB revealed an  $\chi^2 = 404.170$  and  $\chi^2 = 333.724$  with standard deviations of 88 and 64 respectively and indicated significance ( $p \leq .05$ ). Since large samples would indicate even very small deviations in the model and hence the increase of a Type I error, other fit indices not sensitive to sample size should also be consulted (Hair *et al.*, 2010:661; Muijs, 2012:377).

The goodness of fit indices can be classified under three groups: absolute, incremental and parsimony fit indices as illustrated in the Figure 3.9.



**Figure 3.9: SEM fit measures**

**Source: Adapted from Malhotra *et al.* (2013:717)**

It is beyond the scope of this chapter to explain exactly what each goodness-of-fit measure entails. Malhotra *et al.*, 2013:719) indicated that it is good practice to report at least one measure of the three categories of measures. Since this study has a large sample, the CFI (comparative fit index) and RMSEA (root mean square residual) are among the measures the least affected by sample size and thus reported along with the GFI (goodness-of-fit) and PNFI (parsimony normed fit index). A CFI = 1, RMSEA closer to 0 (preferable  $\leq 0.08$ ), a GFI above 0.90, and higher

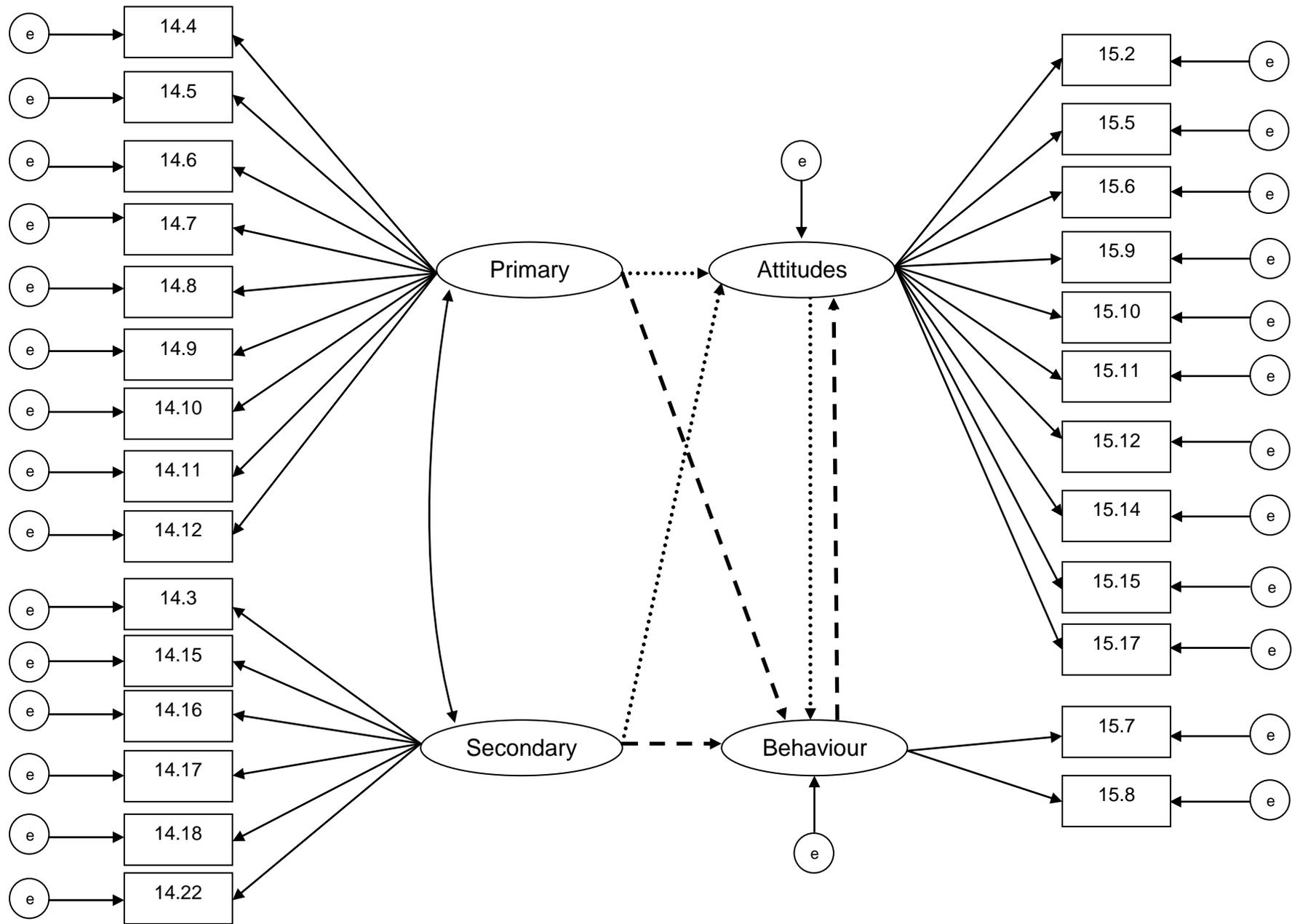
values for PNFI reveals a good fit for the model (Wang & Wang, 2012:18; Malhotra *et al.*, 2013:718-719). The goodness-of-fit measures from the CFA revealed that both the interpretation and TPB models were good based on the CFI (0.908 and 0.898 respectively), GFI (0.892 and 0.879 respectively) as well as the PNFI (0.74 and 0.72 respectively). The RMSEA however disclosed bad fit models with 0.09 and 0.09 respectively. Since most of the measures indicated good fit it is safe to conclude that the CFA revealed good model fit for both interpretation as well as the theory of planned behaviour.

#### Phase 2: Structural model

The second phase of conducting SEM is to determine the structural model which is discussed under the following two steps (i.e. e - f).

##### ***Step e: Specify structural model***

The interpretation and TPB's constructs as well as interpretation and the cognitive dissonance theory's constructs are combined into two models as illustrated in Figure 3.8. In this section, the nature and magnitude of relationships between the latent constructs are tested for each of the models (Malhotra *et al.*, 2013:721). These relationships are based on the hypotheses in step b which are explained in Chapter 6 and illustrated in Figure 3.11.



**Figure 3.10: Structural model**

(Note: ..... indicate the TPB and - - - indicate the cognitive dissonance theory)

Given that the focal point of the structural model is based on the magnitude and relationships between latent constructs, Pearson's correlations are calculated to describe the strength and direction of the linear relationship between continuous variables (Pallant, 2011:128) before the structural model is developed. The correlation coefficient is indicated by  $r$  that ranges from -1 (perfect negative relationship) to +1 (perfect positive relationship) (Dancey & Reidy, 2004:170; Zikmund *et al.*, 2010:559; Pallant, 2011:128). Not only does  $r$  indicate the direction (positive or negative) of the relationship but the strength as well: the further the coefficient is from 0 (i.e. the closer to -1 or +1) the stronger (positive or negative) the relationship or the larger the effect (Hanna & Dempster, 2012:191). According to Cohen (1988:79-81) if  $r = .10$  to  $.29$  the correlation is small, when  $r = .30$  to  $.49$  the correlation is medium, and when  $r = .50$  to  $1.0$  the correlation is large. Correlations do not imply causality but only the strength and direction of the relationship (Zikmund *et al.*, 2010:561; Hanna & Dempster, 2012:191). Even though the correlation coefficient might be statistically significant, the practical significance of large samples might be low and this therefore necessitates the calculation of shared variance (Pallant, 2011:125). To determine whether the correlation coefficient also has practical significance the shared variance can be calculated by means of the coefficient of determination (Zikmund *et al.*, 2010:562):

$$r^2 = \frac{\textit{Explained variance}}{\textit{Total variance}}$$

The relationship can be seen as the larger the degree of overlap, the larger the correlation or the degree to which the two variables overlap and co-vary (Hanna & Dempster, 2012:191). Hanna and Dempster (2012:191) assert that a perfect correlation of 1 will result in a perfect 100% overlap of the two variables.

#### **Step f: Determining structural model validity**

The TPB as well as the cognitive dissonance theory revealed  $\chi^2 = 1143.275$  and  $\chi^2 = 1168.900$  with standard deviations of 347 and 347 respectively and indicated significance ( $p \leq .05$ ). The goodness of fit measures for the TPB and cognitive dissonance theory indicated CFI's of 0.872 and 0.868; GFI's of 0.825 and 0.822 respectively; RMSEA of 0.073 and 0.074 and 90% confidence interval of .069 to .078, and .07 to .079 respectively; as well as PNFI's 0.759 and 0.755 respectively. All these measures indicate well fitted models. From this model the hypotheses can be tested.

### **3.3 CONCLUSION**

This chapter explained five of the six steps of this study's research process. The last step in the research process (i.e. step six) is to formulate conclusions and recommendations and to provide suggestions for action (Zikmund *et al.*, 2010:617). The conclusions, recommendations as well as the suggestions are based on the results obtained from the three articles that follow (the next three chapters) and therefore covered in Chapter 7 of the thesis.

## CHAPTER 4 (ARTICLE 1): EXPECTATIONS VERSUS EXPERIENCE - THE KRUGER NATIONAL PARK'S INTERPRETATION SERVICES FROM A REGIONAL APPROACH

**Abstract:** The growth of the ecotourism industry has resulted in increased demand for ecotourism and, consequently, the demand for one of the most renowned ecotourism destinations in South Africa, the Kruger National Park. Eco-tourists are highly educated and expect information-rich experiences. One of the tools to manage eco-tourists' demand is by means of interpretation. Previous studies indicated that the park's management neglects the importance of interpretation and, thus, the expectations of interpretation services exceeded the actual experience thereof. The aim of this chapter is: to determine the interpretation expectations of visitors to the park; to evaluate the experience with the current interpretation services of the Kruger National Park; to determine whether there is a gap between the expectations of and the experience with the interpretation services; and to compare the northern and southern regions' expectations with experiences. Factor analyses revealed the expected and experienced interpretation services of the park whereas paired sample t-tests indicated significant differences between the expectations of and experiences with the interpretation for the park as a whole as well as between the regions. These results suggest that the park should focus on the interpretation services from a regional perspective by developing an interpretation policy or strategy that should be re-evaluated and amended periodically.

**Keywords:** Kruger National Park; interpretation, mindfulness, experience, expectations

## 4.1 INTRODUCTION

Growth of the tourism industry has stimulated the expansion of ecotourism opportunities (Sangpikul, 2010:109) to a point where ecotourism is considered to be one of the fastest growing sectors (UNWTO, 2012). Consequently, the demand for ecotourism has also increased (Sangpikul, 2010:110). For this reason, Talsma and Molenbroek (2012:2149) suggest that ecotourism products or destinations need to investigate the needs of eco-tourists as this demand is not absolute and changes over time.

A key component of ecotourism and protected areas management is interpretation (Wearing & Neil, 2009:90) which is also captured in the definition of ecotourism. Ecotourism is defined as travelling to relatively undisturbed or uncontaminated natural areas with the specific objective of *studying, admiring* and *enjoying* the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas (Ceballos-Lascurain, 1987:14). Other definitions later on also included concepts like an *enlightening experience* (Geldenhuys, 2009:5) and *learning experience* (Weaver, 2001:15; Fennell, 2008:24; Kara, Deniz, Kilicaslan & Polat, 2011:146) or *environmental education* (Powell & Ham, 2008:468). This educational role of ecotourism management is a means of managing visitor expectations (Saayman, 2009:358) as interpretation adds value and quality to tourists' leisure experiences (Ham & Weiler, 2006:2; Moscardo, 1998:4; 1999:8; Ballantyne, Packer & Sutherland, 2011:771). This is because interpretation services fulfil recreational experiences with heightened appreciation, deeper understanding (Chen, Hwang & Lee, 2006:1168) and shapes the experience for the tourist by differentiating between episodes (Periera, 2005:1). The meanings and relationships revealed through interpretation is what enriches the experiences and conveys the intangible value of a visitor's trip (Periera, 2005:2). Ham and Weiler (2007:19) agree and furthermore found that interpretation positively influenced their experience more than non-interpretative (tangible) services like restroom facilities, parking or camping areas. As a result of the effect of interpretation through informing the tourists about the significance and meanings of the place tourists are visiting, Reisinger and Steiner (2006a:485) argue that interpretation is specifically used in national parks. A positive experience with the

park's interpretation can lead to other benefits that national parks are also aiming to achieve. These benefits include increased environmental awareness, support for conservation and the protection of endangered species (Zeppel & Muloin, 2008:285). Interpretation is therefore one of the tools to successfully manage visitor experiences to a national park. Currently, however, this does not seem to be the case in the Kruger National Park. Engelbrecht (2011:75), who conducted research on the critical success factors of managing the visitor experience at the Kruger National Park, revealed that the expectations of interpretation as well as educational activities (integral part of interpretation) exceeded the actual experience thereof. This implies that interpretation and educational services is not sufficient and requires intervention.

The Kruger National Park is situated in the Limpopo and Mpumalanga provinces of South Africa, bordering Mozambique to the east and Zimbabwe to the north. Of the 21 national parks, the Kruger National Park is the flagship park (South African National Parks [SANParks], 2012a:4) and consists of nearly 2 million hectares of the approximate 4 million hectares of land and 150 000 hectares at sea that are managed by South African National Parks (SANParks) (SANParks, 2012a:4). The Kruger National Park is thus one of the largest national parks in the world (larger than the state of Israel, Wales or the Netherlands) to be managed primarily for conservation of biodiversity (Foxcroft & Richardson, 2003:385). As a result of the size of the park, biodiversity (tropical and subtropical north and a temperate south) (Mabunda, Pienaar & Verhoff, 2003:16) and rainfall differences (low rainfall in the northern and high rainfall in the southern region) (Mabunda *et al.*, 2003:13) from north to south appear. These differences lead to forage quantity and more vegetative biomass in the south (Smit, Grant & Whyte, 2007:227) that is much busier and has a greater game population than the north (Tinker & Tinker, 2011:4). Kruger and Saayman (2014:8) found that a clear distinction can be made between the northern and southern regions based on a visitor study they have conducted on length of stay. They have found that, due to the sheer size of the park, this analysis was required. In addition to this, the question that comes to mind is whether the expectations and experiences in terms of interpretation will then also differ between the northern and southern region.

In view of the facts above, the primary aim of this chapter is to determine the interpretation expectations and experiences of visitors to the Kruger National Park. To achieve this aim, the chapter has certain goals: (i) to identify the interpretation services expected by visitors to the Kruger National Park for a quality experience; (ii) to evaluate how visitors experienced the interpretation services offered by the Kruger National Park; (iii) to compare the expected with the experienced interpretation services of the Kruger National Park and (iv) to determine whether there are differences in the perceptions of visitors towards the interpretation services in the northern and southern regions of the Kruger National Park.

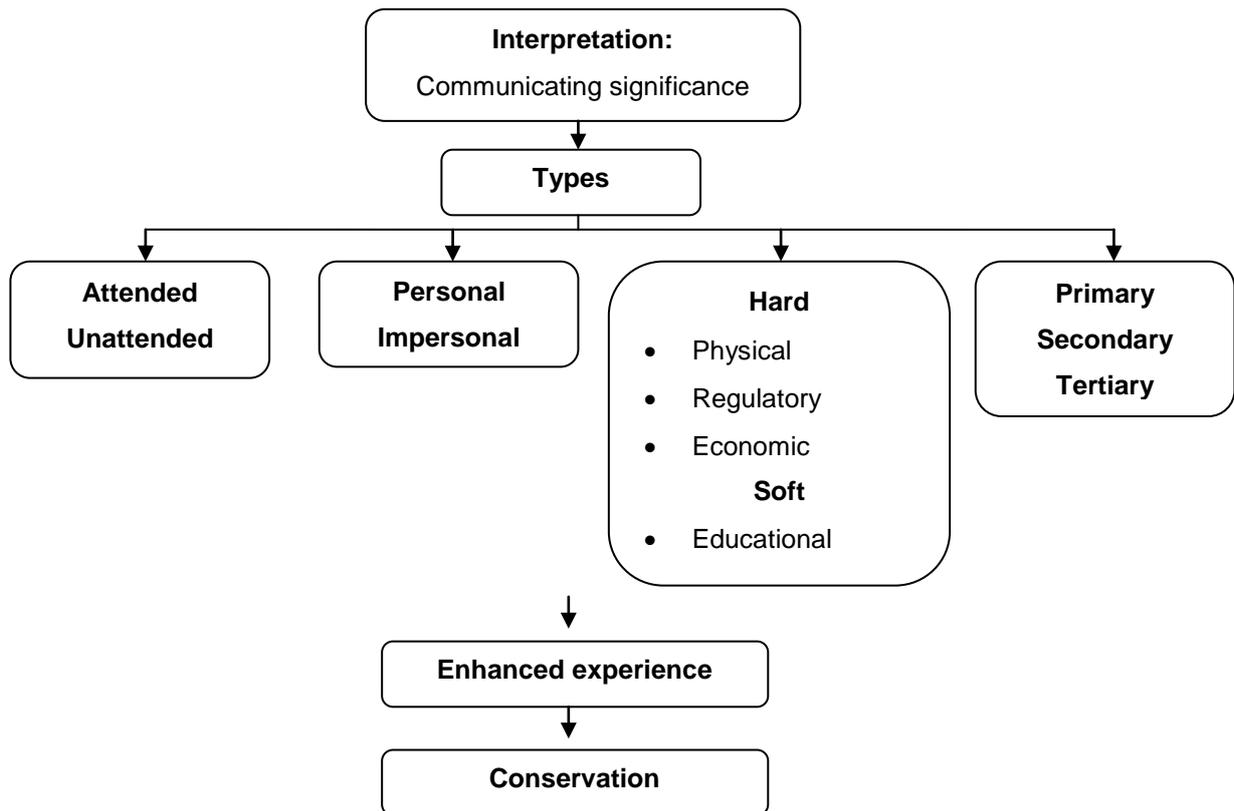
## **4.2 LITERATURE REVIEW**

Orams (1995:92) explains that the only method for tourism to truly become ecotourism is to incorporate interpretation as the educational role that is essential for successful park management (Wearing & Neil, 2009:90). However, the sustainability of ecotourism is dependent on all stakeholders involved (Powell & Ham, 2008:468) and therefore necessitates the inclusion of all stakeholders in the policies of national parks. Currently, however, a specific interpretation policy or strategy for the Kruger National Park does not exist. The educational programmes on offer focus on certain stakeholders like the *Environmental Education* programmes for school children as well as the *Community-based Conservation* programme as a means of community outreach (see <http://sanparks.org.za/conservation/people/>). Planning for interpretation for visitors is not the main focus and seems to be the domain of different park managers under the management of SANParks' own initiative. Based on the increased growth of ecotourism (Sangpikul, 2010:109) and the demand for natural learning experiences (Khan, 2003:111) this is a significant problem as the focus of the Kruger National Park is not on a market that is willing to pay for environmentally sensitive or friendly products (Khan, 2003:111).

Over the years, many definitions of interpretation presented themselves, originating from different perspectives and referring to different concepts. For the purpose of this chapter, interpretation is defined as a form of communication that explains the significance of the place people are visiting by stressing ideas, meanings and relationships rather than facts, and that the visitors may have an enjoyable visit

through first-hand experiences that result in a positive behavioural change for the conservation of natural resources (Ward & Wilkinson, 2006:2; Moscardo, 1999:5; Tilden, 1977:8).

In the same vein as the various definitions of interpretation that occurred over the years, various classifications of the types of interpretation have also presented themselves (see Figure 4.1).



**Figure 4.1: Types of interpretation**

**Source: Adapted from Tilden (1977); Stewart, Hayward, Devlin and Kirby (1998); Kuo (2002) and Ward and Wilkinson (2006)**

According to literature, Figure 4.1 indicates that the significance of the place tourists are visiting can be communicated by any of the four types of classifications of interpretation. The father of interpretation, Tilden (1977), was the first to classify different types of interpretation. He identified **attended** (in person) and **unattended** (not in person) interpretation which is also closely related to Ward and Wilkinson's (2006) **personal** and **impersonal** interpretation. Attended or personal interpretation refers to interpretation that involves a person-to-person contact such as game drives

or educational talks, whereas unattended or impersonal refer to interpretation with no personal contact such as educational displays or exhibits. Over the years the classifications have, however, grown into more complicated types which, to the untrained eye, will not be readily identified as interpretation. The authors associated with these more complicated classifications (the last two classifications in Figure 4.1) are Stewart *et al.* (1998) and Kuo (2002). Stewart *et al.* (1998) distinguished between three interpretation types: **primary** (readily identified as interpretation such as interpretation centres), **secondary** and **tertiary** interpretation (both respectively have an impact on the experience with primary interpretation such as written commentaries at an activity and advertisement of interpretation). This distinction between primary, secondary and tertiary interpretation correlates well with Kuo's (2002) **soft** interpretation aimed at educational management (Stewart *et al.*'s primary interpretation), supported by **hard** interpretation (Stewart *et al.*'s secondary and tertiary interpretation) that focus on physical, regulatory and economic management aspects. Soft interpretation refers to the specific educational message presented to visitors at interpretation centres whereas hard interpretation refers to viewing platforms (physical), rules pertaining to behaviour (regulatory) and higher fees in peak seasons (economic). Based on these classifications it is clear that interpretation is a necessary component of the visitor experience (hard or secondary and tertiary interpretation) and/or it is the experience (soft or primary interpretation) (Moscardo, 1998:5).

As illustrated in Figure 4.1, no matter the type of interpretation, one of the goals of interpretation is an enhanced experience for visitors that may, in turn, contribute to conservation. This may be since interpretation is "mindfully" communicated (Moscardo, 1999:18). The mindful-mindless theory states, that in any given situation a person may be mindful or mindless (Langer, 1964:138). Mindlessness is characterised by the rigid use of information where the individual is not aware of the potential of the information whereas mindfulness is characterised by active analysis of information (Langer & Piper, 1987:280). Since attention and awareness is needed for conscious processing of information (Brown, Ryan & Creswell, 2007:212; Kang & Gretzel, 2012:441) mindfulness is characterised by a readiness for cognitive processing (Kang & Gretzel, 2012:441). Effective interpretation creates mindfulness by presenting the information or message to visitors in a conditional ("this **could**

*be/might be* x”) rather than an absolute way (“this *is* x”) (Langer & Piper, 1987:285). Other authors (Tilden, 1977:9; Ham, 1992:8; Moscardo, Woods & Saltzer, 2004:243; Ham, Housego & Weiler, 2005:7; Moscardo & Ballantyne, 2008:240,244; Frauman, 2010:234; Ballantyne *et al.*, 2011:778) also concluded that effective interpretation should be presented in a variety of presentations, have personal relevance, be enjoyable, provide time for reflection, use all the senses, provoke visitors to think deeply and to draw their own conclusions, provide the significance of the place they are visiting and provide personal control for the visitor. Interpretation is consequently not the communication of factual information (absolute) but rather a communication process that reveals meanings and relationships of the place they are visiting (conditional) (Tilden, 1977:8; Ballantyne *et al.*, 2011:777).

In tourism, the aim of each tourist is the realisation of wanted and expected experiences (Rabotić, 2010:1158). As with any service provider, and specifically national parks, the needs or expectations of their visitor should be considered. According to Khan (2003:112), Eagles (2004:19) and Jurdana (2009:270), visitors to national parks are highly educated and expect or seek information-rich experiences. Eco-service expectations are specifically important in national park settings (Said, Jaddil & Ayob, 2009:83) since the environment is the main resource and attraction of the park (Gilmore & Simmons, 2007:194; Said *et al.*, 2009:85). As a result, Frauman and Norman (2004:382) highlight the plausibility of national parks’ visitors to be more mindful since they are more attentive. According to Moscardo (1999:25) and Moscardo and Ballantyne (2008:243), mindful people pay attention to information available in the environment, react to the new information and learn. Bearing in mind that people can become mindless when over exposed to the same information (Chanowitz & Langer, 1981:1052) and that visitors and experiences change and new desired outcomes emerge, it is important that the interpretation presented remains relevant to the visitors (Ham *et al.*, 2005:16). It is imperative to consider what the visitors expect from interpretation services of the park as this can provide insight into what drives their satisfaction (Ham & Weiler, 2007:6). Within the interpretation context, satisfaction affects the intensification of the tourists’ visit to the park (loyalty, increased purchasing, spend more time at destination, encourage other visitors to visit and contribute to conservation) and also the visitor’s future behaviour (De Rojas & Camarero, 2008:528,533; Lee, 2009:741). Ham *et al.* (2005:2) furthermore

explain that the impact of effective interpretation services means more customers and more sales.

Service experience can be enhanced if the visitor is persuaded to participate or immersed in the environment in which the service is performed (Stuart, 2006:151). According to the definition of interpretation, the latter is exactly what interpretation involves as educational messages or information is presented through stories, illustrative media and first-hand experiences (Tilden, 1977:8; Lee, 2009:729) that create heightened experiences of appreciation (Chen *et al.*, 2006:1168). Specifically in wildlife environments, Ballantyne, Packer, Hughes and Dierking (2007:379) found that the opportunity to learn about conservation is likely to enhance visitors' experience as opposed to detract from it. Henker and Brown (2011:19) state that being in a park heightens the sensitivity of the visitors to emotional and stewardship elements of interpretation. Ballantyne *et al.* (2011:776) concluded that the opportunity to view wildlife at a close range, artificially as well as in their natural habitat, evokes powerful memories, makes life-changing impressions and enhances their experience. Even wildlife experiences through podcasts can reinforce the intellectual and emotional connections in visitors (Henker & Brown, 2011:18) and the potential to enhance tourists' experiences and stewardship (Kang & Gretzel, 2012:449). Hwang, Lee and Chen (2005:152) found that involvement in a park's interpretation services had a positive significant relationship on visitor satisfaction. Moscardo (1998:9) explains this satisfaction by indicating that interpretation experiences is a way of personalising the experience, making a personal link and gives visitors a sense of control.

Clearly interpretation is an effective educational tool not only to fulfil a national park's ecotourism management goals but also, importantly, to increase the experience of visitors. The visitor experience to the Kruger National Park is also of extreme importance considering the fact that 85% of South African National Parks' operational costs are funded from the revenue obtained from tourism revenue (SANParks, 2013a:5). Engelbrecht (2011:80) specifically pointed towards the importance to the management of the Kruger National Park to create a memorable experience for visitors as this will ensure positive word-of-mouth recommendations, increase revenue, create loyalty, generate competitive advantage, provide a means

of personification of the park's brand, and contribute to the sustainability of the park. More specifically, the Kruger National Park's marketers should approach the experiences in the park from a regional perspective since the regions offer different products (Kruger & Saayman, 2014:9). In view of the current interpretation dilemma in the Kruger National Park, the park should determine the expected interpretation services and compare this with the visitors' experience. The latter should not only be determined for the park as a whole but should also be explored between the northern and southern regions of the park because, as previously stated, the experiences in these two regions differ. Identifying and reducing the gaps between the interpretation expectations and the experience in the northern and southern regions is imperative to tourist satisfaction levels (Lee, Jeon & Kim, 2011:1120) that can lead to a range of benefits for the Kruger National Park. As mentioned earlier, these benefits may include personification of the park's brand, increased satisfaction, loyalty, increased purchasing, increased revenue, tourists spending more time at the destination, the encouragement of other visitors to visit, positive word-of-mouth, contributions to the park's conservation and sustainability, and lead to increase environmental awareness (Hwang *et al.*, 2005:152; De Rojas & Camarero, 2008:528,533; Zeppel & Muloin, 2008:285; Lee, 2009:741; Engelbrecht, 2011:80).

### **4.3 METHOD OF RESEARCH**

To achieve the goal of this chapter, the following quantitative methodology was followed:

#### **4.3.1 Study design**

Data was collected by means of a self-administered questionnaire (see Annexure A) in the northern and southern regions of the Kruger National Park. According to Zikmund, Babin, Carr and Griffin (2010:305), the three major criteria for evaluating a measurement such as a questionnaire are reliability, validity, and sensitivity. All of these aspects were included in the design of the questionnaire and specifically in Section B on which this chapter was based as consequently explained.

Section B captured 24 expected and experienced interpretation services for the Kruger National Park. Based on sensitivity, the instrument accurately measured

variability in responses (Zikmund *et al.*, 2010:309) by means of appropriate Likert scales. The expected interpretation variables determined the interpretation services expected by respondents by measuring the *importance* on a five-point Likert scale ranging from 1 = Extremely important to 5 = Not at all important. To understand whether there are differences between what respondents expect of the interpretation services and the experience with these interpretation services the variables were also measured on a five-point Likert scale ranging from 1 = Excellent to 5 = Very poor.

Section B also adhered to content validity as the variables in Section B were based on the following authors' work to cover the breadth of the interpretation domain (Zikmund *et al.*, 2010:307; Salkind, 2008:113): Thorndike (1911); Ajzen (1988); Orams (1994; 1996); Lee and Balchin (1995); Moscardo (1998); Stewart *et al.* (1998); Kuo (2002); Tubb (2003); Frauman and Norman (2004); Madin and Fenton (2004); Hwang *et al.* (2005); Periera (2005); Reisinger and Steiner (2006a); Ward and Wilkinson (2006); Ham and Weiler (2007); Ballantyne, Packer and Hughes (2008); De Rojas and Camarero (2008); Mitsche, Reino, Knox and Bauernfeind (2008); Powell and Ham (2008); Zeppel and Muloin (2008); Lee (2009); Lee, Lee, Kim and Mjelde (2010); Ballantyne *et al.* (2011); and Henker and Brown (2011). The convergent construct validity of the variables in Section B's expected and experienced scales were tested by means of factor analysis to determine the interpretation classification of literature with which the variables are most consistent (Zikmund *et al.*, 2010:308; Salkind, 2008:113). The last criterion for a measurement is reliability. The reliability of Section B's scales is also measured by means of the alpha coefficient which represents the average of all possible split-half reliabilities for a construct (Zikmund *et al.*, 2010:306). The alpha coefficient indicates the quality of the scale; in other words a score ranging from 0.60 to 0.70 indicates fair reliability, 0.70 to 0.80 indicates good reliability and 0.80 to 0.95 indicates very good reliability (Zikmund *et al.*, 2010:306).

#### **4.3.2 Sampling and survey implementation**

Since the focus of this chapter is on the difference between the northern and the southern regions of the Kruger National Park, the sampling should be explained for both the regions. To calculate the sample needed for both surveys, the population of

overnight visitors to the Kruger National Park for 2011 and 2012 were divided by the average travelling group size, seeing as one questionnaire per travelling group was distributed. This resulted in a new population ( $N$ ) of 357 290 for the southern region of 2011 and a population ( $N$ ) of 305 584 for the northern region in 2012 (SANParks, 2011:28-29; 2012c:39). According to Krejcie and Morgan's (1970:607) formula for a population ( $N$ ) of 357 290 tourists to the Kruger National Park during 2011 and a population ( $N$ ) of 305 584 during 2012; a 95% confidence level and a 5% sampling error [ $d$  is, in other words, expressed as (.05)] samples of 384 for both of the southern and northern regions are required to validate analysis. The surveys resulted in a total of 463 for the southern region and 392 completed questionnaires for the northern region of the Kruger National Park. Both surveys therefore resulted in more than the required number (384) of questionnaires.

The distribution of questionnaires for this study was done in two phases to cover respondents from both regions: (i) phase one in the southern region in of the Kruger National park took place specifically in Satara, Skukuza, Lower Sabie, and Berg en Dal rest camps between 27 December 2011 and 3 January 2012; (ii) phase two was done in the northern region of the park in Olifants, Letaba, Mopani, Shingwedzi and Punda Maria rest camps from 24 June to 2 July 2012. Fieldworkers were assigned to a specific area for two days within the rest camps of the southern region as well as in the rest camps of the northern region. In both surveys, fieldworkers were briefed on the goals and the content of the questionnaire beforehand. During the distribution of one questionnaire per overnight travelling group, fieldworkers only distributed a questionnaire to a potential respondent who indicated that he/she has not filled out the questionnaire as the distribution progressed through the park and regions, explained the purpose of the study to the potential respondent and indicated that their participation is voluntary and may withdraw from the study at any time.

The composition of both the northern and southern region's respondents to the Kruger National Park is captured in the demographic profiles in Table 4.1.

**Table 4.1: Demographic profile of respondents to the northern and southern regions of the Kruger National Park**

Category	Southern region (Dec 2011/12)	Northern region (June 2012)
<b>Language</b>	Afrikaans (48%); English (35%)	Afrikaans (71%); English (24%)
<b>Gender</b>	Male (56%); Female (44%)	Male (52%); Female (48%)
<b>Average age</b>	46 years	47 years
<b>Marital status</b>	Married (80%)	Married (79%)
<b>Province of residence</b>	Gauteng (57%) and Mpumalanga (13%)	Gauteng (47%) and Mpumalanga (7%)
<b>Country of residence</b>	RSA (87%)	RSA (92%)
<b>International visitors</b>	Netherlands (19%), USA (14%), Germany (12%), UK (9%), Australia (9%)	Australia (17%), USA (14%), UK (10%), Germany (10%), New Zealand (10%)
<b>Level of education</b>	Diploma/Degree (36%); Matric (26%)	Diploma/Degree (44%); Post-graduate (21%)
<b>Number of people paid for</b>	Average 3 persons	Average 3 persons
<b>Mode of transport</b>	4x4 (33%) and sedan (29%)	4x4 (42%) and 2x4/bakkie (i.e. pickup truck) (19%)
<b>Length of stay</b>	Average of 8.19 nights	Average of 8 nights
<b>Wildcard holder</b>	Yes (73%)	Yes (81%)

\* Percentages do not necessarily add up to a 100%.

According to Table 4.1, the type of respondents to the northern and southern regions does not seem to differ demographically. Both regions' respondents were mostly Afrikaans-speaking, in their mid-forties, mostly males, married, originated from Gauteng and Mpumalanga, were well educated, had a travel group of three people, stayed an average of 8 nights and were holders of a Wildcard (SANParks' loyalty card). This indicates that the visitors to the Kruger National Park seem to be a homogeneous market. As a result, the demographic profiles of visitors to the northern and southern region separately as well as together correspond mostly with the demographic profiles of Kruger and Saayman (2010:92; 2014:7), Engelbrecht (2011:46), Scholtz (2010:28) and Van Tonder (2012:48-55) with regards to marital status, level of education, country of residence, province of residence, and length of stay.

### 4.3.3 Statistical data analysis

Data were captured in Microsoft Excel and analysed using SPSS (SPSS Inc, 2013). The chapter followed two stages of analyses:

In the first stage of the chapter, two factor analyses (i.e. principal axis factoring) were conducted to determine what respondents expect of interpretation services and their experience of interpretation services in the Kruger National Park. To determine whether a factor analysis could have been conducted on the expectations and experience with interpretation services data variables, the Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was performed on both the expectations as well as the experience scales. According to Bartlett (1954), a factor analysis is appropriate when the result of the Bartlett test for sphericity indicates significance, in other words  $p \leq .05$ . In the same manner, Kaiser (1970, 1974) explains that the minimum value of the KMO (the measure of sampling adequacy) for a factor analysis to be performed should be 0.6. To determine the smallest number of factors from the respective data variables the pattern matrix of the principal axis factoring extraction technique was applied. This method was specifically chosen seeing as it partitions the shared variance from the unique variance and error variance to reveal the underlying factor structure as to the principal component analysis that does not discriminate between shared and unique variance (Costello & Osborne, 2005:2). The Kaiser Normalisation (eigenvalues above 1.0 or more) guided the decision on the number of factors retained. According to Dancey and Reidy (2004:431), to name the factors a decision should be made on how strong the factor loadings should be to be included in a factor and tends to be arbitrary and varies among authors. According to Stevens (2009:333), however, the factors are reliable when the average of the four largest loadings is greater than .60 or the three largest loadings are greater than .80. Guadagnoli and Velicer (1988:274) also concluded that factors with only a few low loadings can be interpreted if the sample size is at least 300 to indicate a reliable factor. Stevens (2009:332) furthermore asserts that for a sample of 800 the loadings of variables should be at least 0.182. Bearing all these guidelines in mind and the fact that the sample size is over 800 (northern and southern samples combined for the factor analysis), items with a factor loading above 0.2 were therefore considered as a contributing item to a factor and where an item cross-loaded on two factors the item

was categorised under the relevant categorisation according to literature. The Oblimin oblique rotation technique was furthermore applied to assist in factor interpretation. The internal consistency of each factor was also calculated by means of the reliability coefficient (Cronbach's alpha). Only reliability coefficients above 0.6 were considered as acceptable for the chapter since a reliability coefficient below 0.6 indicates that the scale has poor reliability and unsatisfactory internal consistency (Zikmund *et al.*, 2010:306; Malhotra, 2007:285). The inter-item correlations were also calculated as another reliability measure which, recommended by Briggs and Cheek (1986) should be between 0.2 and 0.4.

Secondly, paired sample t-tests were calculated to investigate whether any significant differences exist between expectations of and experiences with interpretation in the park and furthermore whether there are any differences with the latter between the northern and southern regions. Cohen's (1988) *d*-value (effect size) was also calculated to determine marginal differences between the expected and experienced mean values of interpretation in the park. According to Cohen (1988) if  $d = 0.2$ , it indicates a small effect and the research ought to be replicated to determine whether there is an effect or if the result is practically non-significant;  $d = 0.5$  indicates a medium effect that might point towards practical significance, and if  $d = 0.8$ , it shows practical significance and therefore practical importance (Steyn, 2000:2). The larger the effect of the *d*-value the stronger the indication of the increased lack of overlap between the groups (Salkind, 2008:180) and practical differences.

#### **4.4 RESULTS**

The following section discusses the results from the factor analyses done on the expectations of and the experiences with the interpretation variables as a result of interpretation in the park, as well as the results of the t-tests to investigate significant differences as a whole and between the northern and southern regions.

#### 4.4.1 Results of the factor analyses: expectations of and experiences with interpretation in the Kruger National Park

After comparison, and for more clarity, a factor analysis was based on the typology used by Stewart *et al.* (1998) that proves the construct validity of the scale used.

The results of the first round of factor analyses for both the expectation as well as the experience variables revealed that one variable, *informed staff who can handle queries regarding the interpretation of the park* did not load under the correct factor as literature indicates (i.e. primary interpretation) and it was therefore decided to exclude it from the second round of analyses and regard it as a factor on its own. The principal axis factoring analysis using an Oblimin oblique rotation with Kaiser normalisation on the remaining 23 variables identified two factors for expectations and experiences respectively (see Table 4.2). **Factor 1** was labelled **Primary interpretation**, **Factor 2** was labelled **Secondary interpretation** [for the purpose of this study includes both secondary and tertiary interpretation services according to the classification by Stewart *et al.* (1998)] and **Factor 3**, as previously indicated is **Knowledgeable staff**. The Bartlett's test revealed statistical significance ( $p = 0.001$ ) for expectations as well as experiences, and the KMO for sampling adequacy resulted in 0.941 and 0.931 respectively. Only eigenvalues above 1 were used which resulted in two factors for expectations as well as experiences and accounted for 56% and 50% of the total variance explained respectively. The average of all items contributing to a specific factor revealed factor scores that interpret the factor on the original five-point Likert scale for expectations (1 = Extremely important to 5 = Not at all important) and experiences (1 = Excellent to 5 = Very poor). All factors indicated very good convergent validity with Cronbach alphas above 0.8 (should be above 0.6) and inter-item correlations of between 0.40 and 0.50 (should be between 0.2 and 0.4).

**Table 4.2: Factor analyses for expectations of and experiences with interpretation services of the Kruger National Park**

<b>Interpretation Expectations</b>	<b>Factor loading</b>	<b>Interpretation Experience</b>	<b>Factor loading</b>
<b>Factor 1: Primary interpretation</b>		<b>Factor 1: Primary interpretation</b>	
Interpretation activities e.g. slide shows, informative sessions and specialist talks	.825	Geological and climatological displays	.821
Auditorium with nature videos	.780	Interpretation activities e.g. slide shows, informative sessions and specialist talks	.817
Geological and climatological displays	.716	Educational talks, activities and games for children	.810
Educational displays	.527	Educational displays	.771
Educational talks, activities and games for children	.513	Information boards regarding the fauna/flora in the park	.668
Information regarding the history of the park	.401	Information regarding the history of the park	.656
Information boards regarding the fauna/flora in the park	.388	Auditorium with nature videos	.637
Lifelike examples of different animals, insects, birds and trees with descriptive data	.366	Lifelike examples of different animals, insects, birds and trees with descriptive data	.491
Information centres and interpretation centres in specific rest camps	.264	Identification of trees, e.g. nameplates or information boards	.425
Identification of trees, e.g. nameplates or information boards	.234	Authenticity of interpretation	.421
Authenticity of interpretation	.825	Information centres and interpretation centres in specific rest camps	.407
Interactive field guides on game drives and guided walks	.780	Interactive field guides on game drives and guided walks	.268
<b>Mean value</b>	<b>2.42</b>	<b>Mean value</b>	<b>2.92</b>
<b>Reliability coefficient</b>	<b>.91</b>	<b>Reliability coefficient</b>	<b>.91</b>
<b>Average inter-item correlation</b>	<b>.45</b>	<b>Average inter-item correlation</b>	<b>.44</b>
<b>Factor 2: Secondary interpretation</b>		<b>Factor 2: Secondary interpretation</b>	
Clear directions to rest camps and picnic areas	.964	Clear directions to rest camps and picnic areas	.886
Available route maps with descriptive information	.951	Accessibility of the park	.829
Good layout of the park, rest camps and routes	.900	Available route maps with descriptive information	.813
Accessibility of the park	.889	Good layout of the park, rest camps and routes	.758
Enforcement of park rules and regulations	.764	Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	.643
Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	.709	Information regarding interpretation in the park available on the web	.457
Information regarding interpretation in the park available on the web	.626	Lookout points in the park	.450

Lookout points in the park	.567	Information boards with animal tracking	.429
Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio	.523	Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio	.385
Information boards with animal tracking	.515	Enforcement of park rules and regulations	.358
Bird hides in the park	.324	Bird hides in the park	.309
<b>Mean value</b>	<b>1.74</b>	<b>Mean value</b>	<b>2.42</b>
<b>Reliability coefficient</b>	<b>.91</b>	<b>Reliability coefficient</b>	<b>.88</b>
<b>Average inter-item correlation</b>	<b>.50</b>	<b>Average inter-item correlation</b>	<b>.40</b>
<b>Factor 3: Knowledgeable staff</b>		<b>Factor 3: Knowledgeable staff</b>	
Informed staff who can handle any queries concerning the interpretation aspects in the park	.647	Informed staff who can handle any queries concerning the interpretation aspects in the park	.630
<b>Mean value</b>	<b>1.74</b>	<b>Mean value</b>	<b>3.13</b>
<b>Total variance explained</b>	<b>55.6%</b>	<b>Total variance explained</b>	<b>49.5%</b>

It is clear from Table 4.2 that respondents consider *primary* (2.42) and *secondary interpretation services* (1.74) as well as *knowledgeable staff* who can handle queries about interpretation delivered at a park (1.74) as very important. However, only *secondary interpretation* met the respondents' expectations (1.74) since they have indicated that they have experienced it sufficiently (2.42). The expectations of *primary interpretation* (2.42) and *knowledgeable staff* (1.74) who should handle the queries of the primary interpretation in the park was not met since respondents have indicated that they have only experienced these two factors fairly (2.92 and 3.13 respectively) - indicating room for improvement.

#### 4.4.2 Results of the paired sample t-tests

Paired sample t-tests were used to determine whether significant differences exist between expectations of and experiences with interpretation in the park with regards to *primary*, *secondary interpretation*, and *knowledgeable staff* (see Table 4.3).

**Table 4.3: Paired sample t-test of expected and experienced interpretation services of the Kruger National Park**

Interpretation Factors	Expectations			Experience			t-value	Sig. (2-tailed)	Effect size (d-value)
	Mean	Std. Dev.	N	Mean	Std. Dev.	N			
Primary	2.42	.77	693	2.92	.66	693	-13.528	.001 <sup>#</sup>	0.65 <sup>**</sup>
Secondary	1.74	.67	694	2.42	.61	694	-22.037	.001 <sup>#</sup>	1.01 <sup>***</sup>
Knowledgeable staff	1.74	.99	657	3.13	1.08	657	-25.463	.001 <sup>#</sup>	1.29 <sup>***</sup>

# indicates significant differences ( $p \leq .05$ )

\* $d = 0.2$ : small effect; \*\*  $d = 0.5$ : medium effect; \*\*\*  $d = 0.8$ : large effect

Table 4.3 indicates that there are significant differences ( $p \leq .05$ ) between all factors with regards to expectations of and experience with the interpretation services of the Kruger National Park. This table indicates the same mean values as reported in Table 4.2 above. The effect size reported in Table 4.3 furthermore signifies practical significance (indicated by  $d = 0.8$ ) for both *secondary interpretation* ( $d = 1.01$ ) as well as *knowledgeable staff* ( $d = 1.29$ ), and that *primary interpretation* might indicate a practical significance ( $d = 0.65$ ).

For a more detailed description, further paired sampled t-tests were conducted to see whether significant differences exist between the northern and southern regions with regards to expectations of and the experience with the *primary interpretation*, *secondary interpretation*, as well as *knowledgeable staff* in the park.

**Table 4.4: Paired sample t-test between northern and southern regions' interpretation services of the Kruger National Park**

Region	Interpretation Factors	Expectations			Experience			t-value	Sig. (2-tailed)	Effect size (d-value)
		Mean	Std. Dev.	N	Mean	Std. Dev.	N			
North	Primary	2.46	.74	337	2.95	.65	337	-10.059	.002 <sup>#</sup>	0.66 <sup>**</sup>
	Secondary	1.71	.61	336	2.40	.63	336	-18.069	.001 <sup>#</sup>	1.10 <sup>***</sup>
	Knowledgeable staff	1.78	.95	341	3.11	1.02	341	-17.635	.170	1.30 <sup>***</sup>
South	Primary	2.39	.80	356	2.88	.66	356	-9.174	.354	0.61 <sup>**</sup>
	Secondary	1.76	.73	358	2.43	.60	358	-14.026	.185	0.92 <sup>***</sup>
	Knowledgeable staff	1.71	1.02	369	3.16	1.139	419	-18.394	.072	1.27 <sup>***</sup>

# indicates significant differences ( $p \leq .05$ )

\*d = 0.2: small effect; \*\* d = 0.5: medium effect; \*\*\* d = 0.8: large effect

Comparing the results of Table 4.3 with Table 4.4 gives the impression that there are not considerable differences between the two tables. Comparing the mean values also indicates similarities based on the fact that respondents for both the northern and southern regions indicated that *primary* (2.46 and 2.39 respectively), *secondary* (1.71 and 1.76 respectively) as well as *knowledgeable staff* (1.78 and 1.71 respectively) are very important to the respondents for a visit to the Kruger National Park. Only *secondary interpretation* services in the northern and southern region appear to have met the respondents' expectations since they indicated that they have experienced this interpretation service sufficiently (2.40 and 2.43 respectively). On the other hand, *primary interpretation* (2.95 and 2.88 respectively) as well as *knowledgeable staff* (3.11 and 3.16 respectively) in the northern and southern region, were experienced fairly well. The only significant differences, however, appear at *primary* ( $p = .002$ ) and *secondary interpretation services* ( $p = .001$ ) with regards to expectations of and experience with the interpretation services in the northern and southern regions of the park.

Even though the results indicate that there are few statistical significances, Carter (2003:638) explains the shortcoming of only reporting statistical significance as it does not tell us more than the fact that a sufficient sample size was used. It is imperative to have a look at the effect size since this reflects the magnitude of difference between the means scores (Carter, 2003:637,638). To see whether there are, in fact, differences between the expectations of and the experience with the interpretation services in the

northern and southern region of the Kruger National Park the effect sizes should carefully be examined:

- *Primary interpretation* of the northern region's effect size resulted in  $d = 0.66$  and the southern regions' in  $d = 0.61$ , explaining that there might be practical significance ( $d = 0.5$ ) and indicating approximately 57% to 63% of the overlap (refer to Table 3.7 in Chapter 3 for percentage in overlap) between the responses (Dancey & Reidy, 2004:211) as to what respondents expect and what they have experienced. The northern and southern regions' expectations of experience with *primary interpretation* differ approximately 6% in overlap indicating a slight difference in responses. The fact that there might be practical significance may be a result of the difference between what respondents expect and experience. Respondents expect *primary interpretation* in both regions to be very important but only experience it fairly well which indicates room for improvement for both regions.
- *Knowledgeable staff* of the northern region's effect size resulted in  $d = 1.30$  and the southern region's in  $d = 1.27$ . The effect sizes explain that there is practical significance ( $d = 0.8$ ) and indicates approximately 35% to 37% overlap between the responses (Dancey & Reidy, 2004:211) as to what the respondents expect and what they have experienced. Once again, the overlap between northern and southern region regarding *knowledgeable staff* also indicates a slight difference in responses of approximately 2%. Similarly to *primary interpretation*, the practical significance of *knowledgeable staff* also proves that this factor should be addressed in both regions as respondents regard *knowledgeable staff* as very important but only experienced it fairly well.
- Even though *secondary interpretation's* effect sizes for the northern and southern region ( $d = 1.10$  and  $d = 0.92$  respectively) indicate practical significance ( $d = 0.8$ ), the percentage of overlap between the responses (42% to 53%) of what the respondents expect and experience are particularly interesting. Albeit quite small, the responses differ approximately 11% which is much larger than the approximate 6% and 2% of *primary interpretation* and *knowledgeable staff* respectively. Considering the practical significance, the 11% difference in responses as to what respondents expect and experience and the fact that the mean values indicate that respondents have experienced what they have expected from both regions, clearly indicates that there are some differences between the two regions' *secondary interpretation*. The southern region's percentage in overlap of responses (approximately 48% to 53%) points towards the fact that what the respondents

expect differs from what respondents have experienced more than the difference between what the respondents expect and what they have experienced in the northern regions (overlap in responses is approximately 42%). This suggests that the southern region's *secondary interpretation* needs attention or improvement.

#### 4.5 FINDINGS AND IMPLICATIONS

Based on the results of this chapter, the following findings and implications are presented:

The first finding confirmed that various factors of interpretation are important for an eco-destination such as the Kruger National Park. **Primary interpretation** and **Secondary interpretation** confirm research by Stewart *et al.* (1998) who classified interpretation into three types: primary, secondary and tertiary interpretation. The results of this chapter, however, disclosed a third factor, namely **Knowledgeable staff** which associates with Jurdana's (2009:275-276) educational requirements for ecotourism management that explains that to manage an ecotourism destination successfully, staff should have knowledge on communication and interpretation relating to natural and cultural heritage. All three of these factors are regarded as being very important for a quality experience at the Kruger National Park and considering the demographic profile of the respondents confirms results by Khan (2003:112), Eagles (2004:19) and Jurdana (2009:270) as visitors to the Kruger National Park are highly educated and expect information-rich experiences.

The second finding revealed a difference between expected and experienced interpretation services by visitors to the Kruger National Park. Only *Secondary interpretation* met respondents' expectations and that *Primary interpretation* and *Knowledgeable staff* were experienced fairly. Even though this chapter measured interpretation more in-depth, the results confirm Engelbrecht's (2011:75) study, which revealed that the expectations with interpretation services in the Kruger National Park exceeded the actual experience thereof and that these gaps should be addressed by management.

The third finding again also indicated that there is a difference between expected and experienced interpretation services between the northern and southern regions. Even though the results of these findings confirm the study by Kruger and Saayman (2014)

the results are not as significant. At first glance the results between the northern and southern regions' expected and experienced factors did not seem to reveal more than the results of the park as a whole. However, based on the practical significance and specifically the shared variance between expected and experienced variables revealed that the only factor that did indeed differ between the northern and southern region is *Secondary interpretation*. Results point towards higher expectations than actual experience of the southern region's interpretation compared to the northern region's expectations and experiences. In view of the differences in biodiversity, rainfall (Mabunda *et al.*, 2003:16) and overnight visitor totals between the northern and southern regions (Tinker & Tinker, 2011:4) and the fact that this chapter's results indicate that there are differences in *Secondary interpretation*, confirms Kruger and Saayman's (2014) research and recommendation for a regional analysis approach for the Kruger National Park. Other similar destinations might require a different approach.

The findings of this research also have important implications:

This chapter revealed that visitors to the Kruger National Park are highly educated, expect information-rich experiences and as a result expect *Primary interpretation*, *Secondary interpretation* and *Knowledgeable staff* to be very important for a quality experience. Bearing SANParks' dependence on revenue from tourist facilities in mind and that the Kruger National Park is the biggest contributor to this revenue, the experience of visitors is a key concern for park management and therefore should not only be an initiative but necessitates planning of interpretation services of the Kruger National Park. The current differences between the expectations and experience with the interpretation services amplify the planning for interpretation services. Such a planning procedure can be captured in the form of an interpretation policy or strategy. Planning for a quite complex tool such as interpretation requires an in-depth analysis of all three types of interpretation revealed in the study and cannot be measured in general. A general evaluation of interpretation will only reveal half the truth. Furthermore, the planning for interpretation should also be addressed from a regional perspective as the size of the park disclosed differences in expectations and experiences with interpretation.

As *Primary interpretation* is readily identifiable as interpretation, park management should firstly pay attention to the design of their *Primary interpretation*. Ham *et al.* (2005:5) suggest that the first step in planning for interpretation should be the

interpretative inventory that evaluates the site's potential by determining the unique selling points and then to determine the interpretative goals the site wants to achieve. Considering the fact that the northern and southern regions differ, each region can have its own unique *Primary interpretation* services. Along with identifying the visitors, these unique selling points and goals that the Kruger National Park wants to achieve can then be developed into *Primary interpretation* services. The services of a professional interpretation developer can be consulted to help with this design seeing as the park consists of such a large area and diverse biodiversity, rainfall regions and animal viewing opportunities. The design of the *Primary interpretation* should be developed according to the following suggestions for effective interpretation: present information conditionally, use a variety of presentations, have personal relevance, allow reflection time, make use of senses, provoke, provide significance, and allow personal control (Langer & Piper, 1987:285; Tilden, 1977:9; Ham, 1992:8; Moscardo *et al.*, 2004:243; Ham *et al.*, 2005:7; Moscardo & Ballantyne, 2008:240, 244; Frauman, 2010:234; Ballantyne *et al.*, 2011:778).

Complementary to the development of *Primary interpretation* is designing *Secondary interpretation* services. In view of the fact that *Secondary interpretation* can have an impact and enhance the overall *Primary interpretation* experience, *Secondary interpretation* is specifically important within the Kruger National Park in view of the dependence on tourism revenue. Addressing *Secondary interpretation* will enhance the visitor experience and lead to a range of (previously mentioned) benefits for the Kruger National Park. Since both secondary and tertiary interpretation is incorporated into *Secondary interpretation* for this study, this factor is quite difficult to address. Literature explains that secondary interpretation is supplementary to the wider activity and can include verbal and written commentary like maps and brochures for visitors. This interpretation should therefore also address the suggestions of *Primary interpretation* as indicated earlier. Tertiary interpretation ranges from advertising media to physical (like animal viewing platforms), regulatory (reducing traffic congestion) and economic management (higher entrance fees in peak seasons) strategies (Kuo, 2002:89) mostly under of the control of the park management. It is imperative to address both secondary and tertiary interpretation to assist the *Primary interpretation* and it should therefore not be seen isolation. Considering the fact that there are differences between how respondents experienced *Secondary interpretation* between the northern and

southern region, specific attention should be paid to the design of this factor between the two regions.

Additional for the interpretation services in the Kruger National Park is the enhancement of *Knowledgeable staff* for the interpretation services. Khan (2003:121) claims that management should make sure that contact staff are trained and well informed as part of the management of ecotourism service expectations of eco-tourists. This is since Jurdana (2009:276) and Kuo (2002:99) highlight the fact that knowledge on communication and interpretation is important for the successful management of an ecotourism destination. Not only does knowledgeable staff include the tour guide on a game drive or walk, but also the honorary rangers of the park and reception staff who has an influence on the total experience of the visitor. Knowledge however also refers to the fact that staff understand the goals of the Kruger National Park's interpretation programme between the northern and southern regions and that they also behave in a pro-conservation manner. Wiener, Needham and Wilkinson (2009:495) caution destinations who do not practice what they preach as the visitors may become confused and disregard any conservation message portrayed by interpretation services.

Bearing in mind that interpretation should refrain from over exposure and prevent mindlessness (Chanowitz & Langer, 1981:1052) where information is used in a rigid manner (Langer & Piper, 1987:280), visitors have diverse needs and markets can change and the fact that the northern and southern regions differ in products and aesthetic appeal, part of the planning for interpretation is providing clear guidelines as to when to re-evaluate and adapt the regions' interpretation services of the Kruger National Park. Management should periodically alter the interpretation of the northern and southern regions to still make the desired impact. Evaluation assists in measuring the progress or success of the interpretation in the regions, provides feedback for continual improvement of the interpretation programmes, assesses the performance of the staff involved, calculates the economic efficiency of the interpretation programmes, measures impact on the visitors, demonstrates the benefits of a programmes to relevant stakeholders and is a diagnostic tool to avoid costly mistakes (Ham *et al.*, 2005:22; Ham & Weiler, 2006:4).

## 4.6 CONCLUSION

The aim of this chapter was fourfold: to determine the interpretation expectations of visitors to the Kruger National Park; to evaluate the experience with the current interpretation services of the Kruger National Park; to determine whether there is a gap between the expectations of and the experience with the interpretation services; and furthermore to compare the northern and southern regions' expectations with experiences. It is not surprising that the visitors to the Kruger National Park expect all interpretation services to be very important considering the fact that they are highly educated and expect information-rich experiences. Results, however, indicate that there are differences between the expectations of and experiences with the Kruger National Park's interpretation services from a regional perspective and this need to be addressed.

This study is the first of its kind to conduct an in-depth analysis regarding interpretation services of the Kruger National Park that is important to address the needs of eco-tourists to the Park. Even though there are *Environmental Education* and *Community-based Conservation* programmes, a main point of concern is the fact that the Kruger National Park currently does not have a specific policy or strategy addressing interpretation services from a regional perspective for visitors within the Park. Implementing an interpretation policy or strategy can lead to an enhanced visitor experience and also lead to a range of other benefits for the park [i.e. personification of the park's brand, increased satisfaction, loyalty, increased purchasing, increased revenue, encourage visitors to spend more time at the destination, obtaining new markets as other visitors are encourage to visit, positive word-of-mouth, contribute to the park's conservation and sustainability, and lead to increase environmental awareness (Hwang *et al.*, 2005:152; De Rojas & Camarero, 2008:528,533; Zeppel & Muloin, 2008:285; Lee, 2009:741; Engelbrecht, 2011:80)]. It is therefore highly recommended that the Kruger National Park compile an interpretation policy or strategy from a regional perspective as each region has different characteristics that can present differentiated interpretation opportunities. This planning procedure should focus on market research and incorporate re-evaluation periods as demographic profiles change and different needs appear. Since over-exposure to the same interpretation theme can prevent the impact (i.e. conservation and enhanced experience) that interpretation is intended to do, it is therefore also vital to incorporate a schedule in the interpretation

policy or strategy not only to amend the interpretation according to demographic profiles but also to change the interpretation theme periodically.

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## CHAPTER 5 (ARTICLE 2): CLUSTERING KRUGER NATIONAL PARK VISITORS BASED ON INTERPRETATION

**Abstract:** Interpretation is considered to be an important educational tool that not only addresses visitors' expectations for educational services but also contributes to national parks' conservation purposes. This chapter therefore segmented the Kruger National Park's visitors based on expected interpretation services and revealed four clusters that differed based on their expected and experienced interpretation services as well as their motivational aspects. The distinct contribution of this chapter is the alternative segmentation approach which revealed that the expected interpretation is a viable interpretation variable to use for segmentation purposes in an ecotourism context. This chapter therefore not only assists the Kruger National Park to appropriately address interpretation services but will aid other ecotourism destinations as well.

**Keywords:** Kruger National Park; conservation tourism; interpretation; market segmentation; national parks tourism

## 5.1 INTRODUCTION

National parks' main resource of attraction is the environment (Gilmore & Simmons, 2007:194; Said, Jaddil & Ayob, 2009:85) and eco-tourists to national parks are interested in learning about and experiencing the environment (Khan, 2003:112; Eagles, 2004:19; Shultis & Way, 2006:232; Jurdana, 2009:270; Kang & Gretzel, 2012:442). As a result ecotourism destinations such as national parks include an interpretation experience (Kara, Deniz, Kilicaslan & Polat, 2011:146) as part of ecotourism management to address the expectations of visitors (Saayman, 2009:358). It is therefore not surprising that Ham and Weiler (2007:19) found that interpretation influenced visitors' park experience more positively than non-interpretation services like accommodation or restroom facilities. Consequently, interpretation aids in attracting more visitors, increasing sales (Ham, Housego & Weiler, 2005:2) and subsequently leads to higher revenue (Eagles, 2014a:12). Interpretation can thus address park budget constraints as it is considered to be a successful park management technique (Reisinger & Steiner, 2006a:485; Wearing & Neil, 2009:90).

The declining grants, as well as the economic situation and increased operational costs due to, but not limited to, rhino poaching placed considerable pressure on the governing conservation authority of South African National Parks' (SANParks') tourism to generate sufficient revenue for continued financial sustainability (SANParks, 2012a:4; SANParks, 2013a:5; 2014c:12). SANParks' board thus implemented a strategic plan for commercialisation that forms a significant part of their ecotourism pillar known as business development and public private partnerships (SANParks, 2013a:15-16). Interestingly this strategic plan places a lot of emphasis on infrastructural improvements within the Kruger National Park. The Kruger National Park, which is the focus of this study, is the largest national park of the 21 national parks managed by SANParks and is considered to be their flagship park. However, even though Engelbrecht (2011:75) found that there is a gap between what the visitors to the Kruger National Park expected and experienced with regards to interpretation and education activities (part of interpretation), the focus on interpretation is less important in the aforementioned strategic plan aiming to deal with budget constraints. In reality, interpretation is not a focal point for

SANParks whatsoever but seems to be the initiative of different park managers under SANParks. Planning for interpretation is therefore not considered to be a priority in SANParks and especially not in the Kruger National Park.

To plan for interpretation it is imperative to understand the profile of the visitors since decisions for interpretation development are made from the visitor's point of view (Ham *et al.*, 2005:11). Tourism marketing literature argues that people differ and can therefore be regarded as different markets with different needs (Dolnicar, 2008:129) that motivate certain behaviour (Zehrer & Siller, 2007:39; Getz, 2013:58). Hence the importance of market segmentation to identify profiles of visitors. One aspect of visitor profiles are the socio-demographic characteristics of the visitors that can determine how the interpretation should be organised (i.e. the theme and type of media to communicate the theme) (Frauman, 2010:233) or adapted on the spot (Rabotić, 2010:1162). Socio-demographic characteristics not only can assist in the development of interpretation but may also inturn explain the way tourists experience and regard satisfaction with services (Ham & Weiler, 2007:6). The Kruger National Park therefore has to determine the profile and interpretation needs or expectations of their visitors to develop a successful interpretation programme. An interpretation programme developed according to the visitors' socio-demographic characteristics inturn fulfils visitors' expectations, influences tourist satisfaction and future visitation behaviour (Lee, 2009:741), increases the possibility of spending more time at the destination (De Rojas & Camarero, 2008:534) and thus increases the revenue needed for the Kruger National Park's conservation which can also assist in greater sustainability.

The aim of this chapter is therefore to identify market segments of the Kruger National Park based on expected interpretation services and then to differentiate the segments based on socio-demographic, behavioural characteristics and motivations to visit the park. Furthermore this chapter also has a unique contribution by identifying differences between the segments based on their experience with the interpretation services as to consequently reduce the gap between what interpretation services will be and what they should be (Ham & Weiler, 2006:7). This is because tourists' needs, expectations and interests are directly related to the

quality of the interpretation and an indication of a national park's competitiveness (Rabotić, 2010:1161).

## **5.2 LITERATURE REVIEW**

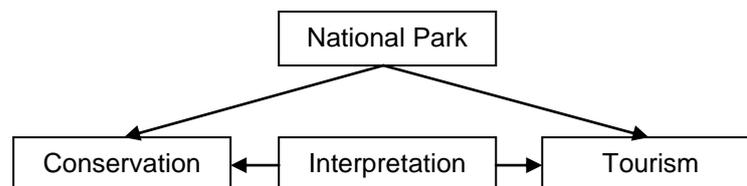
Planning for interpretation involves eight steps: (1) interpretive inventory; (2) interpretive goals; (3) identify visitors; (4) determine outcomes of goals; (5) develop themes; (6) develop media matrices; (7) implementation plan; and (8) evaluation process (Ham *et al.*, 2005:5). To understand this process the following sections will focus on what is meant by interpretation and specifically consider the process involved for identifying visitors (i.e. market segmentation) for interpretation and literature on segmentation within interpretation.

### **5.2.1 Interpretation**

For the purpose of this chapter the definition stated by Tilden (1977), the father of interpretation, will be used. He defined interpretation as “an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experiences, and illustrative media, rather than simply to communicate factual information” (Tilden, 1977:8). Tilden (1977) was consequently the first author to identify different types of interpretation, namely *attended* (i.e. person-to-person contact like game drives or educational talks) and *unattended* (no personal contact like educational displays and exhibits). Tilden's classification closely corresponds with Ward and Wilkinson's (2006) *personal* and *impersonal* interpretation. Other authors, however, have given more complex classifications like Stewart, Hayward, Devlin and Kirby (1998) and Kuo (2002). Stewart *et al.* (1998) classified interpretation into *primary* (readably identified as interpretation like interpretation centres), *secondary* and *tertiary interpretation* (which both respectively have an impact on the experience with primary interpretation like written commentaries at an activity and advertisement of interpretation). Stewart *et al.*'s (1998) distinction correlates well with Kuo's (2002) classification of *hard* (i.e. secondary and tertiary interpretation) and *soft* interpretation (i.e. primary interpretation).

Irrespective of which classification to use, interpretation is specifically used for successful and sustainable management of eco-tourism destinations such as

national parks (Kuo, 2002:99; Jurdana, 2009:276; Wearing & Neil, 2009:90). These interpretation services in national parks are usually in the form of game drives, guided walks or educational talks to name but a few. The reason that interpretation is necessary for effective park management is that interpretation can be regarded as the link between conservation and tourism management of a national park as indicated in Figure 5.1.



**Figure 5.1: Interpretation’s link between the tourism and conservation functions of a national park**

**Source: Author’s own figure based on the literature review**

The main objective of national parks in South Africa is to conserve the environment to be retained in its natural state (National Parks Act 57 of 1976). Interpretation assists with conservation management by broadening visitors’ knowledge about the place they are visiting by revealing the significance of their experience and assisting their understanding (Periera, 2005:1; Reisinger & Steiner, 2006a:484). It is thus not surprising that interpretation is regarded as part of the ecotourism experience (Khan, 2003:111; Kara *et al.*, 2011:146). This, in turn, leads to the protection of the environment since the understanding creates a respect and concern for species (Ballantyne, Packer & Sutherland, 2011:777) supporting nature conservation work and protecting endangered species (Zeppel & Muloin, 2008:285). Understanding the conservation philosophy of national parks therefore determines the overall direction of the interpretation services to offer (Ward & Wilkinson, 2006:60). Interpretation is also a means of managing visitors’ educational expectations (Saayman, 2009:358) since visitors to national parks are well educated and expect information-rich experiences (Khan, 2003:112; Eagles, 2004:19; Jurdana, 2009:270). Interpretation as a result adds value to the tourism experience (Moscardo, 1998:4; Ham & Weiler, 2006:2; Ballantyne *et al.*, 2011:771) and leads to a range of other benefits such as increased satisfaction, loyalty, increased purchasing, increased revenue, visitors spending more time at the national park, encouraging other visitors to visit the park, and providing positive word-of-mouth referrals for the park (Hwang, Lee & Chen,

2005:152; De Rojas & Camarero, 2008:528,533; Zeppel & Muloin, 2008:285; Lee, 2009:741; Engelbrecht, 2011:80). National parks, and especially the Kruger National Park, should therefore place more emphasis on delivering interpretation services given that interpretation will not only benefit the park's tourism function but the additional revenue (and other benefits) will also enable the park to fulfil its main purpose of conserving the environment.

However Ham *et al.* (2005:11) caution that the visitor is a critical element to the delivery and outcomes of interpretation. Kuo (2002:99;100) suggests that, at the planning stage for an effective interpretation programme, management needs to research visitor demographics since each visitor has unique interests, needs, expectations, preferences and purpose for visiting. For that reason, it is important to take the time and effort to achieve a clear understanding of who the interpretation visitors are, why they visit, and the experiences they seek and enjoy (Ham *et al.*, 2005:11). Hence the importance of market segmentation based on interpretation expectations.

### **5.2.2 Market segmentation based on interpretation as a segmentation variable**

Market segmentation is a process of dividing a market into distinct subset of customers with common needs and/or characteristics (Schiffman & Kanuk, 2004:50). Segmenting a market is however only the first step of a three-phase marketing strategy. After segmenting a market into different segments one or more target markets (step two) are identified and a specific marketing mix for each target market is designed where after the product is positioned for each of these target markets (Schiffman & Kanuk, 2004:50; Dolnicar, Grün, Leisch & Schmidt, 2014:296). Profiling customers is therefore crucial for policymakers, managers and marketing analysts since identifying homogeneous markets is an essential step for both planning and developing strategies (Nyaupane, White & Badruk, 2006:96; D'Urso, De Giovanni, Disegna & Massari, 2013:4947). Focussing only on one or two target markets increases the chances of marketing success and improves the overall survival and profitability of the business (Dolnicar, Kaiser, Lazarevski & Leisch, 2012:41).

Deriving market segments can be done in many different ways classified as either a *priori* (common sense grouping before analysis) or a *posteriori* methods (where segmentation is post-hoc or data-driven) (Dolnicar, 2008:130). Techniques like ANOVA, cluster analysis, conjoint analysis, correlation, discriminant analysis, factor analysis, multidimensional scaling, multiple regression, path analysis and structural equation modelling can all be used to obtain market segments associated with data analysis (Nykiel, 2007:11-19). The first step towards deriving market segments, however, is to select the most appropriate base with which to segment a market (Schiffman & Kanuk, 2004:53). Segmentation can be conducted using various different bases such as demographics (e.g. age, gender, marital status); socio-demographics (e.g. education, household composition); socio-economics (e.g. income, employment); socio-cultural (e.g. family life cycle, social class); geographical (e.g. place of origin); psychological (e.g. personality, perceptions, attitudes); psychographics (e.g. activities-interests-opinions, beliefs, values, lifestyles); benefits (e.g. what consumers want, motivations to travel); product-related (e.g. special interest travellers); and user-related (e.g. rate of usage, awareness, brand loyalty) (Schiffman & Kanuk, 2004:53-71; Getz, 2013:190-196; Morrison, 2013:416-427). The basic premise of market segmentation, depending on the circumstances, is that some customers (i.e. segments) are similar to each other that in turn differ from other customers (i.e. segments). It is therefore possible to segment a market into different groups based on only one criterion or a combination, to delimit target markets (Dolnicar, 2008:130; Tangeland, 2011:438; Getz, 2013:189; Morrison, 2013:189). The segmentation process therefore involves selecting a variable or a combination of variables from the segment bases mentioned earlier that best differentiate between customers (Nykiel, 2007:18). This variable(s) is/are known as the active variable(s) (Dillon & Mukerjee, 2006:526). Active and other non-active variables can then further be used to characterise or differentiate between the segments (Dillon & Mukerjee, 2006:526; D'Urso *et al.*, 2013:4952) and appropriately profile customers.

This chapter makes use of the cluster analysis, which will be discussed at a later stage, to determine clusters (i.e. segments) for the Kruger National Park based on their expectations regarding interpretation services. One of the criticisms that researchers should address for cluster analysis is the selection of active variables. This is because (i) the technique has no means of differentiating relevant from

irrelevant variables and (ii) that the cluster solution is dependent upon the variables (Hair, Black, Babin & Anderson, 2010:510). A strong conceptual support is therefore needed and researchers are recommended to select the active variables with the research goal as criterion (Hair *et al.*, 2010:517). Hence it is necessary to consult previous interpretation research to identify relevant segmentation variables. Previous research on both these aspects as well as other segmentation bases in terms of interpretation is included in the table below.

**Table 5.1: Previous research on segmentation variables and interpretation**

Author(s)	Context of study	Segmentation base	Findings
Ballantyne, Packer and Hughes (2008)	Botanical Gardens	Benefits	<ul style="list-style-type: none"> <li>• Important reasons to visit are to enjoy one self, to admire the scenery, to spend quality time with friends and family and enjoy being outdoors.</li> </ul>
Chen, Hwang and Lee (2006)	National Parks in Taiwan	Socio-demographics, geographic, psychographic, and user-related	<ul style="list-style-type: none"> <li>• Five segments were identified based on tourists' involvement with guided interpretation. These were Pleasure involvement, Risk avoidance, Low involvement, Complete involvement and Functional involvement.</li> </ul>
De Rojas and Camarero (2008)	Heritage	Behaviour	<ul style="list-style-type: none"> <li>• Most visitors were first time visitors with high level of education that influenced the pleasure felt with interpretation.</li> <li>• The theme of the interpretation centre attracts more involved and experienced visitors with regards to knowledge about museums.</li> <li>• Although weak, the experience with interpretation is a determinant of affect states rather than disconfirmation.</li> <li>• Adequate interpretation increases involvement and increases the possibility of spending more time at the destination.</li> </ul>
Eagles (2004)	Trends	Socio-demographic	<ul style="list-style-type: none"> <li>• Increased education leads to the demand for interpretation, information and knowledge.</li> </ul>
Ham and Weiler (2007)	Nature-based tourism sites in Panama	Behaviour, socio-demographic	<ul style="list-style-type: none"> <li>• No difference between satisfaction levels with interpretation based on repeat versus first time visitors, gender, age, education, and income or</li> </ul>

Author(s)	Context of study	Segmentation base	Findings
	Canal Watershed		group size. <ul style="list-style-type: none"> <li>• Significant differences were found with the type of group, country of residence and language with satisfaction with interpretation.</li> </ul>
Henker and Brown (2011)	Canyonlands National Park	Socio-demographic	<ul style="list-style-type: none"> <li>• Men were less likely than women to form both intellectual and emotional connections from interpretation programmes.</li> </ul>
Lee (2009)	Taiwan Taomi eco-village	Behaviour	<ul style="list-style-type: none"> <li>• Interpretation services impact satisfaction and future behaviour of tourists.</li> </ul>
Lee, Lee, Kim and Mjelde (2010)	Cheonsuman International Bird watching Fair	Socio-demographic	<ul style="list-style-type: none"> <li>• As age increases so too does the participation in bird watching.</li> <li>• The higher the education the less participation in bird watching.</li> </ul>
Lee, Lee, Mjelde, Scott and Kim (2009)	Chonsoo Bay Bird watching Festival	Socio-demographic, behaviour	<ul style="list-style-type: none"> <li>• Age, income and bird watching experience influenced the willingness to pay for bird watching interpretive experiences.</li> </ul>
Lee and Moscardo (2005)	King Fisher Bay Resort and Village	Socio-demographic, geographic	<ul style="list-style-type: none"> <li>• Neither gender nor place of origin reveals significant differences with the participation in environmental management practices.</li> </ul>
Lukas and Ross (2005)	Chicago Lincoln Park Zoo	Behaviour, socio-demographic, psychological	<ul style="list-style-type: none"> <li>• No difference in performance on knowledge gain between first time and repeat visitors.</li> <li>• Educational level is associated with better performance on knowledge gain.</li> <li>• Repeat visitors scored higher on attitudinal scales than first time visitors.</li> <li>• Higher educational level influenced a negativistic attitude.</li> </ul>
Madin and Fenton (2004)	Great Barrier Reef Marine Park	Behaviour	<ul style="list-style-type: none"> <li>• Statistical differences in pre- and post-exposure of interpretation with reef knowledge.</li> <li>• Prior visits to the Great Barrier Reef influenced reef knowledge.</li> </ul>
Peake, Innes and Dyer (2009)	Hervey Bay	Socio-demographic	<ul style="list-style-type: none"> <li>• A weak relationship between age and conservation message comprehension.</li> </ul>

Author(s)	Context of study	Segmentation base	Findings
Powel and Ham (2008)	Galapagos National Park	Psychological, psychographic	<ul style="list-style-type: none"> <li>• The interpretation strategy had a significant influence on visitor knowledge, attitudes towards conservation, awareness of conservation, intentions to engage in a range of general environmental behaviours, and attitudes and intentions towards specific philanthropic activities.</li> <li>• (Support for a philanthropic programme was determined by the willingness to pay for a philanthropic programme).</li> </ul>
Prentice and Anderson (2007)	Denmark Open Air Museum	Geographic, Behaviour, socio-demographic	<ul style="list-style-type: none"> <li>• Nationality has an effect on the interpretation experience specifically with respect to the familiarity with the history in the museum and empathy.</li> <li>• Repeat visitors differed in responses to first time visitors and rated the museum more 'greatly'.</li> <li>• Gender had no effect on reactions towards the museum.</li> <li>• Least educated visitors rated the museum more 'greatly' than higher educated visitors.</li> </ul>
Saipradist and Staiff (2007)	Ayutthaya World Heritage Site	Geographic, socio-demographic	<ul style="list-style-type: none"> <li>• Nationality had an impact on whether or not visitors read the signs. (This was associated with whether or not visitors understood the language of the interpretation signs; i.e. home language).</li> </ul>
Zeppel and Muloin (2008)	Marine wildlife tours (Great Barrier Reef, Mon Repos turtle rookery and New Zealand swim with dolphins)	Psychographic, behaviour	<ul style="list-style-type: none"> <li>• Interactions with marine wildlife on tours increased environmental awareness, changed attitudes, and modified conservation behaviours.</li> </ul>

**Source: Author's own compilation based on literature review**

Table 5.1 captures most of the segment bases discussed previously. These findings have important implications for destination managers who would like to design interpretive programmes. Ward and Wilkinson (2006:56) explain that both socio-demographic and behavioural characteristics are useful in planning for interpretation. Socio-demographic characteristics help with deciding which facilities, programmes, topics and recreational opportunities should be provided and motivations (i.e. behavioural characteristics) are useful in preparing programmes that meet and satisfy visitors' expectations (Ward & Wilkinson, 2006:56-57). Segmenting interpretation markets by identifying their **age** gives destination managers an idea of prior knowledge (e.g. older individuals might have greater prior knowledge than younger individuals) (Peake *et al.*, 2009:120) and attitudes towards animals in captivity (e.g. older visitors might know more about conservation and have less dominionistic attitudes towards a specific conservation topic) (Lucas & Ross, 2005:46) for developing interpretation programmes. Other variables or visitor characteristics like **language** or **nationality** determine the language in which interpretation should be presented (Saipradist & Staiff, 2007:222) or how the interpretation will be consumed (Prentice & Anderson, 2007:674). If visitors are **motivated** to spend time with family and friends the interpretation programme can be designed to capitalise on this by evoking powerful memories and making lasting impressions (Ballantyne *et al.*, 2011:777). Determining their interpretation **expectations** and/or **motivations** allows managers to cater for their skill and knowledge (Eagles, 2004:19) or making improvements to interpretation services (Lee *et al.*, 2011:1122). Determining visitors' **education level**, on the other hand, may also assist in developing interpretation to influence their attitudes toward conservation (Lucas & Ross, 2005:46). Particularly interesting from Table 5.1 is that little research has been conducted on market segmentation within the interpretation context except for Chen *et al.* (2006). The rest of the studies only identified certain differences between interpretation and one or more socio-demographic and behavioural characteristic but the aim was not to identify market segments for interpretation or use it as a segmentation base.

Even though little research refers to product-related segmentation for interpretation, it is a credible segmentation base for segmenting ecotourists. According to Getz (2013:194) and Morrison (2013:418) product-related segmentation refers to

segmenting visitors based on specific interests. One of the special interest tourism categories is ecotourism of which the visitors (i.e. ecotourists) are characterised as highly educated and interested in learning about the environment (Khan, 2003:112; Eagles, 2004:19; Shultis & Way, 2006:232; Jurdana, 2009:270; Kang & Gretzel, 2012:442) and motivated to visit ecotourism destinations to escape their daily lives (Chan & Baum, 2007:361). In view of the latter and considering that national parks deliver interpretation services (Kara *et al.*, 2011:146) to address the expectations of visitors (Saayman, 2009:358), segmenting visitors based on their expectations of interpretation services is a convincing active variable. To date however, little research has attempted to segment visitors within the interpretation context. Research also falls short in using expected interpretation as a variable for product-related (i.e. ecotourism) segmentation. This chapter will therefore be the first of its kind in addressing both the gaps of segmentation within interpretation as well as using expected interpretation variables to segment markets.

To summarise, interpretation as part of ecotourism, can be regarded as a successful tool for sustaining SANParks' conservation. Interpretation should also especially be a focus for the Kruger National Park as this park is the flagship park of SANParks and comprises approximately 74% of all activities performed in SANParks (SANParks, 2011:32). Key to the success of interpretation is careful planning (Ward & Wilkinson, 2006:52) and as a result of SANParks' shift towards tourism, the board and especially management of the Kruger National Park should be more concerned about visitor satisfaction (Eagles, 2002:143; 2004:23; 2014b:537).

Considering Ham *et al.*'s (2005:6) suggested planning procedure for interpretation and specifically referring to step 2 where the destination has to decide what they want to accomplish with the interpretation, the Kruger National Park already has a broad goal for the development of interpretation. In other words the Kruger National Park wants to conserve the environment and rely on their tourism function to gain sufficient revenue to support the conservation function. Interpretation, however, assists in two ways: (i) interpretation allows visitors to understand and appreciate the environment they are visiting and hence assist conservation, and (ii) interpretation is part of addressing tourists' expectations of learning and thus supports the park's tourism function and, in turn, increases the revenue for conservation. To achieve

these goals, planning for interpretation necessitates that the Kruger National Park should segment the market. Segmentation can specifically be done on the basis of visitors' expectations for interpretation as a type of product-related segmentation base. This will specifically identify possible markets for interpretation services where non-active variables can be used to further profile visitors and position interpretation services accordingly.

### **5.3 METHOD OF RESEARCH**

The method of research conducted in this chapter will be discussed under the following headings: (i) survey design; (ii) sampling and survey implementation; and (iii) statistical analysis.

#### **5.3.1 Study design**

This study followed a quantitative research approach by means of a self-administered questionnaire to collect data from the visitors to the Kruger National Park. The design of the sections of the questionnaire incorporated reliability, validity as well as sensitivity aspects to evaluate the success of the measurement used (Zikmund, Babin, Carr & Griffin, 2010:305).

Sections A to E were predominantly used for the purpose of this chapter by differentiating between interpretation market segments based on socio-demographic, behavioural and motivational variables. Section A pertained to demographic characteristic questions of respondents in the Kruger National Park. These questions were mostly nominal and ordinal (categorical) questions. Section B's questions related to expected and experienced interpretation services as well as behaviour intentions as a result of the interpretation services in the Kruger National Park. These questions were measured on Likert scales that complied with the sensitive aspect of a good measurement (Zikmund *et al.*, 2010:309) since: (i) the expected questions measured respondents' importance of the listed interpretation services on a Likert scale from 1 = Extremely important to 5 = Not at all important; (ii) the experienced questions measured the experience with the interpretation services on a Likert scale ranging from 1 = Excellent to 5 = Very poor; (iii) the behavioural

intentions questions measured respondents' agreement with the listed behavioural intentions on a Likert scale ranging from 1 = Strongly disagree to 5 = Strongly agree.

To cover the breadth of the interpretation domain, the above questions also complied with content validity (Zikmund *et al.*, 2010:307; Salkind, 2008:113; Malhotra, 2007:286) since the questions were based on the following authors' work: Thorndike (1911); Ajzen (1988); Orams (1994; 1996); Lee and Balchin (1995); Moscardo (1998); Stewart *et al.* (1998); Kuo (2002); Tubb (2003); Frauman and Norman (2004); Madin and Fenton (2004); Hwang *et al.* (2005); Periera (2005); Reisinger and Steiner (2006a); Ward and Wilkinson (2006); Ham and Weiler (2007); Ballantyne *et al.* (2008); De Rojas and Camarero (2008); Mitsche, Reino, Knox and Bauernfeind (2008); Powell and Ham (2008); Zeppel and Muloin (2008); Lee (2009); Lee *et al.* (2010); Ballantyne *et al.* (2011); and Henker and Brown (2011). By means of factor analysis, this study addresses construct validity by determining the classification of interpretation that are most consistent with the variables of Section B (Zikmund *et al.*, 2010:308; Salkind, 2008:113). The last aspect, reliability, was measured by means of the alpha coefficient which represents the average of all possible split-half reliabilities for a construct (Zikmund *et al.*, 2010:306; Malhotra, 2007:285). The alpha coefficient indicates that when  $\alpha < 0.6$  the scale is unreliable and indicates unsatisfactory internal consistency (Malhotra, 2007:285);  $0.6 \leq \alpha \leq 0.7$  indicates fair reliability;  $0.7 \leq \alpha \leq 0.8$  indicates good reliability; and  $0.8 \leq \alpha \leq 0.95$  indicates very good reliability (Zikmund *et al.*, 2010:306; Pietersen & Maree, 2007c:216).

Sections C to E of the questionnaire captured information regarding respondents' spending habits, where they heard about the park, motivations to visit the park, preference of the Big 5 animals, and experience with non-interpretation services in the park. These sections were used to compare with section B and included Likert scale, open ended as well as close ended categorical questions.

### **5.3.2 Sampling and survey implementation**

To survey both the northern and southern regions of the Kruger National Park, the distribution of questionnaires was done in two phases. Phase one was between 27 December 2011 and 3 January 2012 in the southern region of the park. This phase covered Satara, Skukuza, Lower Sabie, and Berg en Dal rest camps. Phase two

was conducted in the northern region of the park between 24 June and 2 July 2012 and covered Olifants, Letaba, Mopani, Shingwedzi and Punda Maria rest camps. Fieldworkers were assigned for two days to a specific area within the rest camps and briefed beforehand on the goals and the content of the questionnaires. Fieldworkers distributed one questionnaire per overnight travelling group by explaining the purpose of the study to the potential respondent, voluntary participation and indicated that they may withdraw from the study at any moment. As the distribution of questionnaires progressed throughout the park, fieldworkers were also instructed to distribute questionnaires to potential respondents who indicated that they have not yet filled in a questionnaire.

Since only one questionnaire should be distributed per travelling group, the total of overnight visitors to the Kruger National Park for 2012 was divided by the average of people per travelling group (4) to calculate the population for sampling purposes. This resulted in a new population of ( $N$ ) 352 949 (SANParks, 2012c:39). A sample of ( $n$ ) 384 is required for a population ( $N$ ) of 352 949 tourists to the Kruger National Park with a 95% confidence level and a 5% sampling error [ $d$  is in other words expressed as (.05)] to validate analysis (Krejcie & Morgan, 1970:607). After cleaning the data set  $n = 687$  and hence was more than the required number (384) of questionnaires to validate analysis.

### **5.3.3 Statistical analysis**

Once the questionnaires were obtained the data were captured in Microsoft Excel and analysed by means of SPSS (SPSS, 2013). The analysis was done in three stages as discussed below:

Factor analyses (i.e. principal axis factoring) were done in the first stage of the chapter to (i) determine the interpretation services that respondents expect from the Kruger National Park to be used as one of the scenarios in cluster analysis. Furthermore, factor analyses determined (ii) how respondents experienced these interpretation services at the Kruger National Park; and (iii) the motivations of respondents who visit the Kruger National Park that, along with the results of the expected interpretation factor analysis, the results of these factor analyses were used in stage three of data analysis to differentiate between different clusters. For

all three of these factor analyses, the Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was performed to determine whether a factor analysis could have been conducted on the relevant scales' data variables. A factor analysis can be performed when the result of the Bartlett's test for sphericity indicates significance ( $p \leq .05$ ) (Bartlett, 1954) and when the KMO value (the measure of sampling adequacy) is a minimum of 0.6 (Kaiser, 1970; 1974). To determine the smallest number of factors from the data variables, the pattern matrix of the principal axis factoring extraction technique was applied whereas the Kaiser Normalisation (eigenvalues above 1.0 or more) guided the decision on the number of factors retained. To name the factors a decision should be made on how strong the factor loadings must be to be included (Dancey & Reidy, 2004:431). Stevens (2009:333) concluded that the factors are reliable when the average of the four largest loadings is greater than 0.60 or the three largest loadings are greater than 0.80. Guadagnoli and Velicer (1988:274) furthermore noted that factors with only a few low loadings can be interpreted if the sample size is at least 300 to indicate a reliable factor. Stevens (2009:332) emphasised that, for a sample of 600, the loadings of variables should be at least 0.210. Based on all the above authors' guidelines and the fact that the sample size for this study was larger than 600, items with a factor loading above 0.2 were considered as a contributing item to a factor. Where an item cross-loaded on two factors the item was categorised under the relevant factor guided by literature where the Oblimin oblique rotation technique assisted in factor interpretation. The reliability coefficient (Cronbach's alpha) gave an indication of the internal consistency of each factor. Only reliability coefficients above 0.6 were considered as acceptable for the chapter since coefficients below 0.6 indicate poor reliability of the scale and unsatisfactory internal consistency (Zikmund *et al.*, 2010:306; Malhotra, 2007:285). Inter-item correlations were additionally calculated as another reliability measure which, recommended by Briggs and Cheek (1986), should be between 0.2 and 0.4.

Secondly cluster analysis was performed on several expected interpretation variables. The purpose of clustering methods is to maximise homogeneity of observations within a cluster or segment and simultaneously maximise heterogeneity between clusters or segments (Schmidt & Hollensen, 2006:327; Malhotra, 2007:636; Hair *et al.*, 2010:508; Zikmund *et al.*, 2010:597). The choice of variables is

particularly important in cluster analysis. As discussed earlier, the expected interpretation variables were chosen specifically to segment ecotourism visitors based on product-related segmentation. A typical procedure in tourism literature is to make use of factor analysis in the pre-processing of the cluster analysis. Dolnicar and Grün (2008:66) warn against factor-clustering since the interpretation of segments is based on transformed information and thus questionable and they recommend the use of raw data (Dolnicar & Grün, 2008:70). Malhotra (2007:620) and Hair *et al.* (2010:123) on the other hand suggest the selection of surrogate variables that represent the original variables in a factor and to use it in subsequent analyses and interpreted in terms of the original factors. Since the selection of variables for cluster analysis is a crucial consideration it was necessary to compare the three scenarios to select the correct set of variables for cluster analysis. These three scenarios are identified as (1) raw data: all 24 expected interpretation variables; (2) factors: identified from the expected interpretation factor analysis (see Table 5.2); and (3) surrogate variables: variables with the highest loadings on each factor in the factor analysis (these variables were the least correlated) as well as the variable “*Informed staff who can handle queries regarding the interpretation of the park*” which was removed from the factor analysis and regarded as a factor on its own.

Since cluster analysis is sensitive to outliers, outliers were deleted from the three scenarios’ datasets (Hair *et al.*, 2010:519). The coefficient of variance was then calculated for all three scenarios to determine which scenario has the least variability. The variability along with the multicollinearity assumption guided the decision as to which scenario should be used for cluster analysis. According to Hair *et al.* (2010:546) variables that are highly correlated influence the cluster solution much more than several uncorrelated variables. Considering the fact that raw data’s variables refer to expected interpretation some of these variables are highly correlated with one-another and does not assume multicollinearity. The same argument accounts for the items under each factor in the factor analysis. It was therefore decided to use the surrogate variables since these variables are the least correlated. These variables were then cluster analysed both hierarchically and non-hierarchically which is commonly used in conjunction (Sharma & Kumar, 2006:379). Since the non-hierarchical procedure requires the researcher to indicate the number

of clusters to be retained (Schmidt & Hollensen, 2006:246; Sharma & Kumar, 2006:376) the initial clustering solution from the hierarchical procedure was then specified in the non-hierarchical procedure (Malhotra, 2007:642; Hair *et al.*, 2010:536). The hierarchical and non-hierarchical procedures typically used in tourism research are Ward's and K-means clustering techniques (Füller & Matzler, 2008; Molera & Albaladejo, 2007; Tangeland, 2011). Ward's clustering technique aims at minimising inter-cluster variance (Schmidt & Hollensen, 2006:336; Malhotra, 2007:642), maximises within-cluster homogeneity (Hair *et al.*, 2010:508) and identifies clusters of nearly equal sizes (Sharma & Kumar, 2006:370,371; Hair *et al.*, 2010:508). The K-means clustering technique then selects temporary *k* centres based on the number of clusters specified from the Ward's clustering technique and partitions observations to those centres (Schmidt & Hollensen, 2006:346; Malhotra, 2007:642; Hair *et al.*, 2010:507). Since cluster analysis is subjective in nature, the cluster solution was validated to assure the cluster solution is representative of the general population and generalisable to other objects (Hair *et al.*, 2010:539). It was decided to run the analysis on cases that were sorted (by Age) since the order of cases can affect the cluster membership (Malhotra, 2007:647; Hair *et al.*, 2010:557). Only 18% of the second cluster analysis' cases were not clustered together as they did with the first cluster analysis and thus indicate that the cluster solution is stable (Hair *et al.*, 2010:540).

Thirdly, both chi-square tests and ANOVAs were calculated to investigate whether any significant differences exist between the clusters based on active (i.e. the three surrogate variables) and non-active variables (i.e. variables not used for cluster analysis like socio-demographic and behavioural characteristics, experienced interpretation and motivational aspects). Since active and non-active variables differ in the number of categories, chi square tests were used to identify differences between two or more categorical variables (Pallant, 2011:217) and ANOVAs to investigate statistical differences of mean values between groups (Pallant, 2011:249). Since the ANOVAs conducted a range of comparisons and differences between the continuous and independent variables, Tukey's Honestly Significant Difference test was used as a post-hoc test (Pallant, 2011:209). Additionally, the effect sizes were also calculated [phi ( $\Phi$ ) coefficient for chi square tests and *d*-value for ANOVAs] to determine whether marginal differences exist. According to Cohen

(1988) when  $\Phi$ -value or  $d$ -value is 0.2 it indicates a small effect (research ought to be replicated to determine whether there is an effect or if the result is practically non-significant);  $d = 0.5$  indicates a medium effect (might point towards practical significance); and if  $d = 0.8$  shows practical significance (practical importance) (Steyn, 2000:2). Salkind (2008:180) includes that the larger the effect of the  $d$ -value the increased lack of overlap between the groups.

## 5.4 RESULTS

The following section examines the results obtained from the factor analyses, cluster analyses, chi-square tests as well as the results from the ANOVAs.

### 5.4.1 Results of the factor analyses

As previously indicated three factor analyses were conducted for this chapter: (i) expected interpretation services, (ii) experiences with the interpretation services of the park, and the (iii) motivations of respondents to visit the park. These factors were then used for further analyses to profile the market segments identified in the second stage of analyses. The discussions of the results follow in the sections below.

#### 5.4.1.1 Factor analyses on expectations and experiences with interpretation services

The results of the first round of factor analysis revealed that one variable, *informed staff who can handle queries regarding the interpretation of the park* did not load under the correct factor as literature indicates (i.e. primary interpretation) and it was therefore decided to exclude it from the second round of analysis and regard it as a factor on its own. The principal axis factoring analysis using an Oblimin oblique rotation with Kaiser normalisation on the remaining 23 variables identified two factors for expectations as well as experiences with interpretation services (see Table 5.2). **Factor 1** was labelled ***Primary interpretation***, while **Factor 2** was labelled ***Secondary interpretation and Factor 3***, as previously indicated is ***Knowledgeable staff***. The Bartlett's test revealed statistical significance ( $p = 0.001$ ) and the KMO for sampling adequacy resulted in 0.941 and 0.931 respectively. Only eigenvalues above 1 were used which resulted in two factors that accounted for 56% and 50%

respectively of the total variance explained. The average of all items contributing to a specific factor revealed factor scores that interpret the factor to the original five-point Likert scale: 1 = Extremely important to 5 = Not at all important for expectations and 1 = Excellent to 5 = Very poor for experiences with interpretation. All factors indicated very good convergent validity with Cronbach alphas above 0.8 (should be above 0.6) and inter-item correlations of between 0.40 and 0.50 (should be between 0.2 and 0.4).

**Table 5.2: Factor analyses for expectations of and experiences with interpretation services of the Kruger National Park**

<b>Interpretation Expectations</b>	<b>Factor loading</b>	<b>Interpretation Experience</b>	<b>Factor loading</b>
<b>Factor 1: Primary interpretation</b>		<b>Factor 1: Primary interpretation</b>	
Interpretation activities e.g. slide shows, informative sessions and specialist talks	.825	Geological and climatological displays	.821
Auditorium with nature videos	.780	Interpretation activities e.g. slide shows, informative sessions and specialist talks	.817
Geological and climatological displays	.716	Educational talks, activities and games for children	.810
Educational displays	.527	Educational displays	.771
Educational talks, activities and games for children	.513	Information boards regarding the fauna/flora in the park	.668
Information regarding the history of the park	.401	Information regarding the history of the park	.656
Information boards regarding the fauna/flora in the park	.388	Auditorium with nature videos	.637
Lifelike examples of different animals, insects, birds and trees with descriptive data	.366	Lifelike examples of different animals, insects, birds and trees with descriptive data	.491
Information centres and interpretation centres in specific rest camps	.264	Identification of trees, e.g. nameplates or information boards	.425
Identification of trees, e.g. nameplates or information boards	.234	Authenticity of interpretation	.421
Authenticity of interpretation	.825	Information centres and interpretation centres in specific rest camps	.407
Interactive field guides on game drives and guided walks	.780	Interactive field guides on game drives and guided walks	.268
<b>Mean value</b>	<b>2.42</b>	<b>Mean value</b>	<b>2.92</b>
<b>Reliability coefficient</b>	<b>.91</b>	<b>Reliability coefficient</b>	<b>.91</b>
<b>Average inter-item correlation</b>	<b>.45</b>	<b>Average inter-item correlation</b>	<b>.44</b>
<b>Factor 2: Secondary interpretation</b>		<b>Factor 2: Secondary interpretation</b>	
Clear directions to rest camps and picnic areas	.964	Clear directions to rest camps and picnic areas	.886
Available route maps with descriptive information	.951	Accessibility of the park	.829
Good layout of the park, rest camps and routes	.900	Available route maps with descriptive information	.813
Accessibility of the park	.889	Good layout of the park, rest camps and routes	.758
Enforcement of park rules and regulations	.764	Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	.643
Available books, brochures, information pamphlets and park guides for animal, insects, birds and trees	.709	Information regarding interpretation in the park available on the web	.457

Information regarding interpretation in the park available on the web	.626	Lookout points in the park	.450
Lookout points in the park	.567	Information boards with animal tracking	.429
Marketing of the park and its wildlife as well as activities on the web, in magazines, newspapers and on the radio	.523	Marketing of the park and its wildlife as well as activities on the web, in magazines, newspapers and on the radio	.385
Information boards with animal tracking	.515	Enforcement of park rules and regulations	.358
Bird hides in the park	.324	Bird hides in the park	.309
<b>Mean value</b>	<b>1.74</b>	<b>Mean value</b>	<b>2.42</b>
<b>Reliability coefficient</b>	<b>.91</b>	<b>Reliability coefficient</b>	<b>.88</b>
<b>Average inter-item correlation</b>	<b>.50</b>	<b>Average inter-item correlation</b>	<b>.40</b>
<b>Factor 3: Knowledgeable staff</b>		<b>Factor 3: Knowledgeable staff</b>	
Informed staff who can handle any queries concerning the interpretation aspects in the park	.647	Informed staff who can handle any queries concerning the interpretation aspects in the park	.630
<b>Mean value</b>	<b>1.74</b>	<b>Mean value</b>	<b>3.13</b>
<b>Total variance explained</b>	<b>55.6%</b>	<b>Total variance explained</b>	<b>49.5%</b>

Table 5.2 indicates that respondents regard *primary interpretation* as very important (2.42) for a quality experience in the Kruger National Park. *Secondary interpretation* (1.74) as well as *knowledgeable staff* (1.74) are also very important, but marginally less important compared to *primary interpretation*. The experience with these factors revealed that *secondary interpretation* (2.39) was experienced well; however *primary interpretation* (2.92) and *knowledgeable staff* (3.13) were experienced moderately. Comparing the expectations with the experiences with these factors disclose that only *secondary interpretation* met the respondents' expectations (1.74) as they have indicated that they have experienced this factor satisfactorily (2.42) and that *primary interpretation* (2.42) and *knowledgeable staff* (1.74) however were not experienced according to the expectations of respondents since the mean values of the experienced scale reveal that both these factors were experienced moderately with 2.92 and 3.13 respectively.

#### 5.4.1.2 Factor analysis on motivations to visit the park

A minimum of three factors were identified on the 12 motivation variables by the principal axis factoring analysis, using an Oblimin oblique rotation, with Kaiser normalisation and eigenvalues above 1 (see Table 5.3). Hence the total variance explained was 55%. **Factor 1** was labelled ***Special interest needs*** since these items refer to interests that ecotourism literature reveals for these visitors, **Factor 2** ***Escape*** and **Factor 3** ***Park facilities and value***. The KMO for sampling adequacy resulted in 0.766 and the Bartlett's test revealed statistical significance ( $p = 0.001$ ). The average of all items contributing to a specific factor revealed factor scores that interpret the factor to the original five-point Likert scale: 1 = Not at all important to 5 = Extremely important (Note: this is different from the previous Likert scales). All three factors indicated very good convergent validity with Cronbach alphas between 0.7 and 0.9 (should be above 0.6) and inter-item correlations of between 0.2 and 0.7 (should be between 0.2 and 0.4). Respondents indicated that *escape* (4.26) is a very important motivation to visit the Kruger National Park. Even though *park facilities and value* (3.56) can be considered to be very important as well, this motivation differs marginally from *special interest needs* as an important (3.34) motivation to visit the park.

**Table 5.3: Results of the factor analysis on the motivations of respondents to visit the Kruger National Park**

Motivations	Factor loading	Mean value	Reliability coefficient	Average inter-item correlation
<b>Factor 1: Special interest needs</b>		3.34	.71	.26
Primarily for educational reasons	.656			
To explore a new destination	.591			
To spend time with friends	.497			
For the benefit of my children	.405			
To photograph animals and plants	.349			
It is a spiritual experience	.295			
To see the Big 5	.255			
<b>Factor 2: Escape</b>		4.26	.83	.71
To relax	.751			
To get away from my routine	.729			
<b>Factor 3: Park facilities and value</b>		3.56	.72	.47

Motivations	Factor loading	Mean value	Reliability coefficient	Average inter-item correlation
The park has great accommodation and facilities	.750			
I am loyal to the park	.649			
It is value for money	.622			
<b>Total variance explained</b>		54.8%		

#### 5.4.2 Results of the cluster analyses

Given that this chapter made use of a conjoint hierarchical and non-hierarchical approach, the surrogate variables were first analysed by means of Ward's cluster analysis. The number of cluster solutions to pre-specify for the K-means cluster analysis was calculated by means of the percentage changes in heterogeneity from the coefficients obtained from the Ward's cluster analysis. This rule specifies that when large increases in heterogeneity occur in moving from one stage to the next, the prior cluster solution is selected because the new combination is joining quite different clusters (Hair *et al.*, 2010:549). The Ward's clustering technique identified four clusters that should be retained for further K-means cluster analysis. The second round of cluster analysis thus revealed four cluster or segments of various sizes where segment 1 is  $n = 158$ , 2 is  $n = 429$ , 3 is  $n = 69$  and 4 is  $n = 31$ . The differences between these segments are more clearly identifiable when ANOVAs are performed based on the active variable (i.e. expected surrogate interpretation variables) illustrated in Table 5.4.

**Table 5.4: ANOVAs for expected interpretation**

Expected interpretation	Cluster solutions								<i>d</i> (1-2)	<i>d</i> (1-3)	<i>d</i> (1-4)	<i>d</i> (2-3)	<i>d</i> (2-4)	<i>d</i> (3-4)	F-ratio	Sig. level
	1 <i>Eager seekers</i> ( <i>n</i> = 158)		2 <i>Inquisitive seekers</i> ( <i>n</i> = 429)		3 <i>Comfort seekers</i> ( <i>n</i> = 69)		4 <i>Quasi-interested seekers</i> ( <i>n</i> = 31)									
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.								
Primary	3.02 <sup>b</sup>	.54	2.02 <sup>a</sup>	.52	3.22 <sup>b</sup>	.65	3.63 <sup>c</sup>	.78	1.85***	.31*	.78**	1.85***	2.06***	.53**	233.229	.001 <sup>#</sup>
Secondary	1.77 <sup>b</sup>	.37	1.53 <sup>a</sup>	.45	2.14 <sup>c</sup>	.49	3.91 <sup>d</sup>	.85	.53**	.76**	2.52***	1.24***	2.8***	2.08***	270.033	.001 <sup>#</sup>
Knowledgeable staff	1.52 <sup>a</sup>	.50	1.39 <sup>a</sup>	.54	3.38 <sup>b</sup>	.67	4.29 <sup>c</sup>	.82	.24*	2.78***	3.38***	2.97***	3.54***	1.11***	469.766	.001 <sup>#</sup>

# indicates significant differences ( $p \leq .05$ )

\**d* = 0.2: small effect, \*\* *d* = 0.5: medium effect, \*\*\* *d* = 0.8: large effect

° Measure from 1 = Extremely important to 5 = Not at all important

a differs from where b, c and d are indicated and vice versa

Table 5.4 clearly indicates that the four market segments differ based on expected interpretation as indicated by the significance levels ( $p \leq .05$ ). Specifically referring to the mean values for the interpretation services of the market segments, it is clear why the relevant labels are provided to characterise these market segments. For clarity reasons, the second segment is discussed first, thereafter segments one, three and four. The second segment indicated that primary (2.02), secondary interpretation services (1.53) and knowledgeable staff (1.39) are all very important to extremely important interpretation services for a quality experience to the park. Based on the importance on all three interpretation services and the fact that this segment is the largest ( $n = 429$ ) this segment is labelled the *Inquisitive seeker*.

Segment one indicated that only secondary interpretation services (1.77) and knowledgeable staff (1.52) are very important for a quality experience at the Kruger National Park and regarded primary interpretation services (3.02) as neither very important nor less important. Even though this market has indicated the latter, the factor *knowledgeable staff* who can handle queries regarding the interpretation of the park indicates that this market is eager to learn when the interest arises and is therefore labelled as the *Eager seekers*. To be able to label segments 3 and 4 the motivations (which are discussed later) of these two markets were consulted in combination with their expected interpretation services. The third only regarded secondary interpretation service (2.14) as very important for a quality experience in the park. Considering that secondary interpretation refers to the layout, directions and accessibility of the park, to name but a few, as well as their strong motivation to visit the park for the *park's facilities and value* (more than *special interest needs* and less than *escape*) it can be assumed that this market places strong emphasis on comfort and unknowingly makes use of secondary interpretation to satisfy this need. Consequently, this market is labelled *Comfort seekers*. The last market segment is totally different from the previous markets seeing as they regard *primary* (3.63), *secondary interpretation* (3.91) and *knowledgeable staff* (4.29) all as less important for a quality experience at the Kruger National Park. This market did however indicate that they regard *special interest needs*, which include education as a primary reason, as an important motivation to visit the park and can therefore not disregard them as a possible interpretation market. It is feasible that this market, has up to now, just not realised the importance of interpretation services to address their *special interest needs* (see Table 5.5) and hence labelled the *Quasi-interested seekers*. From the above discussion, it is clear that there are differences between the markets for interpretation services as identified by means of significant differences ( $p \leq .05$ ), medium to large practical significances as well as Tukey's post hoc tests.

The next section provides the results of the chi-square tests as well as the ANOVAs and should be consulted in combination to profile the different markets.

### 5.4.3 Results of the Chi square tests and ANOVAs

Chi-square tests were calculated for gender; home language; marital status; province; level of education; annual gross income; decision to visit the park; mode of transport; who initiated the visit to the park; whether visitors had accompanying children; whether visitors are holders of a Wildcard (i.e. SANParks' loyalty scheme); where the visitors heard about the park (i.e. website, shows, friends and family, radio, TV, magazines, SANParks, previous visits, Facebook, Twitter, and internet blogs) and whether the visitors are a member of a conservation organisation (refer to Appendix B for the table of the chi-square results).

The only significant difference ( $p \leq .05$ ) (with a small effect size) that was identified between the different market segments was based on home language. The *Eager seekers* (58%), *Inquisitive seekers* (63%) and *Comfort seekers* (66%) predominantly speak Afrikaans whereas *Quasi-interested seekers* (52%) speak English. The lack of significant differences for the rest of the variables indicate that the markets are homogeneous based on socio-demographic and behavioural characteristics since the segments are predominantly male, married, live in Gauteng, are well educated (i.e. have a diploma or degree), earn more than R555 000 annually, drive a 4x4, initiated the visit to the park themselves, have accompanying children, own a Wildcard, heard about the Kruger National Park through friends and family and are not members of a conservation organisation. The only other difference that occurred between the segments but did not indicate significant differences is where the segments heard about the Kruger National Park. The segments *Eager seekers*, *Inquisitive seekers*, and *Comfort seekers* predominantly are aware of the park through previous visits whereas *Quasi-interested seekers* are not. Table 5.5 provides the results of the ANOVAs to furthermore indicate differences between the market segments.

**Table 5.5: ANOVA results for the Kruger National Park's interpretation segments**

Characteristics	Cluster solutions								<i>d</i> (1-2)	<i>d</i> (1-3)	<i>d</i> (1-4)	<i>d</i> (2-3)	<i>d</i> (2-4)	<i>d</i> (3-4)	F-ratio	Sig. level
	1 <i>Eager seekers</i> (n = 158)		2 <i>Inquisitive seekers</i> (n = 429)		3 <i>Comfort seekers</i> (n = 69)		4 <i>Quasi-interested seekers</i> (n = 31)									
	Mean	Std. dev	Mean	Std. dev	Mean	Std. dev	Mean	Std. dev								
<b>Socio-demographics</b>																
Average age	46	13.55	46	12.48	46	11.49	43	12.62	0	0	.22*	0	.24*	.24*	.637	.591
Average travel group	4.14	2.68	4.15	2.42	4.57	3.88	4.40	2.57	0	.11	.10	.12	.10	.04	.571	.635
Average people paid for	3.00	1.80	3.24	1.75	3.14	1.67	2.83	1.69	.13	.08	.09	.06	.23*	.18*	1.090	.353
Average age exposed to a park	15.82	12.86	13.88	11.40	13.89	11.12	15.62	11.16	.15	.15	.02	0	.15	.16	1.129	.336
<b>Behaviour</b>																
Average time as a day visitor	2.61	5.04	3.55	8.17	2.85	5.89	5.00	9.68	.12	.04	.25*	.09	.15	.22*	.439	.724
Average time as an overnight visitor	3.96	3.63	4.75	6.53	4.33	4.38	4.96	7.26	.12	.08	.14	.06	.03	.09	.677	.567
Average nights overnight	7.75	7.31	8.27	8.40	7.65	5.18	7.75	6.08	.06	.01	0	.07	.06	.02	.255	.858
<b>°Product-related: experienced interpretation</b>																
Primary	2.93	.61	2.89	.69	3.02	.54	3.00	.61	.06	.15	.11	.19*	.16	.03	.995	.395
Secondary	2.47 <sup>ab</sup>	.58	2.34 <sup>a</sup>	.60	2.59 <sup>b</sup>	.55	2.72 <sup>b</sup>	.74	.22*	.21*	.34*	.42*	.51**	.18*	6.839	.001 <sup>#</sup>
Knowledgeable staff	3.11	1.07	3.08	1.10	3.39	.89	3.29	1.05	.03	.26*	.17	.28*	.19*	.10	1.649	.177
<b>‡Benefits: motivations to visit the park</b>																
Special interest needs	3.21 <sup>ab</sup>	.78	3.44 <sup>b</sup>	.82	2.99 <sup>a</sup>	.77	3.38 <sup>b</sup>	.77	.28*	.28*	.22*	.55**	.07	.51**	7.440	.001 <sup>#</sup>
Escape	4.29	1.03	4.33	.98	4.12	1.04	4.32	.72	.04	.16	.03	.20*	.01	.19*	.886	.448
Park facilities and value	3.45 <sup>ab</sup>	.98	3.64 <sup>b</sup>	.98	3.20 <sup>a</sup>	.96	3.59 <sup>ab</sup>	.91	.19	.26*	.14	.45*	.05	.41	4.424	.004 <sup>#</sup>

<sup>#</sup> indicates significant differences ( $p \leq .05$ );

\**d* = 0.2: small effect, \*\* *d* = 0.5: medium effect, \*\*\* *d* = 0.8: large effect;

a (in row) differs from where b is indicated

Likert scales: °Measured from 1 = Excellent to 5 = Very poor;

‡Measured from 1 = Not at all important to 5 = Extremely important

The results in Table 5.5 indicate that the segments are homogeneous based on only socio-demographic and behavioural characteristics. Except for the *Quasi-interested seeker* (who are 43 years of age), all segments are 46 years of age, have a travel group of approximately 4, paid for approximately 3 people in the park, were exposed to a national park at 14 to 16 years of age, were 3 to 5 times a day visitor to the park, were 4 to 5 times an overnight visitor to the park, and spend approximately 8 nights at the park. The product-related [i.e. experienced secondary interpretation ( $p = .001$ )] and benefit variables (i.e. motivations to visit the park) [i.e. special interest needs ( $p = .001$ ), and park facilities and value ( $p = .004$ )] do, however, provide more significant differences ( $p \leq .05$ ) between the different segments that indicates heterogeneous markets.

Heterogeneity is also visible when comparing the expected interpretation services (see Table 5.4) with the experienced interpretation services for the different segments that revealed the segments' degree of satisfaction with their experiences. The *Inquisitive seekers* regarded *primary* (2.02), *secondary interpretation services* (1.53) and *knowledgeable staff* as all very to extremely important but only *secondary interpretation* met their expectations as they have experienced it well (2.34). *Primary interpretation* (2.89) as well as *knowledgeable staff* (3.08) did therefore not meet their expectations and suggests some room for improvement. The *Eager seekers*, however, expect that *secondary interpretation* (1.77) as well as *knowledgeable staff* (1.52) to be very important interpretation services for an experience in the park but only *secondary interpretation* met their expectations since the experience thereof was rated good (2.47) and *knowledgeable staff* as fairly experienced (3.11). *Primary interpretation* is neither important nor less important (3.02) for the *Eager seekers* and experienced it as fair (2.93). The *Comfort seekers*, however, only considered *secondary interpretation* (2.14) as very important but experienced it moderately (2.59). *Primary interpretation* (3.22) and *knowledgeable staff* (3.38) were considered neither important nor less important, but were experienced moderately (3.02 and 3.39 respectively). The *Quasi-interested seekers* considered all the interpretation services as less important (3.63, 3.91 and 4.29 respectively) but did experience these services moderately (3.00, 2.72 and 3.29 respectively) indicating that their experience was beyond their expectations. The only significant difference between the different segments in the Table 5.4 is identifiable at *secondary experienced interpretation* with small to medium effect sizes.

Furthermore, all the segments regard *escape* as a very important motivation to visit the park (*Inquisitive seekers* = 4.33; *Eager seekers* = 4.29; *Comfort seekers* = 4.12; *Quasi-interested seekers* = 4.32) and it is therefore not surprising that there are no significant differences between the segments based on this specific motivation. Significant differences as well as small to medium effect sizes between the segments are however noticeable at *special interest needs* and *park facilities and value* as motivations to visit the park. Between the four segments the *Comfort seekers* placed less importance (2.99) on *special interest needs* than the other segments (*Inquisitive seekers* = 3.44; *Eager seekers* = 3.21; *Quasi-interested seekers* = 3.38) as well as with *park facilities and value* (3.20 compared to the *Inquisitive seekers* with 3.64; *Eager seekers* with 3.45 and the *Quasi-interested seekers* with 3.59).

## 5.5 FINDINGS AND IMPLICATIONS

The following findings and implications for this chapter can be deduced from the results discussed in the previous section.

The first finding of this chapter confirms that interpretation services are important for a quality experience in an ecotourism destination such as the Kruger National Park. However, there is a gap between the expected and experienced interpretation services. This confirms Engelbrecht's (2011) study that also found that there is a gap between the expectations and experiences of interpretation services in the park. The gap between the expectations and experiences also confirms Lee *et al.*'s (2009:590) as well as Lee *et al.*'s (2010:706) suggestion that interpretation will increasingly play an important role in managing as well as enhancing satisfaction of ecotourism experiences. This chapter identified three interpretation factors (see Table 5.2) labelled as *primary*, *secondary interpretation services* and *knowledgeable staff* where respondents indicated that they expect all these interpretation services as very important for a quality experience at the Kruger National Park. These interpretation services correspond with Stewart *et al.*'s (1998) primary and secondary interpretation (a combination of secondary and tertiary interpretation). A third factor however was also identified from the factor analysis, namely *knowledgeable staff*. This is not surprising since Jurdana (2009:275-276) explains that to manage an ecotourism destination successfully, staff should have knowledge of communication and interpretation relating to natural and cultural heritage. The tourism industry is a service industry and, as a result, staff's expertise plays an important role in service delivery which once again highlights the importance of

knowledge and training of staff. Since Table 5.2 indicated that visitors' expectations for interpretation services are quite high, the experiences with interpretation should also be discussed as an extension to this finding. The results indicate that only *secondary interpretation* met the respondents' expectations and that *primary interpretation* and *knowledgeable staff* were only moderately experienced. The latter suggests that the current interpretation services of the Kruger National Park are not sufficient to satisfy visitors' expectations and it is strongly recommended that the gap between expectations and experiences should be addressed by means of planning for interpretation services through strategies. Considering the fact that all interpretation services are seen as very important for a quality experience in the park and only *secondary interpretation* met visitors' expectations, more emphasis should be placed on planning for *primary interpretation* (which is readily identifiable as interpretation) and *knowledgeable staff* (which represents service quality and a requirement for the tourism industry) as these two factors were only experienced moderately.

The second finding of this chapter is that respondents indicated that there are common motives to visit the park and additionally identified a unique motive for visiting the park. From the most important to the least important the motives are *escape* (4.26), *park facilities and value* (3.56) and *special interest needs* (3.34). The importance of *escape* and *park facilities and value* to visit the park correspond with previous research by Chan and Baum (2007:361) and Kruger, Saayman and Hermann (2014:6) that identified *escape* as the most important motive to visit ecotourism destinations. This chapter, however, also identified a distinct motivation different from previous ecotourism motivational studies, namely *special interest needs*. Bearing in mind that this chapter was based on an ecotourism destination and specifically focused on the interpretation context, this is not an unexpected motive to identify. Many of the items (e.g. *to see the Big 5*, *to photograph animals*, *primarily for educational reasons*, and *it is a spiritual experience*) under this motivation associate well with ecotourism as well as with interpretation characteristics. Because motivations indicate the needs and desires of travel (Chan & Baum, 2007:350) and that motivations give an indication of tourists' participation intentions in certain nature-based activities (Mehmetoglu & Normann, 2013:11) the identification of these specific needs will assist the Kruger National Park with marketing approaches specifically in combination with interpretation services. Two of the markets identified in this chapter (see finding below), have strong motivational aspects that unconsciously correspond with interpretation services. Addressing the

motivational aspects in marketing campaigns (i.e. messages specifically focusing on motivations and corresponding interpretation services that realise these motivations) will therefore also assist interpretational goals as well.

The third and most distinct finding of this chapter is that four interpretation market segments were identified for the Kruger National Park based on expected interpretation services. This implies that there are different needs and expectations with regards to interpretation services and thus different markets. This furthermore indicates that expected interpretation can be regarded as a viable variable for segmentation purposes. This chapter specifically made use of three expected interpretation variables of which any other type of variable not associated with interpretation would have not provided the same results. This confirms Hair *et al.*'s (2010) recommendation to select the variables for cluster analysis based on the goal of the chapter. The markets identified from the expected interpretation variables were labelled as *Inquisitive seekers*, *Eager seekers*, *Comfort seekers* and *Quasi-interested seekers*. These four segments ranged from a market where all interpretation services are very important (*Inquisitive seekers*), only *secondary interpretation* and *knowledgeable staff* are very important (*Eager seekers*), to where only *secondary interpretation* is important (*Comfort seekers*) and no interpretation is regarded as important (*Quasi-interested seekers*). The fact that segments can be identified for interpretation services compares well with Chen *et al.*'s (2006) research which identified market segments for interpretation services. It is, however, important to note that the dependent variables differed on which cluster analyses were based (i.e. interpretation involvement versus expected interpretation for this study) and thus this study's segments differed significantly from Chen *et al.*'s (2006) study. At first glance the four segments for this study seem to be a homogeneous market since most of their characteristics coincide with one another. This is possible considering that visitors to the park can be defined as ecotourists with the same special interest requirements. However, a few differences between the market segments did occur that indicated that the market cannot be observed as homogenous. The only socio-demographic characteristic where significant differences between the markets were found was based on home language. The latter confirms previous research of Saipradist and Staiff's (2007) who found that language had an impact on how interpretation services were understood. This is an important aspect to keep in mind whilst planning for interpretation since more and more people with different home languages are travelling and visit ecotourism destinations. Other differences were

especially identified based on interpretation expectations as well as motivations. The implications of these findings reveal that two interpretation strategies can be identified for the Kruger National Park. The first strategy is to focus on both the *Inquisitive* and *Eager seekers* as target markets for interpretation purposes. These two markets are the largest of the four segments and demand a variety of interpretation services but exposed some dissatisfaction with *primary* and *knowledgeable staff* that should be addressed to gain revenue from these markets for conservation purposes. The second strategy's focus should be on the *Comfort* and *Quasi-interested seekers* which are the smallest two markets of the four segments. These two segments make use of interpretation as a means to an end or have not yet realised the effect of interpretation to satisfy their needs. Marketing should specifically focus on these markets' motivations and gradually adapt marketing campaigns that these markets can consider interpretation services' use and contribute to revenue for conservation purposes. Even though they are quite small in size the Kruger National Park would gain additional revenue from these two segments once they are converted to either *Eager* or *Inquisitive seekers*.

## 5.6 CONCLUSION

The aim of this chapter was to determine market segments for the Kruger National Park based on expected interpretation services. The expected interpretation variables identified four markets or typologies labelled *Inquisitive seekers*, *Eager seekers*, *Comfort seekers* and *Quasi-interested seekers* which differed based on expected interpretation services. Two important contributions can be deduced from this chapter:

The suggested interpretation typologies that can be used in other interpretation studies: *Inquisitive seekers*, *Eager seekers*, *Comfort seekers* as well as *Quasi-interested seekers*. Interpretation destinations or products which especially have a comparable homogenous market similar to this study, should keep tourists' motivations under advisement when assigning these typologies to markets. All four identified markets placed the highest importance on *escape* as a motivation to visit the park. The *Comfort seekers*, however, see the importance of *secondary interpretation* as a means to a comfortable experience since *park facilities and value* are their second highest motivation to visit the park and that the *Quasi-interested seekers* have not yet realised the importance of interpretation services to realise their *special interest needs*

motivation (the second highest motivation to visit the park). These four typologies will most probably always be market segments for interpretation services.

The second contribution refers to the methodological contribution. Even though the goal of this chapter was kept in mind, as might be the case with much research, there were 24 interpretation variables available with which to cluster observations. This raises a few questions such as (i) should all the variables be selected or (ii) should a factor analysis be conducted in the pre-processing of cluster analysis? Or (iii) should surrogate variables be selected and (iv) which variables should then be selected as surrogate variables? Seeing as there are debates regarding which type of variable(s) should be selected for cluster analysis an important suggestion for future research is to base the choice of variables not only with the goal of the chapter in mind but to make this decision on statistical calculations as well. Researchers should compare the different scenarios' degree of variability as well as considering the assumption of multicollinearity for the best selection of variables. This chapter specifically addressed a gap in the literature of segmenting interpretation markets. Furthermore this is the first study to make use of expected interpretation as a segmentation variable for segmentation purposes and hence identified interpretation typologies (as discussed above). Ecotourism destinations can thus make use of these typologies to identify different markets within their destinations and appropriately design interpretation services and ultimately manage the destination sustainably. It is strongly recommended that this study be replicated in other ecotourism destinations and other possible interpretation destinations or products for future research.

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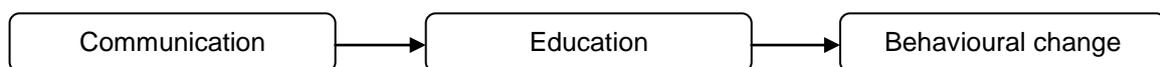
## CHAPTER 6 (ARTICLE 3): THE INFLUENCE OF INTERPRETATION ON VISITORS' BEHAVIOUR IN THE KRUGER NATIONAL PARK

**Abstract:** It is a well-known fact that interpretation influences visitors' behaviour to be more in line with respect for the environment, philanthropic support for conservation and general environmental behaviour. This study made use of two theories, the theory of planned behaviour (TPB) and the cognitive dissonance theory, to examine the influence of interpretation on both attitudes and behaviour within the Kruger National Park. Apart from the confirmation of these theories by means of structural equation modelling, this chapter also empirically confirmed a classification of interpretation by means of an exploratory and confirmatory factor analysis.

**Keywords:** Theory of planned behaviour; cognitive dissonance theory; interpretation; attitudes; behaviour; national parks tourism

## 6.1 INTRODUCTION

Interpretation has undergone a great deal of development from the time that it was first defined by Tilden (1977), the father of interpretation, as “an educational activity which aims to reveal meanings and relationships through the use of original objects, by first hand experiences, and illustrative media, rather than simply to communicate factual information” (Tilden, 1977:8). Since then, various authors have attempted to define interpretation, and, as a result, different types of constructs were exposed as part of the definition. Authors like Orams (1996), Moscardo (1998) and Ward and Wilkinson (2006) highlighted the term *communication* in their definitions [e.g. “the communication and learning of ideas and concepts to convey appreciation for the natural environment” (Orams, 1996:45); “interpretation is communicating the significance of the place people are visiting” (Moscardo (1998:5); and “interpretation is an artful form of communication that rather focuses on ideas and relationships than factual information” (Ward & Wilkinson, 2006:2)]. Before long, interpretation definitions were either centred on visitors that include terms like *communication*, *understanding*, *significance* and *changes in perceptions* or centred on management that include terms like *education*, *appreciation*, *protection* and *changes in behaviour* (Moscardo & Ballantyne, 2008:239). Comparing all the various definitions of interpretation that exist, three prominent terms or constructs can be identified to explain interpretation. These are *communication*, *education* and *behavioural change*. After careful consideration, these three constructs can be used to explain the functioning of interpretation as illustrated in Figure 6.1.



**Figure 6.1: The functioning of interpretation**

**Source: Author's own figure based on definitions of interpretation**

It is argued that interpretation is similar to the term communication; however interpretation is the preferred term to use within the tourism context (Carmody & Prideaux, 2011:92). Interpretation thus incorporates all the various ways in which the destination seeks to communicate with its visitors (Moscardo & Ballantyne, 2008:238). Given that communication can be considered as the transfer of information (Buckley, 2010:316) as portrayed in Figure 6.1, the received information

should be processed to result in learning (Moscardo, Woods & Saltzer, 2004:242). This is better understood by the term *education*; the second construct within the functioning of interpretation. Seeing as learning (i.e. education) involves a relatively permanent change in behaviour (Myers, 2010:287) the last construct in the functioning of interpretation can be regarded as behaviour or a change towards conservation behaviour. Specifically within the ecotourism context, this behaviour or change in conservation behaviour explicitly refers to visitors' actions in the park being more in line with respect to sustain and protect the environment (Tubb, 2003:476) and ultimately one of the goals of interpretation (i.e. to protect resources). Orams (1996:47) also explains that, initially, the interpretation programme facilitates education and learning and then subsequently changes attitudes and behaviour that are more in line with environmentally and ecologically sound behaviour; from passively minimising disturbances on the environment to actively contributing to the health of the environment.

The behaviour explained above is particularly important within South Africa's national parks, as the parks' main objective is to conserve and protect the environment (National Parks Act 57 of 1976). The governing body of South African National Parks' or SANParks' five-year strategic plan explains that the conservation pillar of SANParks is regarded as the basis upon which the other two sub-pillars' programmes and activities (i.e. responsible tourism and constituency building towards a people-centred conservation and tourism mandate) are directed (SANParks, 2014c:24). But conservation has been quite a difficult task to perform. Public funding to national parks to sustain and protect the environment, and especially SANParks, has decreased in real terms (Powell & Ham, 2008:477; Eagles, 2014b:534). To be able to protect the environment therefore requires national parks, and especially SANParks, to see ecotourism management as equally important as conservation management. This is because the tourism function brings about the sustainability of SANParks' conservation performance seeing that 80% of the income for the national parks is from tourism activities (SANParks, 2013a:5; SANParks, 2014d:12). As a result, SANParks has developed the 2022 Responsible Tourism Strategy that lays a sustainable foundation for tourism to be able to conserve (SANParks, 2013b:3). Different improvement aspects are highlighted in the strategy such as business tourism, wilderness experiences (like bush braais and

walking trails), better food establishments, connecting to the communities, beneficial partnerships, adventure trails, green development and less congestion (SANParks, 2013b:11). Even though these objectives address visitor expectations and are arguably important to obtain revenue for conservation, the service expected by well-educated visitors to national parks (Eagles, 2004:19; Jurdana, 2009:270), is interpretation, which directly contributes to conservation and, surprisingly, is not part of the strategy. Talsma and Molenbroek (2012:2149) explain that eco-tourists' demand is not absolute and changes over time and hence the park needs to adapt to these changing needs. Khan (2003:112), Eagles (2004:19), Jurdana (2009:270) and Kang and Gretzel (2012:442) explain that visitors to national parks are well educated and expect information-rich experiences and hence the importance of interpretation as a means of managing visitors' educational expectations (Saayman, 2009:358). Not only does interpretation fulfil educational expectations, but also leads to a range of benefits such as adding value to the tourism experience, increased satisfaction, loyalty, increased purchasing, increased revenue, visitors spending more time at the national park, encouraging other visitors to visit the park, and providing positive word-of-mouth referrals for the park (Moscardo, 1998:4; Hwang, Lee & Chen., 2005:152; Ham & Weiler, 2006:2; De Rojas & Camarero, 2008:528,533; Zeppel & Muloin, 2008:285; Lee, 2009:741; Ballantyne, Packer & Sutherland, 2011:771; Engelbrecht, 2011:80).

Interpretation is specifically a point of concern in the Kruger National Park since Engelbrecht (2011:75) found that there is a significant gap between what visitors expected and what they have experienced. Established in 1898 (SANParks, 2014a), the Kruger National Park has existed for more than a century. Considering the fact that the Kruger National Park is considered to be the flagship national park where activities comprise approximately 74% of all activities performed in SANParks (SANParks, 2011:32) as well as 85% of SANParks' operational costs are funded from the revenue obtained from this park's tourism revenue (SANParks, 2013a:5), one can argue that this is specifically a service in which SANParks should invest to fulfil their main objective (i.e. conservation). Furthermore, literature indicates that interpretation leads to a change in behaviour to be more in line with sustaining and protecting the environment. This highlights the importance of interpretation for national parks and hence why Orams (1995:92) explains that an effective

interpretation programme may be a means by which nature-based tourism can truly become ecotourism. To prove the importance of interpretation services to be included in the Kruger National Park's services, the aim of this chapter is to determine whether the Kruger National Park's interpretation services have an impact on visitors' behaviour in support of the park's conservation practices.

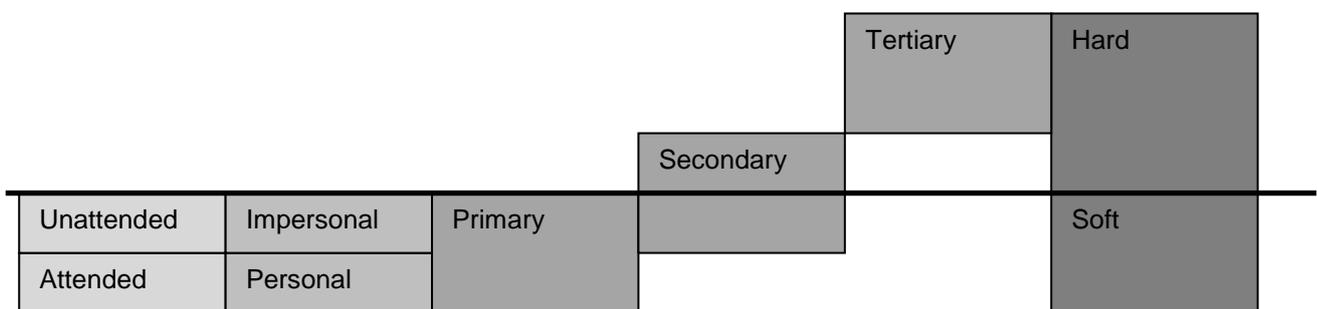
## **6.2 LITERATURE REVIEW**

A very important aspect to consider in using structural equation modelling (hereafter referred to as SEM and discussed later in the method of research) is that this technique is a confirmatory rather than an exploratory technique (Schmidt & Hollensen, 2006:511; Cohen, Manion & Morrison, 2011:693; Malhotra, Baalbaki & Bechwati, 2013:711) which is dependent on derived hypotheses from theory to build and test the model (Hair, Black, Babin & Anderson, 2010:638; Malhotra *et al.*, 2013:712). Hence, this chapter's outline is constructed in three sections (i) the classification of interpretation; (ii) the theory of planned behaviour; and (iii) the cognitive dissonance theory that explores theory related to interpretation to construct certain hypotheses.

### **6.2.1 Classification of interpretation**

To date there is no single classification of interpretation that is used consistently throughout the literature, and as a result, authors refer to various classifications of interpretation. Those most frequently used include Tilden (1977), Stewart, Hayward, Devlin and Kirby (1998), Kuo (2002), and Ward and Wilkinson's (2006) classifications. The most simplified classifications, that, in a sense, correspond with one another, are those from Tilden (1977) and Ward and Wilkinson (2006) which respectively referred to *attended* (i.e. person-to-person such as educational talks) and *unattended* (i.e. no personal contact such as educational displays) interpretation and *personal* and *impersonal* interpretation. These two authors specifically focus on the educational aspect of interpretation. Other authors like Stewart *et al.* (1998) and Kuo (2002) have provided more complex classifications. Interestingly enough, these authors' classifications also correspond with one another. Stewart *et al.* (1998:260-261) refer to *primary* (readily identifiable and promoted to the purpose of conservation message and dissemination of information), *secondary* (not readily

identifiable as interpretation but supplementary to and an integral feature to enhance the experience of primary interpretation), and *tertiary interpretation* (not always considered to be interpretation based on its obscurity but impacts the experience of the place). Kuo (2002) on the other hand states that *hard* (correlates with *tertiary* and, in a sense, with *secondary* interpretation based on the fact that these two are not readily identifiable) that refers to physical, regulatory and economic visitor management techniques; and *soft* interpretation (which correlates well with *primary* interpretation) that refers to educational messages, can be identified. After careful consideration one can conclude that all these classifications correspond with one another as illustrated in Figure 6.2.



**Figure 6.2: Classifications of interpretation**

**Source: Author's own compilation**

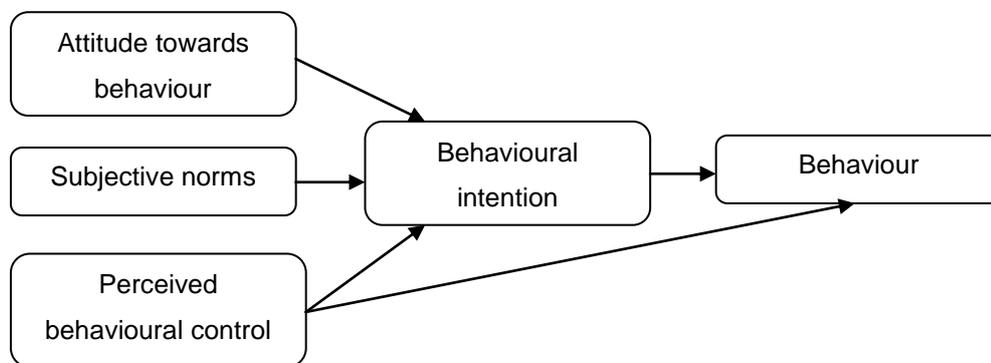
As shown in Figure 6.2, the classifications correspond below the horizontal line based on the educational aspects where *primary interpretation* or *soft interpretation* can be conducted either in person (i.e. attended) or not in person (i.e. impersonal). Consequently, the classifications of interpretation that are not readily identifiable as interpretation but still regarded as part of interpretation occur above the horizontal line. The best explanation of interpretation classifications can thus be regarded as the classification by Stewart *et al.* (1998) and will be used for the purpose of this chapter. It is important to note, however, that since *secondary* and *tertiary interpretation* corresponds well with *hard interpretation* these two will be combined together and referred to *secondary interpretation* for this chapter. Furthermore, when referring to *primary* and *secondary interpretation* one is also referring to the other classifications of interpretation that coincide with this classification.

It is common knowledge that interpretation (i.e. a combination of *primary*, *secondary* and *tertiary interpretation*) influences visitors' actions to be more in line with respect

for the environment (Tubb, 2003:476), philanthropic support for conservation and general environmental behaviour (Powell & Ham, 2008:484) and hence a change in behaviour (Moscardo & Ballantyne, 2008:239). General environmental behaviour includes aspects such as donating money for conservation, writing letters to government pertaining to the environment, joining conservation organisations, avoiding the use of certain products due to their impact on the environment, recycling at home, reading about the environment, voting for elected officials due to their support for the environment and attending meetings in the community with regards to the environment (Powell & Ham, 2008:480). One of the theories which explain how interpretation influences behaviour is the theory of planned behaviour (TPB).

### 6.2.2 Theory of planned behaviour (TPB)

Ajzen's (1991) TPB proposes that attitudes, subjective norms, and perceived control predict behavioural intentions and that behavioural intentions, in turn, determine behaviour (Crisp & Turner, 2007:87; Sparks, 2007:1182). This is illustrated in the Figure 6.3.



**Figure 6.3: The theory of planned behaviour**

**Source: Ajzen (1991:182)**

In Figure 6.3, *attitudes* refer to the degree to which a person has a favourable or unfavourable evaluation of the behaviour in question; whereas the *subjective norms* refer to perceived social pressure to or not to perform the behaviour; and *perceived control* refers to perceived ease or difficulty of performing the behaviour and is also presumed to reflect on past experience (Ajzen, 1988:4; 1991:188; Crisp & Turner, 2007:87; Powell & Ham, 2008:472). As indicated by the arrows in the figure, the

theory also indicates that *perceived behavioural control* and *behavioural intention* can directly be used to predict behaviour (Ajzen, 1991:184).

Hughes, Ham and Brown (2009:51) found that the TPB approach enables park managers to identify and measure attitudes with regard to a specific behaviour and enables managers to identify why a specific interpretation message did not work. Powell and Ham (2008:484) also found that interpretation not only influenced knowledge, but attitudes and intentions related to pro-conservation behaviour confirming the TPB. Authors like Lee and Moscardo (2005) and Peake, Innes and Dyer (2009) used the TPB as reference in the design of their studies but did not pertinently measure certain aspects of the theory. Ajzen (1991:206) explains that even though *attitudes*, *subjective norms*, *perceived control* and the *intention to behave* reveal different aspects of behaviour, each of these can serve as a point of attack to change behaviour.

Influencing *subjective norms* and *perceived control* is a fairly easy task to accomplish with tertiary interpretation in a park (through physical, regulatory and economic visitor managing techniques) since the visitor has no choice to conform to these management requirements to visit the park. A more difficult task to manage or influence through interpretation services is the *attitudes* of visitors. Specific attention will therefore only be paid to *attitudes* and *behaviour* for this chapter. Attitudes can be deduced from cognitive (e.g. a belief that a behaviour is wrong or appreciation towards a behaviour), affective (e.g. expressions of admiration or increased heart rate) and conative (e.g. intention to encourage others to participate) verbal or non-verbal expressions (Ajzen, 1988:5) that can either be a positive or negative evaluation of the specific behaviour (Ham, 2007:42).

Based on the information above *attitudes* influence the *behaviour* of a person according to the TPB and hence the presented hypothesis:

**H<sub>1</sub>: Attitudes have an influence on behaviour.**

This chapter investigates the TPB within the interpretation context and hypothesises that interpretation influences *attitudes* which, in turn, influence *behaviour* (as

presented in H<sub>1</sub>). Considering that interpretation is a combination of *primary* and *secondary interpretation*, H<sub>2</sub> is presented:

**H<sub>2a</sub>: *Primary interpretation* has an influence on *attitudes*.**

**H<sub>2b</sub>: *Secondary interpretation* has an influence on *attitudes*.**

Seeing as there might be a positive influence from *attitudes* to *behaviour* as specified in H<sub>1</sub> and *interpretation* has an influence on *attitudes* (H<sub>2</sub>) the following mediating relationship can be concluded:

**H<sub>3a</sub>: *Attitudes* are a mediator between *primary interpretation* and *behaviour*.**

**H<sub>3b</sub>: *Attitudes* are a mediator between *secondary interpretation* and *behaviour*.**

Even though the influence from *attitudes* to *behaviour* is plausible, the direction between *attitudes* and *behaviour* can be reversed since a person's attitudes can be created from his observations of his own behaviour (Crisp & Turner, 2007:91). This effect is known as the cognitive dissonance theory discussed next.

### **6.2.3 Cognitive dissonance theory**

Festinger's (1957) cognitive dissonance theory suggests that (i) dissonance is psychologically uncomfortable and motivates people to achieve consonance; and (ii) in state of dissonance, people will avoid information and situations that might increase dissonance. The term is thus used to describe an uncomfortable feeling that a person may experience when that person holds two or more inconsistent beliefs and then behaves in a way that is inconsistent with the way the person has behaved before where certain situations can either change their behaviour or can rationalise their refusal to change their behaviour (Eunson, 2008:431). People feel terrible when they perform an action (behaviour) that is inconsistent with their attitudes and avoid this dissonance by adapting their attitude to the behaviour (Crisp & Turner, 2007:91). H<sub>4</sub> is thus based on the cognitive dissonance theory:

**H<sub>4</sub>: *Behaviour* has an influence on *attitudes*.**

Little research has been done on the cognitive dissonance theory within the interpretation context that highlights the importance of this approach for future research. Some of the authors that have attempted this approach but did not test it empirically are Christie and Mason (2003) and Orams (1994; 1995). Christie and Mason (2003:5) explain that cognitive dissonance is achieved when interpretation programmes are designed to challenge the visitor's belief system by putting questions in their mind. Orams (1994:24) specifically refers to a cognitive dissonance example where interpretation communicates the negative impact on the environment when littering in a park when visitors have always done so, in order to create inconsonant elements.

As explained earlier, tertiary interpretation in a park (i.e. part of *secondary interpretation* for the purpose of this chapter) unknowingly enables visitors to conform to management requirements through physical, regulatory and economic visitor managing techniques and hence manipulates visitors to perform behaviour. Hence the relationship between *interpretation* and *behaviour* can also be hypothesised.

**H<sub>5a</sub>: *Primary interpretation* has an influence on *behaviour*.**

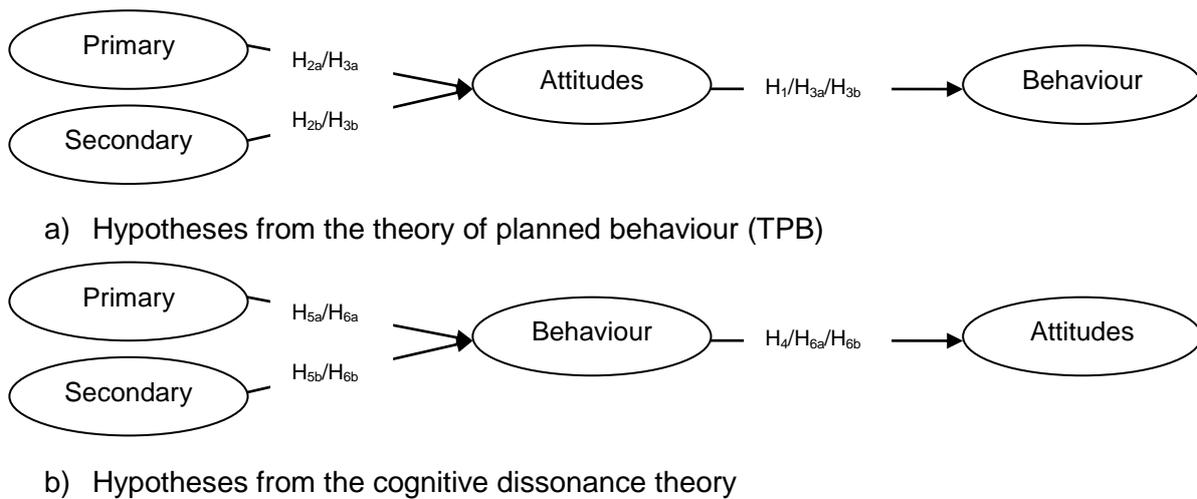
**H<sub>5b</sub>: *Secondary interpretation* has an influence on *behaviour*.**

Considering H<sub>5</sub> and H<sub>4</sub> (the cognitive dissonance theory) the following hypotheses are deduced:

**H<sub>6a</sub>: *Behaviour* is a mediator between *primary interpretation* and *attitudes*.**

**H<sub>6b</sub>: *Behaviour* is a mediator between *secondary interpretation* and *attitudes*.**

The hypotheses deduced from the theories above are presented in Figure 6.4.



**Figure 6.4: Hypothesised models**

From the literature review, it is reasonable to deduce that interpretation can assist the Kruger National Park to achieve their conservation goals through the TPB as well as, or alternatively through, the cognitive dissonance theory. Not only will the park be able to conserve the environment through interpretation but, as explained earlier, may enjoy other benefits that interpretation leads to such as adding value to the tourism experience, increased revenue, visitors spending more time at the park, encouraging other visitors to visit the park, and providing positive word-of-mouth referrals.

### 6.3 METHOD OF RESEARCH

This chapter made use of the SEM technique and is defined as “a procedure for estimating a series of dependence relationships between a set of concepts or constructs represented by multiple measured variables and incorporated into an integrated model” (Malhotra *et al.*, 2013:710). Albeit similar to estimating a series of multiple regression equations, the SEM is a technique that explicitly takes measurement error into account and estimates what the relationship would be without the measurement error (Hair *et al.*, 2010:637; Malhotra *et al.*, 2013:710) and thus the preferred method to use for this chapter. Conducting a SEM involves certain steps that, in reality, refer to two phases. Phase one includes the design of the measurement model by means of a confirmatory factor analysis, and phase two

includes the structural model which identifies the interrelationships among constructs of the first phase, by means of path analysis (Blanche, Durrheim & Painter, 2006:263; Hair *et al.*, 2010:654; Malhotra *et al.*, 2013:715) and hence discussed in this order in the following sections.

### **6.3.1 Phase one: measurement model**

The following four sections explain the measurement model.

#### **6.3.1.1 Defining the individual constructs**

As explained in the literature, the latent constructs for this chapter are *primary* and *secondary interpretation* as well as *attitudes* and *behaviour* which were measured on two separate Likert scales. The first Likert scale asked respondents to indicate how well they have experienced the park's interpretation services on a scale ranging from 1 = Excellent to 5 = Very poor (hereafter referred to the interpretation scale). The second Likert scale determined visitors' level of agreement with attitudes and behaviour as a result of the experience with the interpretation services in the park where 1 = Strongly disagree to 5 = Strongly agree (hereafter referred to the behaviour scale). The questions or items on both of these scales were designed based on the following authors' work to adhere to construct validity: Thorndike (1911); Ajzen (1988); Orams (1994; 1996); Lee and Balchin (1995); Moscardo (1998); Stewart *et al.* (1998); Kuo (2002); Tubb (2003); Frauman and Norman (2004); Madin and Fenton (2004); Hwang *et al.* (2005); Periera (2005); Reisinger and Steiner (2006a); Ward and Wilkinson (2006); Ham and Weiler (2007); Ballantyne, Packer and Hughes (2008); De Rojas and Camarero (2008); Mitsche, Reino, Knox and Bauernfeind (2008); Powell and Ham (2008); Zeppel and Muloin (2008); Lee (2009); Lee, Lee, Kim and Mjelde (2010); Ballantyne *et al.* (2011); and Henker and Brown (2011).

#### **6.3.1.2 Develop and specify measurement model**

From Figure 6.4 it is clear that *primary* and *secondary interpretation* are the only two latent constructs that are identified as exogenous constructs (i.e. cannot be explained by any other construct or variable) and thus seen as independent variables (Hair *et al.*, 2010:637; Malhotra *et al.*, 2013:713). These two constructs' observed variables are thus referred to as X-variables. Consequently *attitudes* and

*behaviour* are identified as endogenous dependent latent constructs and observed variables are known as Y-variables (Hair *et al.*, 2010:637; Malhotra *et al.*, 2013:714). Even though the models are specified by theory, sample size and missing data are a great point of concern for a SEM to be performed.

### **6.3.1.3 Study design**

A few guidelines ensure that the same sample used in the measurement model can be used for the structural model.

#### **6.3.1.3.1 Sample size and missing data**

Hoyle (2011:43) explains that although it is not clear as to exactly what constitutes a large sample, a sample of approximately  $n = 400$  should deliver satisfactory results for a SEM. Malhotra *et al.* (2013) however suggest required sample size based on latent constructs, number of measured variables for each latent construct as well as communalities. For  $\leq 5$  constructs, each more than three measured variables and communalities of at least 0.5,  $n = 200$ ; when  $\leq 5$  constructs, with less than three measured variables or communalities less than 0.5,  $n = 300$ ; and when  $> 5$  constructs, less than three measure variables, and multiple low communalities,  $n = 400$  (Malhotra *et al.*, 2013:717). Considering the fact that communalities cannot be established before the collection of data, Hoyle's (2011) suggestion was considered for the purpose of this study.

This study followed a quantitative research approach by means of a self-administered questionnaire where data was collected in two phases: (i) phase one in the southern region in of the Kruger National park took place in Satara, Skukuza, Lower Sabie, and Berg en Dal rest camps between 27 December 2011 and 3 January 2012; (ii) phase two was carried out in the northern region of the park in Olifants, Letaba, Mopani, Shingwedzi and Punda Maria rest camps from 24 June to 2 July 2012. For both of these phases, fieldworkers were assigned to a specific area in each rest camp for approximately two days to distribute questionnaires. Before distribution began, the fieldworkers were briefed on the goals and the content of the questionnaire and instructed to distribute only one questionnaire per overnight travelling group. The purpose of the study was explained to the potential respondent and assurance given that their participation is voluntary and that they may withdraw

from the study at any time. As the distribution of questionnaires progressed through the park fieldworkers were also instructed to distribute questionnaires to potential respondents who have not yet previously completed a questionnaire. Questionnaires were then captured for analyses for both the northern and southern regions.

Considering that missing data should be remedied before the estimation procedure (Hair *et al.*, 2010:660), cases with missing data were deleted (i.e. listwise or complete case deletion that has missing data) from the appropriate Likert scales and resulted in  $n = 429$ . Considering Hoyle (2011) and Malhotra *et al.*'s (2013) suggestion for required sample size this sample size is sufficient for data analyses.

Respondents who participated in this study were predominantly male (58%), an average of 47 years of age, speak Afrikaans (61%), married (78%), live in Gauteng (47%), are well educated [i.e. have a diploma or degree (39%)], earn more than R555 000 annually (31%), drive a 4x4 (37%), initiated the visit to the park themselves (56%), have accompanying children (71%), have an average of 4 people in their travel group, pay for an average of 3 people, own a Wild Card (78%), stay an average of 8 nights in the park, heard about the Kruger National Park through friends and family (60%) and previous visits (63%) and are not members of a conservation organisation (77%).

#### 6.3.1.3.2 Estimation method

For the purpose of this chapter, the Maximum Likelihood estimation (ML) procedure was used within the Analysis of Moment Structures programme (i.e. AMOS). AMOS uses a graphical interface to construct the hypothesised paths (AMOS, 2013). The ML procedure finds a set of free parameters that maximises the likelihood of the data given the specified model (Hair *et al.*, 2010:663; Hoyle, 2011:38) and delivers estimates that are the most precise of the estimates available with minimum variance (Savalei & Bentler, 2006:341; Wang & Wang, 2012:15).

#### 6.3.1.4 Determining measurement model validity

The validity of the measurement model depends on the (i) construct validity (i.e. convergent and discriminant validity), (ii) reliability and evidence of (iii) goodness-of-

fit results [known as the chi-square test that should be non-significant, i.e.  $p > .05$  (Muijs, 2012:377)] (Malhotra *et al.*, 2013:717). This is known as the confirmatory factor analysis (Muijs, 2012:377).

Convergent validity refers to the extent to which the scale correlates with other measures of the same construct (Malhotra, 2007:287; Zikmund, Babin, Carr & Griffin, 2010:308; Malhotra *et al.*, 2013:720) and discriminant validity refers to a construct that is distinct from other constructs and individual items therefore only load on one latent construct (Zikmund *et al.*, 2010:308; Malhotra *et al.*, 2013:720). Even though a SEM is based on theory (Malhotra *et al.*, 2013:715) and therefore assembled without any prior knowledge from an exploratory factor analysis (EFA) (Schmidt & Hollensen, 2006:513), Stevens (2009:348) explains that the theory can be based on previous empirical research, the current thinking on the particular field, the researcher's own hypotheses about the variables, or any combination of these. The results from an EFA can thus be used as a motivation for establishing the pattern of loadings for a confirmatory factor analysis (Schmidt & Hollensen, 2006:513-414). Based on this, and the fact that this study made use of newly developed Likert scales, the Promax rotation with Maximum Likelihood factoring (i.e. the EFA) was applied first to determine the convergent and discriminant validity before the confirmatory factor analysis (CFA) was performed.

Complying with factor analysis assumptions, the Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy for both the interpretation and behaviour scales were determined to see whether an EFA could have been conducted for these scales. A factor analysis is appropriate when the Bartlett test for sphericity indicates a  $p$ -value  $\leq .05$  (i.e. significance) (Bartlett, 1954) and the KMO a minimum value of 0.6 (Kaiser, 1970; 1974). Only eigenvalues above 1 were used as guidance to the number of factors to retain. Stevens (2009:332-333) explains that for a sample of 400, loadings of variables should at least be 0.258, but ideally above 0.7 to comply with convergent validity (Hair *et al.*, 2010:709). Furthermore, the average of the four largest loadings per latent construct is considered reliable when it is greater than 0.60 (Stevens, 2009:333). Hence items with factor loadings above 0.4 (ideally above 0.7), average of the four largest factor loadings above 0.60, and items with high communalities (preferably  $> 0.5$ ) indicated convergent validity,

whereas items that did not cross-load, and an indication of discriminant validity, were retained for the CFA.

For the CFA, the average variance extracted (AVE - calculated by dividing the sum of the standardised square loadings with the sum of the standardised square loadings added to the measurement error) should be above 0.5 (Fornell & Larcker, 1981:46; Said, Badru & Shahid, 2011:1099) and correlations between constructs should be below 0.7 (Malhotra, 2007:287) to determine convergent and discriminant validity respectively.

The reliability of each latent construct was also determined by the Cronbach alpha. Both the EFA as well as the CFA should indicate  $\alpha > 0.6$ , since a reliability coefficient below 0.6 indicates that the scale has poor reliability and unsatisfactory internal consistency (Zikmund *et al.*, 2010:306; Malhotra, 2007:285).

The goodness-of-fit measures indicate how well the specified model reproduces the observed covariance matrix among the observed variables (Hair *et al.*, 2010:664). One of the measures is the chi-square test which should be non-significant, i.e.  $p > .05$  (Muijs, 2012:377). Since this test will detect even very small deviations from the data with large samples, other fit indices are also necessary to consult that are not sensitive to sample size (Muijs, 2012:377). A CFI (comparative fit index) closer to 1, RMSEA (root mean square residual) closer to 0 (preferable  $\leq 0.08$ ), a GFI (goodness of fit) above 0.90 and higher values for PNFI (parsimony normed fit index) reveals a good fit for a model (Wang & Wang, 2012:18; Malhotra *et al.*, 2013:718-719). Among these measures, the least affected by sample size are the CFI and RMSEA.

### **6.3.2 Phase two: structural model**

The following two sections explain the structural model.

#### **6.3.2.1 Specify structural model**

Different from the measurement model, which focused on the relationships between latent constructs and observed variables, the structural model shifts to the nature and magnitude of relationships between latent constructs (Malhotra *et al.*, 2013:721). Since this chapter examined two theories within the interpretation context which

contradict each other (TPB indicates that attitudes influences behaviour, whereas the cognitive dissonance theory states that behaviour influences attitudes), two separate structural models were specified based on the results from the EFA and CFA.

Given that the focal point of the structural model is based on the magnitude and relationships between latent constructs, Pearson's correlations are calculated to describe the strength and direction of the linear relationship between continuous variables (Pallant, 2011:128) before the structural models were developed. The correlation coefficient is indicated by  $r$  that ranges from -1 (perfect negative relationship) to +1 (perfect positive relationship) (Dancey & Reidy, 2004:170; Zikmund *et al.*, 2010:559; Pallant, 2011:128) that also indicate the strength of the relationship. The further the coefficient is from 0 (i.e. the closer to -1 or +1) the stronger (positive or negative) the relationship or larger the effect (Hanna & Dempster, 2012:191). According to Cohen (1988:79-81) a small effect is when  $.10 \leq r \leq .29$ ; a medium effects is when  $.30 \leq r \leq .49$ ; and a large effects is when  $.50 \leq r \leq 1.0$ . Even though the correlation coefficient might be statistically significant, the practical significance of large samples necessitates the calculation of shared variance (i.e.  $r^2$ ) to determine practical significance (Pallant, 2011:125). The larger the degree of overlap, the larger the correlation or the degree to which the two variables overlap and co-vary (Hanna & Dempster, 2012:191). A perfect correlation of 1 will result in a perfect 100% overlap of the two variables (Hanna & Dempster, 2012:191).

### **6.3.2.2 Determining structural model validity**

The same goodness-of-fit measures (i.e. CFI, RMSEA, GFI and PNFI) discussed in measurement validity also apply for determining the validity of the structural model. This time, however, the magnitude of relationships based on the hypotheses is also tested from the structural models.

## **6.4 RESULTS**

The results of the EFA, CFA, Pearson correlations as well as the SEM are discussed in the following sections.

### 6.4.1 Results of the exploratory and confirmatory factor analysis

Since the results from the EFA can be used as a motivation for establishing the pattern of loadings for the CFA, both the EFA and CFA are discussed next.

#### 6.4.1.1 EFA

To fulfil construct validity, factor analyses were performed on both the interpretation and behavioural items. The factor analysis was performed several times in a process to eliminate items that were not in agreement with construct validity. After several factor analyses, the pattern matrix of the Maximum Likelihood factor analysis with Promax rotation and Kaiser normalisation identified two factors for interpretation, labelled **Factor 1: *primary interpretation*** and **Factor 2: *secondary interpretation*** as well as two factors for behaviour, **Factor 1: *attitudes*** and **Factor 2: *behaviour***. For both the interpretation as well as the behavioural EFA's the Bartlett tests revealed  $p \leq .05$  and KMO's of .90 and .91 respectively.

**Table 6.1: Results from the EFA to test construct validity and reliability**

Items retained for CFA and related factors		Commun.	Loading	Average of four highest loadings	Construct reliability	Mean
<b>Factor: Primary interpretation</b>				.79	.90	3.00
14.7	Geological and climatological displays	.632	.805			
14.8	Educational displays	.629	.798			
14.10	Educational talks, activities and games for children	.561	.780			
14.6	Interpretation activities	.549	.766			
14.5	Auditorium with nature videos	.471	.693			
14.11	Information boards regarding the fauna/flora in the park	.535	.689			
14.9	Information regarding the history of the park	.500	.672			
14.12	Informed staff that can handle any queries concerning the interpretation aspects in the park	.435	.631			
14.4	Bird hides in the park	.310	.411			
<b>Factor: Secondary interpretation</b>				.83	.88	2.15
14.18	Enforcement of park rules and regulations	.804	.929			
14.17	Available route maps with descriptive information	.723	.871			
14.15	Good layout of the park, rest camps and routes	.562	.791			
14.16	Accessibility of the park	.625	.726			
14.22	Lifelike examples of different animals, insects, birds and trees with descriptive data	.449	.646			
14.3	Lookout points in the park	.328	.410			
<b>Factor: Attitudes</b>				.75	.91	3.90
15.6	I am a more loyal supporter of parks	.563	.842			
15.5	My park experience was more authentic (contact was fun, participatory and immediate)	.446	.729			
15.10	I have a stronger viewpoint on conservation issues	.599	.720			
15.14	I encourage family and friends to be more conscious about conservation	.604	.690			
15.17	I have the confidence to express my views concerning conservation on the social media and in conversations	.525	.686			
15.12	I tend to visit more nature-based products	.542	.661			
15.15	I had a better experience/level of satisfaction at the park	.352	.640			
15.2	I implement recycling and energy saving methods at home to lessen my impact on the environment	.404	.612			
15.9	I watch more environmental programmes on television	.514	.611			
15.11	My children are more knowledgeable	.392	.607			

Items retained for CFA and related factors		Commun.	Loading	Average of four highest loadings	Construct reliability	Mean
<b>Factor: Behaviour</b>				.82	.88	3.16
15.7	I actively search for information about environmental conservation	.792	.906			
15.8	I do volunteer work for groups that help the environment	.488	.730			

Taking the sample size into consideration ( $n = 429$ ), all the items in Table 6.1 indicated convergent validity. All the factors have high loadings ( $> 0.6$ ) except for the items *Bird hides in the park* (.411) and *Lookout points in the park* (.411) for the factors *primary* and *secondary interpretation* respectively. Furthermore all the items indicated an average of item loadings per latent construct above 0.7.

All the items also indicated relative high communalities except for the items *Auditorium with nature videos* (.471), *Informed staff that can handle any queries concerning the interpretation aspects in the park* (.435), and *Bird hides in the park* (.310) for **primary interpretation**; *Lifelike examples of different animals, insects, birds and trees with descriptive data* (.449) and *Lookout points in the park* (.328) for **secondary interpretation**; *My park experience was more authentic (contact was fun, participatory and immediate)* (.446), *I had a better experience/level of satisfaction at the park* (.352), *My children are more knowledgeable* (.404), *I implement recycling and energy saving methods at home to lessen my impact on the environment* (.392) for **attitudes**; and only *I do volunteer work for groups that help the environment* (.488) for **behaviour** which were below 0.5.

The Pattern matrix indicated that none of the items retained cross-loaded, which points towards discriminant validity. As a result of construct validity, *primary interpretation* had nine items retained for the CFA, whereas *secondary interpretation* had six items. *Attitudes* resulted in 11 items whereas *behaviour* had only two items retained. These results prove that all the latent constructs are over-identified except for *behaviour* which has two items. To test the reliability of the items retained per latent construct, the Cronbach alphas were calculated and resulted in .90 and .88 for *primary* and *secondary interpretation* respectively; whereas the *attitudes* and *behaviour's* Cronbach alphas were .91 and .88 respectively.

Lastly the mean values of the latent constructs revealed interesting results. Visitors indicated that they have experienced the park's *primary interpretation* services fairly (3.00) and the *secondary interpretation* quite good (2.15) whereas they agreed that their *attitudes* are a result of the interpretation services (3.90) but felt neutral with regards to the effect of interpretation services on their *behaviour* (3.15).

#### **6.4.1.2 CFA**

Since one of the latent factors (i.e. *behaviour*) was under-identified, the CFA was constructed by imposing tau-equivalence. Tau-equivalence requires all factor loadings on a latent construct to be equal (Hair *et al.*, 2010:706) and hence set for this study to 1. The CFA of the items retained from the EFA also resulted in construct validity. The AVE (should be above 0.5) resulted in 0.49 for *primary interpretation* and 0.56 for *secondary interpretation*; whereas *attitudes* were 0.47 and *behaviour* were 0.65, indicating convergent validity. Correlations between *primary* and *secondary interpretation* was 0.29 and between *attitudes* and *behaviour* 0.59 proving discriminant validity (should be below 0.7). But comparing the AVE with discriminant validity [DV calculated as the square root of the AVE (Said *et al.*, 2011:1099)] revealed that the DV is larger than the AVE (should be smaller) for the interpretation as well as the behaviour latent constructs and thus did not indicate discriminant validity.

#### **6.4.2 Results of the correlations**

Table 6.2 captures the strength and direction of relationships between the latent constructs for the SEM.

**Table 6.2: Correlations between latent constructs of SEM**

Linear relationship between latent constructs		<i>r</i>	<i>r</i> <sup>2</sup>	Cov.	Sig.	( <i>N</i> )
Attitudes	Behaviour	.480	.230*	.330	.001 <sup>#</sup>	429
Attitudes	Primary interpretation	-.151	.022	-.082	.002 <sup>#</sup>	429
Attitudes	Secondary interpretation	-.285	.081	-.163	.001 <sup>#</sup>	429
Behaviour	Primary interpretation	-.132	.017	-.095	.006 <sup>#</sup>	429
Behaviour	Secondary interpretation	-.082	.006	-.063	.089	429

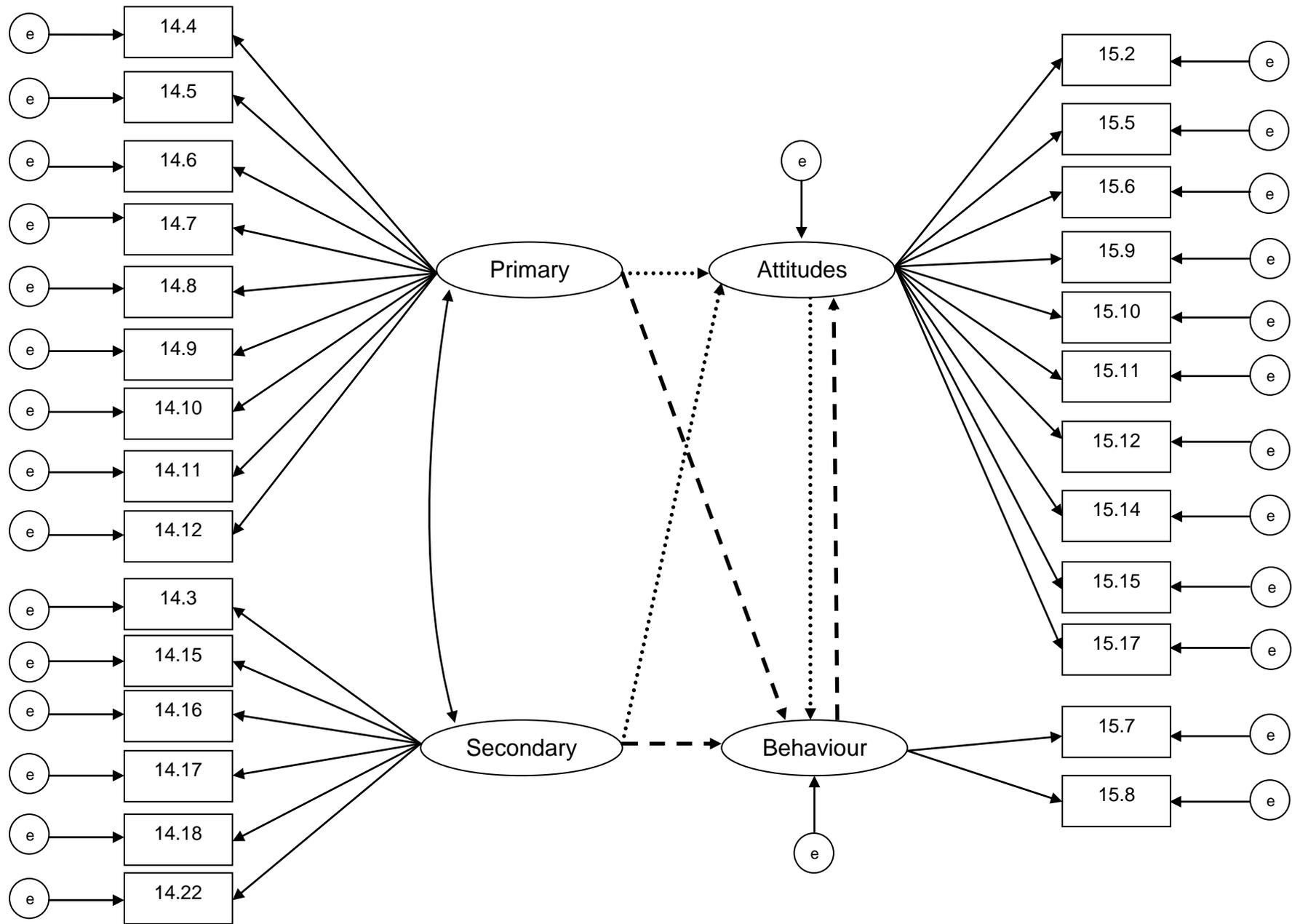
# indicates significant differences ( $p \leq .05$ )

\* $d = 0.2$ : small effect; \*\*  $d = 0.5$ : medium effect; \*\*\*  $d = 0.8$ : large effect

Table 6.2 reveals that all the relationships between latent constructs are fairly small ( $.10 \leq r \leq .29$ ) except for the medium relationship ( $.30 \leq r \leq .49$ ) between *attitudes* and *behaviour* ( $r = .480$ ). *Attitudes* and *behaviour* also show the only positive relationship between the latent constructs indicating that as *attitudes* increase, *behaviour* will also increase. All the linear relationships between latent constructs indicated statistical significance ( $p \leq .05$ ) except for the relationship between *behaviour* and *secondary interpretation*. Even though the results indicate that there are statistical significances, it is important to have a look at the effect sizes (i.e.  $r^2 =$  shared variance) of the latent constructs as this reflects the magnitude of difference between the mean scores (Carter, 2003:637,638). Once again, the only relationship that indicated an effect, which was small ( $d = 0.2$ ), is between *attitudes* and *behaviour* ( $d = 0.230$ ) and hence the degree of covariance of .330.

### 6.4.3 Results of the structural equation models

Because this chapter made use of two theories within the interpretation context and based on the results from the EFA and CFA, the following structural models were specified (see Figure 6.5).



**Figure 6.5: Structural model**

(Note: ..... indicate the TPB and - - - indicate the cognitive dissonance theory)

### 6.4.3.1 Theory of planned behaviour (TPB)

The results from the structural model based on interpretation and the TPB indicated that  $\chi^2 = 1143.275$ , standard deviation of 347 and statistical significance ( $p \leq .05$ ). All the goodness of fit measures indicated a well fitted model with a CFI of 0.872, GFI of 0.825, RMSEA of 0.073 and 90% confidence interval of .069 to .078; and PNFI of 0.759.

### 6.4.3.2 Cognitive dissonance theory

The structural model from interpretation and the cognitive dissonance theory revealed similar results as the structural model based on the TPB and hence also a well fitted model. Results indicated an  $\chi^2 = 1168.900$  with a standard deviation of 347 and statistical significance of  $p \leq .05$ . The goodness of fit measures revealed that CFI = 0.868; GFI = 0.822; RMSEA = 0.074 and 90% confidence interval of .07 to .079; and PNFI = 0.755.

### 6.4.3.3 Hypotheses

Since the structural models indicated good fit, the results for the hypotheses can be considered to determine the magnitude and relationships between latent constructs. Given that **H<sub>3</sub>** and **H<sub>6</sub>** were constructed as mediating hypotheses, **H<sub>3</sub>** and **H<sub>6</sub>** are not included in Table 6.3 but are accepted or rejected based on the results from the hypotheses in the table.

**Table 6.3: Results of structural model hypotheses**

Hypotheses			Stand. Reg. Weight	Estimate	Sig.
<b>H<sub>1</sub></b>	Behaviour	← Attitudes	0.584	0.692	.001 <sup>#</sup>
<b>H<sub>2a</sub></b>	Attitudes	← Primary interpretation	-0.068	-0.058	.187
<b>H<sub>2b</sub></b>	Attitudes	← Secondary interpretation	-0.277	-0.231	.001 <sup>#</sup>
<b>H<sub>4</sub></b>	Attitudes	← Behaviour	0.605	0.497	.001 <sup>#</sup>
<b>H<sub>5a</sub></b>	Behaviour	← Primary interpretation	-0.112	-0.115	0.045 <sup>#</sup>
<b>H<sub>5b</sub></b>	Behaviour	← Secondary interpretation	-0.091	-0.092	0.1

# indicates statistical significance ( $p \leq .05$ )

The results in Table 6.3 indicate that **H<sub>1</sub>** ( $p = .001$ ) and **H<sub>4</sub>** ( $p = .001$ ), the hypotheses constructed from the TPB and the cognitive dissonance theory are supported. This was expected from the correlations in Table 6.2 where  $r = .480$ . Both of these hypotheses indicate that *attitudes* and *behaviour* ( $\beta = .584$ ) and *behaviour* and

*attitudes* ( $\beta = .605$ ) have a positive impact on each other, but different from the correlations, the SEM indicated different standard regression weights ( $\beta$ -value) for the two theories. The only other hypotheses that are supported ( $p \leq .05$ ) are  $H_{2b}$  (influence of *secondary interpretation* on *attitudes*) for the TPB and  $H_{5a}$  (impact of *primary interpretation* on *behaviour*) for the cognitive dissonance theory. Even though these hypotheses are supported, it is interesting to note that these impacts are negative (i.e. the sign in front of the  $\beta$ -values). This implies that *secondary interpretation* has a negative influence in forming visitors' *attitudes* ( $\beta = -0.277$ ) and that *primary interpretation* has a negative influence on visitors' *behaviour* ( $\beta = -0.091$ ). Unexpectedly, *primary interpretation's* influence in forming visitors' *attitudes* (i.e.  $H_{2a}$ ) as well as *secondary interpretation's* influence on visitors' *behaviour* (i.e.  $H_{5b}$ ) was negative ( $\beta = -.068$  and  $\beta = -.091$  respectively) and furthermore both  $H_{2a}$  and  $H_{5b}$  are rejected since  $p > .05$ .

Since the only two hypotheses based on interpretation (i.e.  $H_{2b}$  and  $H_{5a}$ ) are accepted; only  $H_{3b}$  (*attitudes* is a mediator between *secondary interpretation* and *behaviour*) and  $H_{6a}$  (*behaviour* is a mediator between *primary interpretation* and *attitudes*) can be accepted although the influence from interpretation to either *attitudes* or *behaviour* is negative.

## 6.5 FINDINGS AND IMPLICATIONS

The following findings and implications can be deduced from the results of this chapter:

The **first finding** is that interpretation services can partially be classified according to Stewart *et al.*'s (1998) classification, which classified interpretation into primary, secondary and tertiary interpretation. The results from the EFA as well as the CFA disclosed that ***primary interpretation*** represents aspects such as Geological and climatological displays; Educational displays; Educational talks, activities and games for children; Interpretation activities; Auditorium with nature videos; Information boards regarding the fauna/flora in the park; Information regarding the history of the park; Informed staff that can handle any queries concerning the interpretation aspects in the park; and Bird hides in the park. Even though the results supports

Stewart *et al.*'s (1998) primary interpretation, the results of this chapter also contradicts the authors' classifications seeing as the EFA as well as the CFA verified that Stewart *et al.*'s (1998) secondary and tertiary interpretation should be combined into ***secondary interpretation***. This is not unexpected seeing as both of these interpretation services are not readily identifiable or always considered to be interpretation based on their obscurity but have an impact on the experience with services (Stewart *et al.*, 1998:260-261). The results indicate that *secondary interpretation* comprises Enforcement of park rules and regulations; Available route maps with descriptive information; Good layout of the park, rest camps and routes; Accessibility of the park; Lifelike examples of different animals, insects, birds and trees with descriptive data; and Lookout points in the park.

The **second finding** disclosed that visitors to the Kruger National Park are inclined to have positive attitudes towards conservation practices. The factor ***attitudes*** included items with strong viewpoints on matters of conservation. These positive attitudes are, however, not necessarily a result of the park's interpretation services seeing as results indicate that *secondary interpretation* influenced *attitudes* negatively as well as *primary interpretation* with *behaviour*. These positive attitudes could be a result of the type of visitor to the park. These results confirm research by Tubb (2003) who found that visitor' intentions to engage in certain "environmentally" friendly activities from pre-visit to post-visit did not vary. The positive attitudes of visitors seem to be in line with the fact that visitors to national parks are well educated, expect information-rich experiences and want to learn from the environment (Khan, 2003:112; Shultis & Way, 2006:232; Jurdana, 2009:270; Kang & Gretzel, 2012:442). Alternatively, visitors' attitudes can also be a result of direct experience (Ham, 2007:43) with the park. This is also not different in the Kruger National Park since the demographic profile of visitors indicated that they are well-educated and are repeat visitors with experience with the park and hence confirms research by Khan (2003), Shultis and Way (2006), Ham (2007), Jurdana (2009) and Kang and Gretzel (2012) that visitors to national parks are well educated. The fact that the visitors indicated that they felt neutral with regards to *behaviour* towards conservation and that Kruger National Park's interpretation influenced the visitors' *attitudes* as well as their *behaviour* confirms that there is a gap with the park's interpretation service as Engelbrecht (2011) has found. Considering the wide

acceptance of interpretation's positive impact on attitudes and behaviour, this matter is a point of concern for the park and leaves room for improvement.

The above two findings implies that since visitors' *attitudes* are positively inclined towards conservation behaviour, and that interpretation influenced their *attitudes* and *behaviour* negatively, the park should make an effort to adjust this discrepancy to rather sustain positive attitudes than to detract from them. Clearly the interpretation services of the park do not fulfil the visitors' educational expectations and the park thus has to deliver an experience that will sustain visitors' attitudes. In view of the fact that *primary interpretation* is readily identifiable as interpretation; the park should place priority on the development and implementation of *primary interpretation* to address visitors' educational needs. Complimentary to *primary interpretation*, *secondary interpretation* should also be developed and implemented as a second priority as these services impacts the experience of *primary interpretation*. Furthermore, planning for interpretation also involves guidelines as to when the interpretation services or programmes should be re-evaluated. Ham, Housego and Weiler (2005:22), Ham and Weiler (2006:4) and Ward and Wilkinson (2006:223-224) emphasise re-evaluation since it measures the progress or success of interpretation, provides guidelines for improvement of the interpretation programmes, assesses the performance of the staff involved, calculates the economic efficiency, measures the impact on the visitors, demonstrates the benefits of a programme to relevant stakeholders and hence avoids costly mistakes.

In addition to the implication above, attitudes are an internal aspect of visitors that is a rather difficult task to influence or change with interpretation. Firstly, Ham (1992) explains that visitors are non-captive and do not need to pay attention and, secondly, the window of communication opportunity (by means of any classification of interpretation) is too brief in many interpretive encounters to realistically expect strong and enduring attitude impacts (Ham, 2007:43). There is ample literature pertaining to effective development of interpretation to capture visitors' attention; however there is a lack in research explaining the importance of developing interpretation for younger markets. Creating and sustaining attitudes towards conservation from a young age will surely create a more responsible future generation with a lot more philanthropic behaviour. The Kruger National Park should

therefore not only develop interpretation programmes to fulfil the current market's educational needs but needs to keep its future markets in consideration. Ward and Wilkinson (2006:150) explain that youth are the most important populations to target, which will not only make a difference to the future of our planet but, through the children, adults can be influenced as well. Tilden (1977:9) recommends that interpretation programmes for children up to the age of 12, should follow a fundamentally different approach to the programmes delivered to adults. Ward and Wilkinson (2006:150-159) agree and state that children have different characteristics than adults (such as the fact that children are energetic, curious, and sensory bound) and suggest different interpretation programmes for different age categories (ages 2 to 6, 7 to 11 and teenagers) as these age categories have different levels of development.

The **third finding** is that *attitudes* have a positive influence on *behaviour* and that *behaviour*, in turn, has a positive influence on *attitudes*. This confirms both Ajzen's (1991) TPB as well as Festinger's (1957) cognitive dissonance theory. These two theories, however, contradict each other. One theory indicates that *attitudes* impact *behaviour* (i.e. TPB) and the cognitive dissonance theory indicates the inverse effect (i.e. *behaviour* impacts *attitudes*). The results of this chapter, however, supported both of these theories. It should be noted here that these theories were not developed within an eco-tourism context and the primary aim of explaining the effect of interpretation but the fact that both theories are supported within the eco-tourism, and especially within the interpretation context, might imply the development of a new theory. Seeing as previous studies have indicated a gap in the expectations and experience of the interpretation services of the park and that the results of this chapter indicated interpretation's negative influence on both attitudes and behaviour the relationship between attitudes and behaviour as a result of interpretation cannot be supported with certainty. It is thus strongly recommended that this study be replicated at other eco-destinations to confirm whether a new theory can be developed to explain this effect.

## **6.6 CONCLUSION**

The aim of this chapter was to determine whether the Kruger National Park's interpretation services had an impact on the visitors' behaviour to be more in line with the park's conservation practices. Results indicated that even though visitors are inclined to positive attitudes towards conservation practices, the park's interpretation services have a negative influence on their attitudes. This once again confirms that the park's interpretation leaves room for improvement and that, if unchanged, could detract from visitors' positive attitudes, decrease conservation behaviour and the park being unable to comply with its conservation obligations. This study was the first of its kind to incorporate both the TPB as well as the cognitive dissonance theory to examine interpretation's influence on visitors' attitudes and behaviour. Interestingly, these two theories contradict each other but both were supported in this study which leaves room for a new theory to explain interpretation's influence on both attitudes and behaviour in an ecotourism context. It is therefore strongly recommended that this study be replicated in other ecotourism destinations to test this influence. Additionally, it is recommended to replicate this study by means of a longitudinal study to empirically test interpretation before and after implementation to test the effectiveness of interpretation.

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## CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

### 7.1 INTRODUCTION

The aim of this study was to develop an interpretation framework for the Kruger National Park. Certain objectives and sub-objectives were set out in Chapter 1 and achieved in subsequent chapters.

The first objective was to conduct a literature analysis on the components, theories, and goals related to interpretation in ecotourism products that was achieved in Chapter 2. Apart from the history and definitions of interpretation discussed, the functioning of the different components identified from the various definitions of interpretation was also explained as well as the goals that ecotourism products would like to achieve.

The second objective was concerned with the exploration of methodological considerations for the subsequent articles (i.e. Chapters 4-6) of the thesis and was explored in Chapter 3. Due to the limited space in the articles, this chapter explained and provided additional methodological aspects and processes which were not covered in the articles.

The third objective determined the interpretation expectations and experiences of visitors to the Kruger National Park. This was achieved in Chapter 4 and accomplished by means of several sub-objectives: (i) to identify the interpretation services expected by visitors to the Kruger National Park for a quality experience; (ii) to evaluate how visitors experienced the interpretation services offered by the Kruger National Park; (iii) to compare the expected with the experienced interpretation services of the Kruger National Park; and (iv) to determine whether there are differences in perceptions of visitors towards the interpretation services in the northern and southern regions of the Kruger National Park. The article revealed that three interpretation services are very important for visitors' quality experience in the Kruger National Park, namely *primary interpretation*, *secondary interpretation* and *knowledgeable staff*. Visitors revealed that only *secondary interpretation* satisfied their expectations and that *primary interpretation* and *knowledgeable staff* did not satisfy their expectations. Comparing the northern and southern regions' expectations and experiences with interpretation did not reveal any significant differences to the park as a whole. However, based on shared variance, the

southern regions' interpretation services did reveal higher expectations than experiences in the northern region.

The fourth objective identified market segments of the Kruger National Park based on expected interpretation services. This was accomplished in Chapter 5 by means of several related sub-objectives. The sub-objectives were (i) to identify the interpretation services that visitors to the Kruger National Park expect for a quality experience; (ii) evaluate how well the visitors experienced the interpretation services offered by the Kruger National Park; (iii) identify the different motives of visitors to visit the Kruger National Park; (iv) identify different market segments based on expected interpretation services; and (v) determine the differences between market segments based on the expectations of interpretation, experiences with interpretation and socio-demographic and behavioural characteristics. The first two sub-objectives coincide with the previous objective's sub-objectives stated above. This article revealed that visitors to the park are motivated by *escape, park facilities and value*, and *special interests* to visit the park. Furthermore four markets were identified based on expected interpretation services. *Inquisitive* seekers and *Eager seekers* are the largest two markets that expect all interpretation services (*Inquisitive* seekers) compared to *secondary interpretation* and *knowledgeable staff* (*Eager seekers*) as important for a quality experience to the park. The smaller markets *Comfort* and *Quasi-interested seekers* differed from the *Inquisitive* and *Eager seekers*, based on their motivations to visit the park, and they seem to only regard interpretation services as a means to an end.

The fifth objective of this study determined whether the Kruger National Park's interpretation services have an impact on visitors' behaviour to be more in line with the park's conservation practices. The results of Chapter 6 indicated that visitors' *attitudes* are inclined to be positive towards conservation practices, but respondents felt neutral about their *behaviour* to be in line with conservation. Most importantly, interpretation influenced both *attitudes* and *behaviour* negatively, which once again indicates that there is a gap in the Kruger National Park's interpretation services that needs to be addressed.

The last objective of this study was to draw conclusions from, and make recommendations based on, the results of the study so as to propose an interpretation

framework for the Kruger National Park and addressed in this chapter (i.e. Chapter 7). This chapter concludes the findings of the research and makes use of the research results and findings obtained from the three articles to make recommendations for the Kruger National Park.

### **7.1.1 Personal journey of completing this study**

My journey with the Kruger National Park started when I was quite young. I am very fortunate to have visited the Kruger National Park at least once every two years along with a family who is very passionate about appreciating nature. In a sense, I grew up with the park and we have witnessed each other's development. I have learned to view the park from a mere vacation destination to a point where I was taught the value of conserving the environment. Each visit was more intriguing than the previous and the atmosphere was filled with enjoyment. It became my culture. But even though this might be the case for me, I have stumbled across people who think the park is uninteresting and does not add value. After a few minutes' conversation you realise that these people's views are based on a lack of education and may be the result of misguided experiences. Our family's visits to the Kruger National Park have decreased due to demanding schedules and careers but, when I get the opportunity to visit, I make use of it. I have to agree that, with the last couple of visits, the intriguing characteristic of the park has faded. So how do you convince someone of the value and significance of the park if the "proof is not in the pudding"? Something needs to be done and I reminded myself that change starts with me.

I have loved every part of this study as the topic is so near to my heart. However, comprehending a complex term like interpretation was no easy task. The mere history of interpretation suggests that this topic has been researched for quite some time and that the amount of literature through which one has to work seem to have no end. My experience with this topic can be compared to building a puzzle.

I was faced with a 5 000 piece puzzle where only few of the pieces were available and I was told the end result is a landscape. To make sense of what I had available, I had to organise the pieces by themes and build these pieces to reveal the parts of the landscape that was available. Research, just like building large puzzles, takes time, patience and scrutiny. Each article or book on interpretation was a piece of the puzzle and revealed only part of the information. By combining all the available information, I

had a good idea of what interpretation entailed but realised that I needed to create and design new pieces of the puzzle to build a holistic picture. This, by far, was the most difficult part of the thesis. I had to create information with the correct methodology and realised my own limitations quite early on. To fulfil the aim, I had to overcome certain obstacles and, at the end, I was no longer just the builder but the developer and designer. I learned not only to deduce and combine information, but had to learn the basics of statistical analysis to a point where I was performing the analyses myself. I also had to find new ways of addressing problems with the fast pace at which both interpretation and statistical literature were transforming to provide results that were up to date with the latest developments. This process took some time to master but delivered results – the missing pieces of the landscape.

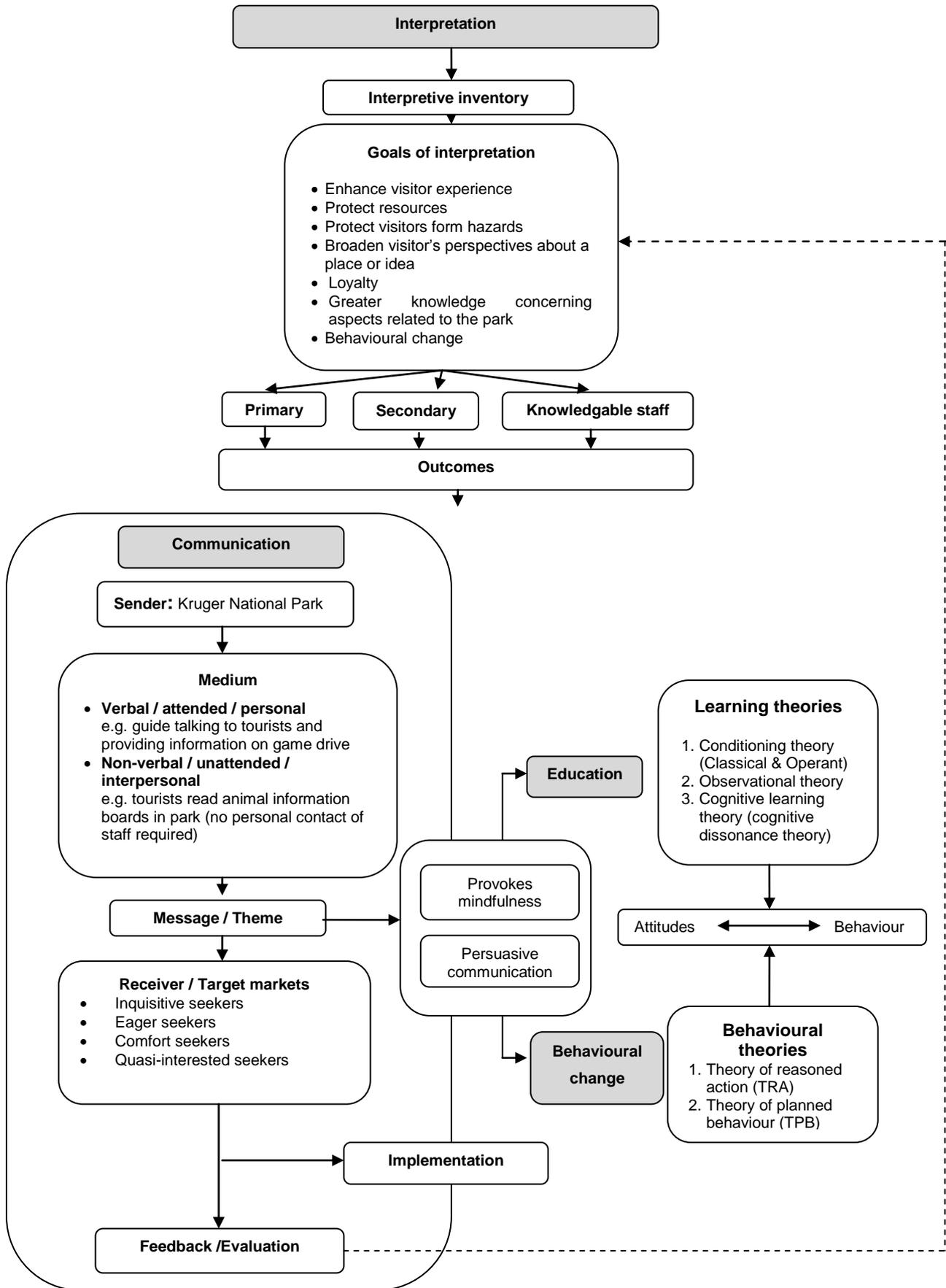
The aim of this chapter is therefore to provide the holistic picture (i.e. landscape) by drawing conclusions and making recommendations based on the results.

## **7.2 CONTRIBUTION**

This study made a literature, statistical and practical contribution by means of recommendations to the Kruger National Park. The contributions outlined in sections 7.2.1 to 7.2.3 are captured in the three articles of this study which are currently in process of review for publication purposes and also viewed as the most distinct contributions of the study.

### **7.2.1 Literature contribution**

Based on a literature analysis as well as the results of this study, an interpretation framework (see Figure 7.1) was developed. Even though interpretation is a concept that appeared in the early 1900s and several research studies have been done on the concept ever since, literature fails to provide a clear and comprehensive explanation of all components of, theories related to and consequent goals of interpretation.



**Figure 7.1: Interpretation framework for the Kruger National Park**

*Source: Author's own compilation*

The interpretation framework in Figure 7.1 contributes to the body of knowledge as it can be used as a reference for future research that provides a holistic view of interpretation. To a degree, this framework, explains the functioning of interpretation by providing the link between the different concepts related to interpretation that also assists with planning for interpretation. It illustrates the fact that communication, education and behavioural change work together to accomplish the goals of interpretation and hence each of these components cannot be seen in isolation. This is more clearly explained in the conclusions to the study in sections 7.3.1.2 and 7.3.1.5. Each of these components should be addressed by destination or tourism product managers aiming to implement interpretation since addressing only one component will result in ineffective interpretation.

Secondly, this study empirically tested and confirmed that Stewart *et al.*'s (1998) classification of primary, secondary and tertiary interpretation can partially be used as a general classification for interpretation in future ecotourism research studies. The results of this study revealed that interpretation in ecotourism destinations can be classified as *primary interpretation* that is readily identifiable as interpretation and hence educational (include aspects like educational displays or talks, auditorium with nature videos and information regarding the history of the park) and, on the other hand, *secondary interpretation* that includes aspects that are not considered as interpretation (like enforcing park rules, good layout of the park, and accessibility of the park), has an impact the experience with primary interpretation.

This study proposed interpretation typologies for visitors to destination and tourism products which offer interpretation services or programmes. These typologies are specifically based on visitors' expected interpretation services that enable destinations or tourism products to differentiate between markets and rather tailor interpretation services or programmes according to the needs of these markets, rather than to deliver a mass market interpretation programme. These typologies should be assigned to different markets in combination with visitors' motivations to visit the destination/product as the motivations determine the typologies assigned along with the expected interpretation services.

Another literature contribution along with the typologies is that this study specifically addressed a current gap in the literature of segmenting interpretation markets according

to expected interpretation services. This proved to be a very useful segmentation base and is explained in more detail in the statistical contribution section.

### **7.2.2 Statistical contribution**

Little research to date has made use of product-related segmentation and by making use of expectations for interpretation within the interpretation context. There was thus no guideline available to segment a market for interpretation services and this was a specific problem that needed to be addressed. This raised the question as to which variable or combination of variables is the correct choice for segmenting visitors according to expected interpretation services. This study found that not only should the aim of the study be considered in terms of cluster analysis to segment a market but also to make this decision based on statistical calculations. Researchers should compare different scenarios of variables' degree of variability as well as adhere to the assumption of multicollinearity for the best selection of variables.

### **7.2.3 Practical contribution**

Primarily, this research assists the Kruger National Park to critically analyse their current position with regards to their interpretation services. The framework proposed in this study enables the Kruger National Park to determine their tourists' needs or expectations, where the Kruger National Park interpretation services need attention, and therefore enable the Kruger National Park to adapt accordingly. Other ecotourism products that are in the same category as the Kruger National Park that attract tourists as well as having environmental conservation as a goal will also be able to understand the importance of interpretation and develop it accordingly. This study determined *primary interpretation*, *secondary interpretation* as well as *knowledgeable staff* as specific factors that need to be incorporated into interpretation programmes that can assist the Kruger National Park to implement successful interpretation programmes. Additional to this, this study determined that market segments can be identified by means of visitor expectations for interpretation services which provides clear direction to the development of each of the different interpretation programmes or services in accordance with the needs of visitors to the Kruger National Park. Not only does this assist the Kruger National Park but all other ecotourism tourism products aiming to deliver interpretation services or programmes can benefit from this research and proposed framework.

The practical contributions are more clearly explained in the recommendations to the Kruger National Park in section 7.4.

## **7.3 CONCLUSIONS**

Conclusions will be discussed with regards to the literature review and empirical results as reported in Chapters 1 to 6.

### **7.3.1 Conclusions with regards to the literature reviews**

Because an article approach was followed, each article had its own goal. This chapter, however, includes all the chapters' literature reviews into one conclusion to address the aim of the study.

#### **7.3.1.1 Background to interpretation**

- Interpretation has a long history. It made its first appearance in the 1900s in the work of Enous Mills (c.f. 1.2; 2.1) but Freeman Tilden (1977) is regarded as the father of interpretation (c.f. 1.2; 2.1; 4.2; 5.2.1; 6.1).
- Over the years many definitions of interpretation have been presented (c.f. 1.2; 1.6.2; 2.2; 4.2; 5.2.1; 6.1).
- After comparison of all the various definitions, interpretation can be defined as *educating visitors through persuasive communication and first hand experiences to mindfully reveal the significance and relationships of the place they are visiting so that visitors may have an enjoyable experience and reveal behaviour that is in line with conservation practices* (c.f. 2.2).
- Seeing as interpretation has such a long history, different classifications of interpretation also exist (c.f. 1.2; 2.3; 4.2; 5.2.1; 6.2.1):
  - Attended and unattended (c.f. 1.2; 2.3; 4.2; 5.2.1; 6.2.1).
  - Personal and impersonal (c.f. 1.2; 2.3; 4.2; 5.2.1; 6.2.1).
  - Primary, secondary and tertiary (c.f. 1.2; 2.3; 4.2; 5.2.1; 6.2.1).
  - Hard and soft (c.f. 1.2; 2.3; 4.2; 5.2.1; 6.2.1).
    - From these classifications one can deduce that the various classifications correspond with one another. Attended and unattended as well as personal and impersonal interpretation correspond with each other (c.f. 2.3; 4.2; 5.2.1; 6.2.1); whereas primary, and secondary and tertiary interpretation correspond with hard and soft interpretation respectively (c.f. 2.3; 4.2; 5.2.1; 6.2.1).

- Even though many definitions of interpretation exist (c.f. 1.2; 2.2; 4.2), an analysis of the different definitions reveal that components like communication, persuasive communication, mindfulness, education and behavioural change (c.f. 1.2; 2.4; 6.1) explain what is meant by interpretation:
  - Communication (c.f. 2.4.1; 6.1):
    - Interpretation is a similar term to communication. However, interpretation is the preferred term to use within the tourism industry (c.f. 1.2; 6.1).
    - Communication has certain components: message, sender, receiver, medium (or channel) and feedback (c.f. 1.2; 2.4.1).
    - These components need to function successfully for effective interpretation to occur (c.f. 1.2; 2.4.1).
  - Persuasive communication (c.f. 2.4.1.2)
    - Persuasive communication is the voluntary forming or changing of attitudes and behaviour in accordance with the intended message (c.f. 1.2; c.f. 2.4.1.2).
    - Persuasive communication therefore has a predetermined message (c.f. 1.2; 2.4.1.2).
    - Education is one form of persuasive education since it has a predetermined message (c.f. 1.2; 2.4.1.2.1).
  - Mindfulness (c.f. 2.4.2):
    - Interpretation should specifically aim for the attainment of mindful visitors (c.f. 1.2; 2.4.2; 4.2).
    - Mindfulness is not regarded as a type of mental processing but rather a psychological state that increases readiness for mental processing (c.f. 2.4.2; 4.2).
    - Mindfulness can be created if information is presented in a conditional way (c.f. 2.4.2; 4.2).
    - Over-exposure to a setting can create mindlessness (c.f. 2.4.2).
  - Education (c.f. 2.4.3):
    - The message of communication (or interpretation) should be processed and thus refers to education (c.f. 1.2; 6.1).
    - Three theories of learning which explain processing of information are (i) conditional learning (c.f. 2.4.3.1) [and specifically the classical and operant learning theories (c.f. 2.4.3.1.1 and 2.4.3.1.2 respectively)]; learning through modelling (c.f. 2.4.3.2); and cognitive learning (c.f. 1.2; 2.4.3.3) which is better explained by the cognitive dissonance theory (c.f. 2.4.3.3.1).

- A pertinent role is thus assigned to memory to recall learned information (c.f. 2.4.3.3.2).
  - Behavioural change (c.f. 2.4.4):
    - Refer to section 7.2.1.5.
- No matter the type of interpretation, interpretation leads to certain goals (c.f. 2.5):
  - enhanced experience (c.f. 2.5.1; 4.1; 4.2).
  - protect resources (c.f. 2.5.2.1).
  - protect visitors from hazards (c.f. 2.5.3).
  - add to or broaden visitors' perspectives of the place they are visiting (c.f. 2.5.4; 5.2.1).

### **7.3.1.2 The importance of interpretation for ecotourism products such as national parks**

- Due to the fast pace at which ecotourism is growing (c.f. 1.1; 4.1) and the amount of attention paid to ecotourism, ecotourism destinations are more focused on delivering competitive products (c.f. 1.1) and more concerned about their visitors (c.f. 4.1).
- National parks are an excellent example of an ecotourism destination (c.f. 1.1) which is broadly mandated with the dual purpose of conservation management as well as ecotourism management (c.f. 1.1; 5.2.1; 6.1).
- From the definitions of ecotourism, one aspect to which should be paid attention is education (c.f. 1.1) which is an essential ingredient for park management (c.f. 1.1).
- Education is emphasised as an important aspect since national parks are predominantly visited by highly educated visitors that expect information-rich experiences (c.f. 1.1; 1.3; 4.2; 5.1; 5.2.2; 6.1).
- Interpretation accomplishes education and allows national parks to achieve their dual mandate of conservation and ecotourism management (c.f. 1.1; 4.1; 4.2; 5.2.1).
- Interpretation is therefore regarded as the cornerstone of national park management (c.f. 1.1; 4.1).
- Interpretation is specifically used for successful management of national parks (c.f. 5.2.1).
- This is since interpretation can be seen as the link between conservation and ecotourism management (c.f. 5.2.1).

- Interpretation and conservation
  - The functioning of interpretation illustrates this contribution to conservation from communication to education to behavioural change (c.f. 6.1).
  - Interpretation assists conservation management by broadening visitors' knowledge about the place they are visiting by revealing the significance of their experience and assisting their understanding. This, in turn, leads to conservation since the understanding creates a respect and concern for species, supporting nature conservation work, protecting endangered species; philanthropic behaviour and general environmental behaviour (c.f. 5.2.1; 6.1; 6.2.1).
  - General environmental behaviour refers to reading about the environment, donating money for conservation, joining conservation organisations, writing letters to government pertaining to the environment, attending meetings in the community with regards to the environment, avoiding the use of certain products due to their impact on the environment, recycling at home and voting for elected officials due to their support for the environment.
- Interpretation and ecotourism management
  - Interpretation assists ecotourism management by fulfilling visitors' educational expectations (c.f. 5.2.1).
  - As a result, interpretation adds value to the tourism experience (c.f. 5.2.1) and hence leads to other benefits (c.f. 4.2; 5.2.1; 6.1): assists with personification of the park's brand, increased satisfaction, loyalty, increased purchasing, increased revenue, visitors spending more time at the destination, encouraging other visitors to visit, providing positive word-of-mouth referrals, contributions to the park's conservation and sustainability, and leading to increase environmental awareness.

With this background to interpretation as well as its importance specifically for ecotourism destinations in mind, the purpose of this research was to develop an interpretation framework for the Kruger National Park. To achieve this goal, three articles were completed from different perspectives. The literatures relevant to the three articles are subsequently discussed.

### **7.3.1.3 The Kruger National Park – a regional approach**

- Since public funding for national parks has been reduced, national parks are faced with budget constraints and are forced to focus on their tourism function to gain revenue to support their conservation function (c.f. 5.1; 6.1).
- This is also the case in South African National Parks (SANParks) (c.f. 5.1; 6.1).
- The Kruger National Park (the study's focus) is SANParks' flagship park (c.f. 1.1; 1.6.1; 4.1; 5.1; 6.1).
  - The park was established in 1898 (c.f. 6.1).
  - This park covers nearly 2 million hectares (c.f. 1.1; 1.6.1; 4.1).
  - It is located in the far north-eastern corner of South Africa which shares a long eastern border with Mozambique and borders Zimbabwe to the north (c.f. 1.6.1; 4.1).
  - As a result of the size of the park, biodiversity and rainfall differences from north to south appear and hence a clear distinction can be made between the northern and southern regions of the Kruger National Park (c.f. 4.1).
  - Activities of the Kruger National Park comprise 74% of all the activities performed in SANParks (c.f. 1.1; 6.1).
  - Hence the park contributes the highest percentage of revenue to SANParks (c.f. 1.1; 4.1; 6.1).
- Visitors to the Kruger National Park have indicated that there is a gap between what they expect and experience with regards to the Kruger National Park's interpretation services (c.f. 1.1; 1.3; 4.1; 4.2; 5.1; 6.1).
- Due to the size of the park, expectations and experiences with interpretation services from north to south might be different (c.f. 4.1).
- Nevertheless, interpretation is not a focus in the Kruger National Park and seems to be the domain of different park managers under the management of SANParks' own initiative (c.f. 4.2; 5.1).

### **7.3.1.4 Market segmentation and interpretation**

- As mentioned, national parks, and especially SANParks, should regard ecotourism management as being equally important as conservation management (c.f. 6.1).
  - As a result of budget constraints to fulfil conservation management, national parks are more inclined to focus on their visitors' needs (i.e. ecotourism management) (c.f. 1.1; 4.1).

- Seeing as the Kruger National Park's activities are the highest contributor to SANParks' revenue streams and the fact that visitors' interpretation expectations are not met, the Kruger National Park should focus on their visitors' expectations and hence plan for interpretation.
- Planning for interpretation involves eight steps: (1) interpretive inventory; (2) interpretive goals; (3) identify visitors; (4) determine outcomes of goals; (5) develop themes; (6) develop media matrices; (7) implementation plan; and (8) evaluation process (c.f. 5.2).
- Referring to step 2 of the planning procedure, the Kruger National Park already has a broad goal for the development of interpretation:
  - to conserve the environment and rely on their tourism function to gain sufficient revenue to support the conservation function (c.f. 5.2.2).
- To achieve this goal, it is imperative to determine the socio-demographic profile of visitors that use interpretation services as step 3 of the interpretation planning process (c.f. 5.2.1).
- Hence the importance of market segmentation for interpretation services (c.f. 5.2.2).
  - Market segmentation divides a market into homogeneous markets with common needs and/or characteristics (c.f. 5.2.2).
  - Step 2 in market segmentation is to select one or two target markets and to develop a marketing mix for these target markets (c.f. 5.2.2).
  - Focusing only on one or two target markets increases the chances of marketing success and improves overall survival and profitability of a business or destination (c.f. 5.2.2.).
    - Different market segmentation bases exist with which a market can be segmented: demographics; socio-demographics; socio-economics; socio-cultural; geographical; psychological; psychographics; benefits; product-related; and user-related (c.f. 5.2.2).
- Interpretation expectations can be seen as a viable active variable to use for product-related segmentation of eco-tourists to national parks as this segmentation base refers to segmenting visitors based on specific interests (c.f. 5.2.2).

### 7.3.1.5 Interpretation and behavioural change in national parks

- Interpretation can be viewed as a system in which the components of interpretation work together: communication leads to learning which, in turn, involves a change in behaviour (c.f. 1.2; 2.4; 6.1).
  - Behavioural change (c.f. 2.4.4):
    - Learning involves a permanent change in behaviour (c.f. 1.2; 2.4.4; 6.1).
    - Behavioural change is thus a result of an experience (c.f. 2.4.4) which is better understood with experiential learning (c.f. 2.4.4).
    - The theory of planned action (c.f. 1.2; 2.4.4.1), theory of planned behaviour (c.f. 1.2; 2.4.4.2; 6.2.2) and the cognitive dissonance theory (c.f. 1.2; 2.4.3.3.1; 6.2.3) explain this behavioural change.
    - Typical behaviour or behavioural change within a national park refers to: actions being more in line with respect for the environment; philanthropic support for conservation; and general environmental behaviour (c.f. 6.2.1).
    - General environmental behaviour includes donating money for conservation; writing letters to government pertaining to the environment; joining conservation organisations; avoiding the use of certain products due to their impact on the environment; recycling at home; reading about the environment; voting for elected officials due to their support for the environment; and attending meetings in the community with regards to the environment (c.f. 6.2.1).

### 7.3.2 Conclusions with regards to the empirical results

Chapter 4 (Article 1) determined what visitors to the Kruger National Park expect of interpretation services as well as determining their experiences with the park's interpretation services. This was accomplished by means of factor analysis which revealed **primary, secondary interpretation** and **knowledgeable staff** as factors for both the expectations of and experiences with interpretation services. Results indicated that visitors to the park regard *primary* and *secondary interpretation* as well as *knowledgeable staff* as very important interpretation services for a quality experience to the park. These factors' expectations were then compared with the experiences for (i) the park as a whole, as well as (ii) between the northern and southern region by means of paired sample t-tests. The following results indicate the differences between the expectations and experiences for the park as a whole:

- Comparing the expectations with the experiences thereof revealed that only *secondary interpretation* met respondents' expectations and that *primary interpretation* and *knowledgeable staff* did not meet visitors' expectations and that they experienced these interpretation services only fairly.
- Weighing the expectations with the experiences based on effect size, however, revealed that practical significances did occur between the expectations and experiences of *secondary interpretation* and *knowledgeable staff* and that *primary interpretation* might indicate practical significance.

At first glance the results between the northern and southern regions of the park seemed to deliver the same results as for the park as a whole, but the effect sizes disclosed interesting results as follows:

- Only *secondary interpretation's* percentage in overlap of responses between expectations to experiences differed more than *primary interpretation* and *knowledgeable staff's* percentage in overlap of responses, indicating that there are some differences between the northern and southern regions' *secondary interpretation* services. A closer look at the results indicates that the southern region's *secondary interpretation* needs attention.

Seeing as the results of Chapter 4 indicated that there is a gap between the expectations of and experience with interpretation services of the Kruger National Park but did not indicate significant differences between the northern and southern regions' interpretation services, Chapter 5 (Article 2) explored possible market segments based on visitors' expectations of interpretation services for the park as a whole. This was accomplished by means of cluster analysis. Even though cluster analysis is a popular method to segment markets, selecting the correct variables for the cluster analysis should be done with caution. A great deal of statistical debate exists around the selection of the correct variable(s) and hence this chapter first had to identify which scenario of variables [i.e. raw data (24 expected interpretation variables); factors (of the 24 expected interpretation variables); or surrogate variables (one variable that represents the factors)] delivered the least variability to use for cluster analysis. Results of the different scenarios revealed the following:

- The raw data scenario indicated the least variability which, at first glance, pointed towards its use for further analyses.

- One of the assumptions of cluster analysis, however, is that the selected variables should address multicollinearity. Considering that the raw data's variables all refer to expected interpretation and hence can be grouped as factors (*primary* and *secondary interpretation* factors which comprise variables that are highly correlated with each other), the raw data scenario violated the multicollinearity assumption.
- The factor scenario delivered the most variability and hence was not suitable for further cluster analysis.
- Consequently, the last scenario, surrogate variables, was chosen for cluster analysis. The surrogate variables were chosen from the factor analysis scenario's items with the highest factor loadings. These variables, also confirmed with a correlation matrix, are the least correlated with each other and hence fulfil the multicollinearity assumption.

Market segments were therefore determined by making use of surrogate expected interpretation variables by first making use of a hierarchical and then a non-hierarchical method. Four market segments (from large to small) were identified: (i) ***Inquisitive seekers***, (ii) ***Eager seekers***; (iii) ***Comfort seekers***; and (iv) ***Quasi-interested seekers***. Results indicated that there are different needs and expectations with regards to interpretation services:

- The *Inquisitive seekers* view all interpretation services (i.e. *primary*, *secondary interpretation* as well as *knowledgeable staff*) as very important.
- The *Eager seekers* only regard *secondary interpretation* and *knowledgeable staff* as very important.
- *Comfort seekers* only view *secondary interpretation* as important.
- The *Quasi-interested seekers* did not regard interpretation as important.

The difference between the markets was determined based on other non-active variables. Some of the non-active variables included differences between expectations of and experiences with interpretation services as well as motivations to visit the park which were determined by factor analyses. The results of the expected and experienced interpretation services are exactly the same as the results of Article 1 (i.e. *primary*, *secondary interpretation* and *knowledgeable staff*). The factor analysis on motivations identified (i) ***Escape***; (ii) ***Park facilities and value***; and (iii) ***Special***

**interests**, from the most important to the least important, as motivations to visit the park. Other non-active variables (i.e. socio-demographic and behavioural characteristics) determined further differences between the markets by means of Chi-square tests and ANOVAs. The following results were discovered for the market segments:

- The different markets appear to be homogeneous based on socio-demographic and behavioural characteristics.
- Markets differ based on home language: the *Eager seekers*, *Inquisitive seekers* and *Comfort seekers* predominantly speak Afrikaans whereas *Quasi-interested seekers* speak English.

For interpretation development purposes it was also important to view these markets' experiences with the interpretation services:

- The *Inquisitive seekers* regarded *primary*, *secondary interpretation* and *knowledgeable staff* as all very important to extremely important but only *secondary interpretation* met their expectations. *Primary interpretation* as well as *knowledgeable staff* did not meet their expectations and this suggests some room for improvement.
- The *Eager seekers* expect that *secondary interpretation* as well as *knowledgeable staff* to be very important interpretation services for an experience in the park but only *secondary interpretation* met their expectations. *Primary interpretation* is neither important nor less important for the *Eager seekers* and they experienced it as fair.
- The *Comfort seekers* only considered *secondary interpretation* (2.14) as very important but experienced it moderately. *Primary interpretation* and *knowledgeable staff* were considered neither important nor less important, but were experienced moderately.
- The *Quasi-interested seekers* considered all the interpretation services as less important but experienced these services moderately indicating that their experience was beyond their expectations.

The focus of Chapters 4 and 5 was primarily on interpretation as a means of addressing visitor expectations within a park's ecotourism management function. Results indicated that the Kruger National Park's interpretation services are not sufficient and proves that

this needs to be addressed. Apart from ecotourism management, national parks' main objective, and also the case for the Kruger National Park, is to conserve the environment and, once again, interpretation can assist with achieving this. As a further indication that the Kruger National Park should address interpretation in the park, Chapter 6 (Article 3) determined whether the Kruger National Park's interpretation services have an impact on visitors' behaviour to be more in line with the park's conservation practices. This was accomplished by making use of the theory of planned behaviour (TPB) and the cognitive dissonance theory along with interpretation in a structural equation model. The exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) determined validity and reliability for the latent constructs ***attitudes*** and ***behaviour***, as part of the TPB and cognitive dissonance theory, as well as ***primary*** and ***secondary interpretation*** as latent constructs for interpretation. Considering the fact that there is no consensus as to which classification of interpretation to use, the results from the EFA as well as the CFA prove that *primary* and *secondary interpretation* can be used. It is important to note that results indicate that *secondary interpretation* is a combination of secondary and tertiary interpretation.

Unsurprising from the previous chapters' results, the results of this chapter indicate that visitors experienced *primary interpretation* services fairly and *secondary interpretation* quite well, indicating that there is a problem with the interpretation services of the Kruger National Park. Furthermore, results revealed that visitors to the Kruger National Park are inclined towards positive *attitudes* for conservation and seem to be in line with the type of visitor to an ecotourism destination (i.e. well-educated visitors who visit the park for special interests). Results, however, indicate that visitors felt neutral regarding their *behaviour* towards conservation.

Before the structural model was estimated, correlations were calculated to determine what to expect from the relationships between latent constructs. The results for the correlations between the latent constructs pointed towards the following:

- All the relationships between latent constructs are fairly small except for the relationship between *attitudes* and *behaviour* with a medium relationship.
- All the relationships are negative except for the relationship between *attitudes* and *behaviour*.
- Although small, the only practical significance was once again between *attitudes* and *behaviour*.

Since two contradicting theories were used for this study (TPB indicates an influence of attitudes on behaviour and the cognitive dissonance theory states influence from behaviour to attitudes), both these theories' structural models were estimated separately. Both the TPB as well as the cognitive dissonance theory are applicable to interpretation. As expected from the correlations, results supported the following hypotheses:

- *Attitudes* have a positive influence on *behaviour*.
- *Behaviour* has a positive influence on *attitudes*.
- Although negative, *secondary interpretation* has an influence on *attitudes*.
- The influence of *primary interpretation* on *behaviour* is also negative.

The influence of *primary interpretation* on *attitudes* (for the TPB) and *secondary interpretation* on *behaviour* (for the cognitive dissonance theory) were not supported.

These results imply that visitors' positive attitudes are not a result of interpretation services. This proves, once again, that the Kruger National Park's interpretation services need to be addressed to sustain positive attitudes rather than to detract from them. Considering the fact that both the theories were supported indicates that positive *attitudes* can influence visitors' neutral *behaviour* to be more supportive of conservation and general environmental behaviour leading to fulfilling the park's conservation mandate. But visitors' neutral *behaviour* can also influence their *attitudes*, thus resulting in a decline in positive attitudes.

Interpretation is thus of extreme importance for the Kruger National Park, not only to address visitors' expectations as part of ecotourism management, but also as a part of the park's conservation management.

#### **7.4 RECOMMENDATIONS FROM THE RESEARCH**

The results from this study highlighted the importance of the Kruger National Park to plan for interpretation. This is emphasised by the fact that there is (i) a gap between visitors' expectations of and experiences with the current interpretation services; (ii) different market segments that were identified which have different needs for interpretation; and moreover (iii) the current interpretation services influences the positive attitudes of visitors negatively. As explained in Chapter 4, planning for interpretation is quite a complex process that needs an in-depth analysis of various

aspects; hence the eight steps [(1) interpretive inventory; (2) interpretive goals; (3) identify visitors; (4) determine outcomes of goals; (5) develop themes; (6) develop media matrices; (7) implementation plan; and (8) evaluation process] involved in planning for interpretation. Ham *et al.*'s (2005:5) interpretation planning process is therefore used as an outline to discuss recommendations for the Kruger National Park. This planning process was specifically used to explain recommendations for the Kruger National Park since it chronologically helps to determine certain aspects for the proceeding steps and can be viewed as an interpretation framework for the Kruger National Park.

The steps in the planning process address the components identified in the interpretation framework that explains the functioning of interpretation as illustrated in Figure 7.1. Since only certain steps were investigated in this study [specifically steps 2 (interpretive goals), 3 (identify visitors) and 4 (determine outcomes of goals)], it should be noted here that all eight steps are not covered in detail. The steps investigated in this study provide the Kruger National Park with a good starting point and information foundation for further effective planning and development. These steps are covered in sections 7.4.1 to 7.4.8.

#### **7.4.1 Interpretive inventory**

The first step in the interpretation planning process can be viewed as the overarching heading (i.e. "Interpretation") of the interpretation conceptual framework illustrated in Figure 7.1. Ham *et al.* (2005:5) explain that the first step involves two parts: (i) to describe the interpretive potential (i.e. features as well as unique selling points of the Kruger National Park); and (ii) a general description of who the visitors are.

##### **7.4.1.1 Interpretive potential**

The sheer size of the Kruger National Park illustrates the complexity of planning for interpretation services in the park. As explained in Chapter 4, as a result of the size of the park (2 million hectares of land), biodiversity and rainfall differences that appear from north to south result in more species and hence more people to occur in the southern region of the park. Even the rest camps in the park offer differentiated products with diverse experiences pertaining to recreational activities (hiking and cycling trails, golf, 4x4 trails and bush braais), infrastructure (electricity, the number of chalets or camping spots, layout of camps), education (guided walks, information on the history

of the park), accommodation facilities (guesthouses, chalets and camping) or travel purpose (stop over destination, conference, or holiday). Documenting special features like places, people and things that make the park special and noteworthy to interpret as Ham *et al.* (2005) suggest, is thus very complicated. It is important to note here that the park does not fail to deliver interpretation services but, in fact, has various interpretation services available. The results of Chapters 4 and 5, however, indicated that there is a gap between the visitors' interpretation expectations and what they have experienced and that this gap needs to be addressed.

For the park as a whole, some of the *secondary interpretation* provided by the park includes information boards, directions in the park, maps, recycling bins and name plates for the identification of trees (see Photos 7.1 to 7.5).



**Photo 7.1: Information board with animal tracking**

**Source: Photo taken by author**



**Photo 7.2: Recycle bins**

**Source: Photo taken by author**



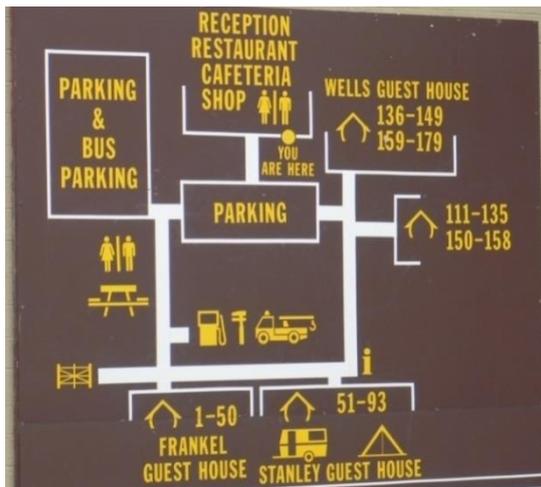
**Photo 7.3: Name plates for the identification of trees**

**Source: Photo taken by author**



**Photo 7.4: Rules of the park**

**Source: Photo taken by author**



**Photo 7.5: Directions and layout of rest camps**

**Source: Photo taken by author**

Most of the park's *primary interpretation* includes game drives but specific rest camps' *primary interpretation* includes: Olifants rest camp - Star gazing telescope; Letaba rest camp - the Elephant interpretation Hall, Auditorium; Mopani and Shingwedzi rest camps – geological displays; Berg en Dal rest camp - The Rhino interpretation Hall, geological displays; Skukuza – Goldfields Environmental centre, Stevenson Hamilton library and panels, Old Selati railway station, Game ranger's dog cemetery, geological displays; and Lower Sabie – geological displays.

A good starting point could be to analyse each of these interpretation services (i.e. the 'setting' in Table 7.1 in section 7.4.4) and amend each service based on recommendations from literature (this will be discussed later).

#### **7.4.1.2 The broad market**

Identifying the broad market for interpretation services specifically refers to the "receiver" as part of the communication process in the interpretation framework of Figure 7.1. At this stage it is common knowledge that the broad market of visitors to the Kruger National Park is homogeneous based on socio-demographic and behavioural characteristics (see Chapter 5) since the segments are predominantly male, married, live in Gauteng, are well educated (i.e. have a diploma or degree), earn more than R555 000 annually, drive a 4x4, initiated the visit to the park themselves, have accompanying children, own a Wild Card, heard about the Kruger National Park through friends and family and, interestingly, are not members of a conservation organisation as

one would expect from special interest visitors. Chapters 4 and 5 have also determined that visitors expect information-rich experiences such as interpretation services.

#### **7.4.2 Interpretive goals**

The interpretative goals refer to the last aspect (i.e. “goals of interpretation”) in the interpretation framework of Figure 7.1 which the park would like to achieve. South African National Park’s main objective is to conserve the environment (National Parks Act 57 of 1976) which makes the Kruger National Park the largest national park in the world to conserve the environment (Foxcroft & Richardson, 2003:385). The fact that there is a lack of public funding made this conservation object quite difficult to achieve and hence the importance placed on ecotourism management as well. Chapters 5 and 6 explained that interpretation can accomplish both.

Two interpretative aims and subsequent objectives can be formulated to address the Kruger National Park’s mandate as well as their current budget constraints:

1. Conserve the environment through interpretation
  - a. Protect resources by means of directing where visitors go.
  - b. Inform tourists about appropriate behaviour.
2. Enhance visitor experience through interpretation
  - a. Protect visitors from hazards.
  - b. Create an actual experience.

More goals and objectives can be added to suit specific management requirements of the Kruger National Park.

Chapter 4 recommended that *primary interpretation* should be addressed first since these services are readily identifiable as interpretation services. Furthermore, *secondary interpretation* should also be developed as complementary to *primary interpretation* as these services impact the experience of *primary interpretation*.

#### **7.4.3 Identify visitors**

Identifying the visitors for interpretation services refers to the “receiver” as part of the communication process in the interpretation framework in Figure 7.1. The difference here is that the broad market is now split into target markets. This, in turn, implies that for each target market different communication processes are developed.

Chapter 5 revealed that visitors to the Kruger National Park are fairly homogenous, but identified four heterogeneous markets based on visitors' expectations of interpretation. These markets were identified as:

- *Inquisitive seekers* (largest market): *primary, secondary interpretation* and *knowledgeable staff* are very important.
- *Eager seekers* (second largest market): only *secondary interpretation* and *knowledgeable staff* are very important.
- *Comfort seekers* (second smallest market): only *secondary interpretation* is important.
- *Quasi-interested seekers* (smallest market): no interpretation is regarded as important.

The only difference between these markets, apart from the expected interpretation services, is based on home language. All the markets, except for the *Quasi-interested seekers* who speak English, predominantly speak Afrikaans. This might arguably indicate that interpretation should be developed in Afrikaans. Even though the numbers of *Quasi-interested seekers* are quite small, delivering interpretation in Afrikaans might increase the chances that this market could become less interested in interpretation than they already are. Home language should therefore be used with caution and rather recommend that multi-language interpretation be implemented. More recommendations pertaining to the market segments will be discussed in section 7.4.4.

Interestingly, all the markets (see Chapter 5) have accompanying children and Chapter 6 recommended creating and sustaining positive attitudes from a young age as well. This suggests that *children* should also be a target market for interpretation services. According to Ward and Wilkinson (2006) interpretation programmes should be developed for children's different developmental levels and suggest interpretation services for toddlers (between the ages of 2 to 6), children (between the ages of 7 to 12) and teenagers (ages 12 or more).

#### **7.4.4 Determine outcomes of goals**

This step forms part of the "goals of interpretation" in the framework of interpretation in Figure 7.1. Based on the previous discussions that identified the goals and visitors for interpretation, Table 7.1 can be drafted as an example to help the Kruger National Park's interpretation planning process (Ham *et al.*, 2005:12).

**Table 7.1: Interpretation planning table**

Goals	Object.	Type of interpretation	Attended or unattended	Setting	Market	Outcome		Theme	
						Observable	Non-observable		
Conservation	Protect resources by means of directing where visitors go	Primary	Attended		Inquisitive				
					Eager				
					Children (2-6 years of age)				
			Children (7-12 years of age)						
			Teenagers						
			Unattended		Inquisitive				
		Eager							
		Teenagers							
		Knowledgeable staff	Attended		Inquisitive				
					Eager				
					Children (2-6 years of age)				
			Children (7-12 years of age)						
			Teenagers						
			Unattended		Inquisitive				
		Eager							
		Comfort							
		Quasi-interested							
		Teenagers							
		Secondary	Attended		Inquisitive				
					Eager				
					Comfort				
			Quasi-interested						
			Unattended		Inquisitive				
					Eager				
	Comfort								
	Quasi-interested								
	Informing tourists about appropriate behaviour	Primary	Attended		Inquisitive				
					Eager				
					Children (2-6 years of age)				
					Children (7-12 years of age)				
			Teenagers						
			Unattended		Inquisitive				
					Eager				
					Children (2-6 years of age)				
					Children (7-12 years of age)				
			Children						
			Knowledgeable staff	Attended		Inquisitive			
						Eager			
		Children (2-6 years of age)							
		Children (7-12 years of age)							
		Teenagers							
		Unattended			Inquisitive				
			Eager						
			Comfort						
		Quasi-interested							
		Teenagers							
		Secondary	Attended		Inquisitive				
					Eager				
Comfort									
Quasi-interested									
Unattended			Inquisitive						
			Eager						
		Comfort							
Quasi-interested									
Teenagers									

**Source: Adapted from Ham et al. (2005:12)**

For the purpose of this chapter, only the first goal (i.e. conservation) is used as an example in Table 7.1. Orams (1994:31) explains that each destination should determine their specific issues and that the interpretation be developed with these

problems or issues in mind. The Kruger National Park's mandate is to conserve the environment but, due to budget constraints, visitors' experience is also important. Due to the gap in expectations and experiences with interpretation services as well as the current budget constraints, the park should first address the current interpretation services before developing new interpretation services.

The order in which the goals, objectives, settings and markets are placed in Table 7.1, is arbitrary to the Kruger National Park and merely a suggestion based on the results of Chapters 4 to 6. Since this is a national park with a mandate for conserving the environment, more emphasis might be placed on conservation and hence the park might decide to address interpretation service in rest camps with fewer visitor bookings to spread the carrying capacity over the whole park and reduce the traffic in busier rest camps. On the other hand, the current dilemma of lack of public funding places more emphasis on gaining revenue from visitors in order to conserve the environment and hence highlights the importance of developing interpretation in busier rest camps. Whichever case it may be, the decision as to where to start the amendment or development of interpretation determines the rest of the planning process for the Kruger National Park.

Bearing in mind that *primary interpretation* is readily identifiable as interpretation and the fact that results indicated that the experience with *primary interpretation* did not meet respondents' expectations; the Kruger National Park should focus on amending and delivering different *primary interpretation* services in the different rest camps before *secondary interpretation* is addressed. With this said, the park should create a priority list of the different rest camps and settings in which *primary* and *secondary interpretation* should be addressed in accordance with their set out goals (i.e. interpretation for conservation purposes or for enhancing visitor experience). It might also be viable to distinguish between attended (person to person) and unattended (impersonal) interpretation to determine the level of skills and knowledge of interpreters (like field guides or specialists on certain topics) should have in delivering attended interpretation services. It should also be noted here, that results from Chapters 4 and 5 indicated that *knowledgeable staff* is also an important factor that the park should consider along with the development of interpretation services. This factor also indicated that visitors' expectations were more than their experience with *knowledgeable staff* suggesting that this aspect urgently needs to be addressed. This

not only illustrates the service quality of the interpreters, but also emphasises that all staff of the Kruger National Park are equally important in delivering an experience (i.e. service quality) to the visitors as well as important for conserving the environment. All staff should therefore be skilled and knowledgeable (in varying degrees of course) on the topics and themes the park is delivering to visitors. This will make sure that all staff are working towards the same goal of conservation and hence the existence of the park.

The priority of goals and the type of interpretation goes hand in hand with the type of setting to achieve these goals. Certain settings (e.g. the Rhino Hall or Olifant museum) in the Kruger National Park are quite well developed and, due to budget constraints, it might be viable to start amending the interpretation services with the least impact on costs. Delivering at least one effective interpretation service that addresses visitors' needs could be a good starting point for addressing both conservation requirements as well as enhancing visitor experience. Once the park has experienced an increase in revenue, further developments can be realised. This can be a lengthy process before all interpretation is developed and implemented effectively, but the fact that interpretation is not yet developed can also be used as an angle to increase revenue. The Kruger National Park may make use of this as an opportunity to communicate or market future interpretation developments that might, in turn, create something visitors may look forward to or create curiosity for visitors in future.

In conjunction with determining which setting should be addressed first, is the appropriate markets for these services. Hwang *et al.* (2005:154) explain that interpretation should be tailored to the attributes, involvement levels and characteristics of visitors rather than to provide one style of interpretation. Hence different interpretation packages should be developed to meet the needs of different visitors (Moscardo, 1998:8; Hwang *et al.*, 2005:154; Rabotić, 2010:1162). Considering the numbers of the *Inquisitive* and *Eager seekers* and the emphasis these markets place on all or most of the interpretation services, highlights the priority of development of interpretation services for these two markets; first addressing *primary interpretation* and *knowledgeable staff* and thereafter *secondary interpretation*. This being said, it might then be viable to determine which current setting's interpretation services are more important to these markets and to develop these setting's interpretation services before others are addressed. As these two markets are the largest, it can also be argued that interpretation programmes should be developed for the *children*. Bearing in mind that

children have different developmental levels, it might be necessary to determine the ages of these markets' children to develop appropriate interpretation programmes. Hwang *et al.* (2005:154) suggest interpretation programmes that attract the young by means of using interesting, funny, lively, and life-like expressions and storytelling. An apt example of interesting interpretation is the interpretation facilities of the Addo National Park. Interpretation that attracts children, along with the fact that children's developmental levels and their characteristics point towards the fact that *primary interpretation* will be sufficient for this market seeing as *secondary interpretation* is obscure and only regarded as auxiliary to *primary interpretation*. Arguably, only adults or even teenagers would be interested in *secondary interpretation* and hence only *secondary interpretation* can be developed for teenagers whereas *primary interpretation* can be developed for all categories of children. The same argument can be used for *knowledgeable staff* seeing as small children (ages 2 to 12 years) will most probably only be interested in staff who are delivering interpretation programmes and hence not interested in staff who are not delivering interpretation.

The *Comfort* and *Quasi-interested seekers*, on the other hand, make use of interpretation (especially *secondary interpretation*) as a means to an end and hence are only placed in Table 7.1 at *secondary interpretation*. Specifically referring to the *Comfort seekers'* special interest motivations also implies development of *primary interpretation* at a later stage for this market. As Frauman and Norman (2004:382) suggest, it makes sense to provide mindfully orientated services and activities not only to capture the attention of the mindful tourists but also potentially inducing mindfulness in those tourists who may not be very mindful. This also illustrates the importance of determining a list of priorities for implementing interpretation (see section 7.4.7). As the previous priorities have been achieved the *Comfort* and *Quasi-interested seekers* can be added as priorities to amend *primary interpretation* for these two markets.

After determining the priority of amendments, specific outcomes should be stipulated in accordance with each goal, objective, type of interpretation and visitor. These outcomes can either be observable or non-observable. Observable outcomes can be viewed by the behaviour of visitors (e.g. visitors stay on path ways, repeat visitation, and increase in revenue) and non-observable outcomes refer to the mental or emotional outcomes of visitors (e.g. meaning-making, inspiration and provoked to think about the experience) (Ham *et al.*, 2005:12). These outcomes guide the amendment or

development of interpretation themes as well as highlight the importance of the evaluation process (see section 7.4.8).

Up to this point, the results of this study were incorporated to provide recommendations for the first four steps of Ham *et al.*'s (2005) interpretation planning process. Steps 5 (developing themes) and 6 (developing media matrices) of the interpretation planning process will be based more on suggestions from literature.

### 7.4.5 Developing themes

This step specifically refers to the “message” in the communication process of Figure 7.1. The previous four steps determine the direction in which messages are developed and hence general guidelines or recommendations are provided here for the Kruger National Park.

Since the park already has interpretation services or programmes, it is necessary for the park to evaluate the effectiveness of these different services or programmes. Ham's (1992) practical guide on environmental interpretation is a very helpful book to create effective interpretation. Ham (1992:8) explains that interpretation should be enjoyable (i.e. pleasurable), relevant, organised and has a theme which is commonly known as the EROT model or guidelines (see Table 7.2).

**Table 7.2: EROT model**

Quality of interpretation	Explanation	Guidelines
Enjoyable	<ul style="list-style-type: none"> <li>All communication is entertaining to hold the audience's (i.e. market's) attention.</li> <li>Successful interpretation is informal and not classroom like.</li> </ul>	<p>An informal atmosphere can be created by means of:</p> <ul style="list-style-type: none"> <li>Interpreters' conversational tone</li> <li>Exhibits are game-like, participatory, 3D or contain movement, changing senses and lively colours.</li> <li>Presentations contain humour, music or two-way communication.</li> </ul>
Relevant	<ul style="list-style-type: none"> <li>Information should be meaningful and personal.</li> </ul>	<p>To create meaning:</p> <ul style="list-style-type: none"> <li>Link the information to something visitors know.</li> <li>Instead of using the technical term, make use of examples, analogies and comparisons.</li> </ul> <p>To create interpretation that is personal:</p> <ul style="list-style-type: none"> <li>Make use of self-referencing – people should think about themselves as the information is presented.</li> </ul> <p>A strong emphasis is placed on the word “you” (e.g. “Have you ever...?”; “When last did you...”).</p>

Quality of interpretation	Explanation	Guidelines
		<ul style="list-style-type: none"> <li>• Make use of labelling – creating categories of people (e.g. “People who litter...”; “Most South Africans...”).</li> </ul>
Organised	<ul style="list-style-type: none"> <li>• Information is presented in a way that is easy to follow.</li> <li>• It does not require too much effort from the visitor.</li> </ul>	In order for information to be organised the ideas should: <ul style="list-style-type: none"> <li>• Be in a logical train of thought where little effort is needed to keep things understandable;</li> <li>• Present 5 or fewer ideas.</li> </ul>
Theme	<ul style="list-style-type: none"> <li>• Interpretation should have the qualities of a story, in other words:               <ul style="list-style-type: none"> <li>○ Beginning and end</li> <li>○ Moral or message</li> <li>○ Little meanings add up to big ones</li> </ul> </li> </ul>	Create little meanings for big ideas by: <ul style="list-style-type: none"> <li>• Big idea: determining a theme</li> <li>• Small meanings: five or fewer ideas pertaining to the theme</li> <li>• Subsequent facts, concepts, analogies to name but a few, for each small idea</li> </ul> Information should be presented in chronological order which has a beginning and end.

**Source: Adapted from Ham (1992:8-28)**

Addressing the aspects in Table 7.2 can be seen as methods to limit “noise” in the communication process (see section 2.4.1) or interferences that reduce the clarity of the message. As Baer *et al.* (2004:193-194) suggest, four skills should be evoked to create mindful visitors: to observe, describe, visitors acting with awareness and visitors accepting without judgement. The aspects in Table 7.2 correspond with “communication factors” (see section 2.4.2) in the design of mindful interpretative programmes suggested by Moscardo (1999:27), Moscardo and Ballantyne (2008:244) and Frauman (2010:232). Langer (1964:142) argued that when an environment is characterised by originality, surprise, complexity and/or has ambiguous qualities, this could induce a person to become more mindful.

To provide clear recommendations for the Kruger National Park, enjoyment (see section 7.4.5.1), relevance (see section 7.4.5.2) and organised interpretation (see section 7.4.5.3) are discussed in this section for developing themes.

#### **7.4.5.1 Interpretation should be enjoyable or pleasurable**

At first glance, interpretation should raise interest (Rabotić, 2010:1162). Hence Ballantyne *et al.* (2011:778) suggest that the design of interpretive experiences should incorporate multiple senses, enable visitors to get as close as possible to the animals, and provide interpretive commentaries and signage to reinforce visitors’ sense of awe, wonder, excitement and privilege.

As explained earlier, the Kruger National Park has a variety of interpretation services and programmes that could be amended to include these suggestions. Most of the interpretation services in the Kruger National Park allow visitors to make use of only one or two of their senses at a time. Consider the Rhino Hall in Berg en Dal rest camp in Photo 7.6.



**Photo 7.6: Rhino Hall in Berg-en-Dal rest camp**

**Source: Photo taken by author**

The Rhino Hall in Photo 7.6 is an interpretive centre dedicated to the rhino that is currently a major conservation aspect in South Africa. Most of the information presented in this interpretive centre involves written facts that require a lot of reading but does have visual exhibitions to explain certain information presented. Even though this centre has ample information available, it speaks only to the experienced and very interested visitors. Providing lively colours, shorter descriptions, applicable sounds and games to portray information can induce a variety of visitors to visit the centre and to spend more time there. An excellent strategy that can be implemented is to have a variety of interpretation programmes dedicated to certain aspects of the animal during the applicable times (the birth of rhino calves in winter or World Rhino Day in September) of the year. This will then result in relevant and various programmes to be presented throughout the year and will deliver variety and interesting visits that will assure repeat visits.

#### **7.4.5.2 Interpretation should be relevant**

Increasing a person's knowledge alone will not significantly change visitors' attitudes and behaviour (Orams, 1995:89) and hence Moscardo (1998:8) explains that effective

interpretation should motivate participation and provide personal connections. To prompt behavioural change (captured in the Figure 7.1 under “behavioural change”), visitors should be provided with reasons why their behaviour should change (Orams, 1995:89) that are the most persuasive messages (Ballantyne & Hughes, 2006:244). Additional to this, practical and achievable examples of what visitors can do to contribute to the welfare of the environment and animals in accordance with their level of skills (i.e. answers to the problems) should also be provided (Orams, 1994:31; Ballantyne *et al.*, 2011:778). This aspect therefore can also be considered to incorporate the different educational methods as depicted in Figure 7.1 under “education”.

Particularly important in developing interpretation that is relevant to the visitor, the Kruger National Park should make sure that the interpretation aims to target visitors’ attitudes and behaviour. This can be accomplished by incorporating the aspects discussed above [providing reasons why current behaviour is inappropriate; examples of appropriate behaviour; making use of the analogies, similes and metaphors; and allowing time to reflect or using labelling (see Table 7.2)]. These aspects can also be illustrated in the previous example of the Rhino Hall. Strategies to make the rhinoceros relevant to the people visiting the centre may include personifying and comparing the life cycle of the rhinoceros to that of humans; providing everyday examples which visitors can relate to illustrate certain characteristics of the animal (e.g. comparing the weight of the rhinoceros to a small two ton vehicle); explaining why the rhinoceros is on the verge of extinction and providing solutions which visitors can help to solve or reduce the problem (e.g. donating to anti-poaching organisations or “adopting” a rhino).

#### **7.4.5.3 Organised**

It is imperative that interpretation be organised (Ham, 1992:19; Moscardo, 1998:8). Tubb (2003:495) found that visitors became mindless as they walked through an exhibition and interactive material diminished. This is closely related to enjoyment and relevance as explained earlier and hence illustrates the idea that these qualities cannot be seen in isolation.

An apt example of effective organised interpretation was developed by Moscardo (1999). The author explained that the aim of new exhibits was to help visitors to make the best choice of activities they were interested in to match the time available to them

(Moscardo, 1999:8). The exhibits were then developed in accordance with the different types of visitors and the amount of time these visitors have to participate in interpretation by combining it into one exhibit. Due to the Kruger National Park's budget constraints and the different markets available, the same principles can be used in the Kruger National Park to design effective interpretation. Photo 7.7 was taken of an interpretation exhibit regarding the African Scops-Owl.



**Photo 7.7: African Scops-Owl interpretation exhibit.**

**Source: Photo taken by the author**

The exhibit in Photo 7.7 is currently available at the Afsaal Trader's Rest picnic area in the Kruger National Park. This exhibit explains the Scops-Owl's habitat and nature to the tourists. Because this owl roosts in the same spot each day, this exhibit is specifically designed to educate visitors regarding their behaviour in this bird's habitat. Furthermore visitors are also made aware about not using a flash while taking a picture

of this remarkable creature as the owl is nocturnal and may be frightened with the intense light of the flash of a camera.

As illustration, Moscardo's (1999) apt illustration of an effective exhibit is applied to the information of Photo 7.7 as illustrated in Figure 7.2.

Have you seen our resident owls?	The Scops Owls have made this picnic spot their home for the past 12 years!	
Very cryptic, with its eyes closed the Scops Owl often roosts in the same spot each day.	Picture	
They are nocturnal but during the day they close their eyelids to slits and slowly turn their heads to follow movement.  They are silent, keep to themselves and are rarely seen in flight.	!!No flash sign!!  The intense light of your flash can scare our residents.	
Picture	At night they tuck their ear-tufts away and become dumpy, round headed and wide-eyed.  Located by its single monotonously repeated purring call note ("kruup"), given every 5-8 seconds.	
They are normally found widespread in savannah and woodlands of sub Saharan Africa; feeds mainly on insects found on the ground, and nests in natural holes of trees.  [For more information visit <a href="http://www.scops-owl.co.za">www.scops-owl.co.za</a> .]		

**Layer 1:** Creating interest and providing the introduction.  
*Market: All markets.*

**Layer 2:** Presenting the conservation issue and the reason *why* (i.e. relevant or educational).  
*Up to here the information can be presented in both Afrikaans and English.*

**Layer 3:** Presenting additional information.  
*Markets: Eager and Inquisitive seeks. Information presented only in Afrikaans or both languages.*

**Layer 4:** Providing additional information.  
*Information presented only in Afrikaans or in both languages.*

**Figure 7.2: Layering example for the Kruger National Park**

**Source: Adapted from Moscardo (1999:9)**

In the same way in which Moscardo (1999) layered information in accordance with visitors' time available, the information on the Scops Owl is layered in Figure 7.2 in the varying degrees in which the different markets would pay attention to the information. The *Comfort seekers'* motivation to visit the park indicated that these visitors have special interest but may not yet realise the importance of interpretation to fulfil this need. If sufficient interest is created, and the same can be said for the *Quasi-interested seekers*, these markets could be converted to *Eager seekers* and eventually *Inquisitive seekers*. The high importance placed on interpretation services by both the *Eager*

*seekers and Inquisitive seekers* suggests that these markets are in a quest for information and would acquire as much information as possible. The exhibit in Figure 7.2 hence provides more detailed information in which the other two markets would not be interested. Since the only other characteristic that distinguishes these markets from each other is home language, interpretation can be designed to be delivered in different languages in accordance with the amount of information demanded per market. Even though the information is layered, other factors such as the colours and photos used in the exhibit may also be important factors to consider within the design of exhibits.

#### **7.4.6 Developing media matrices**

Hand in hand with developing messages (i.e. themes), are the “medium” considerations of the communication process in Figure 7.1. Since there are different communication processes for the different target markets identified for the Kruger National Park, the selection of media is vital to the success of the interpretation programme as this is the method through which the message will be delivered (Ham *et al.*, 2005:17). Interestingly, Weiler and Smith (2009:102-103) found that, in a zoo context, no individual interpretive medium performed better than another but that the more media is used, the greater the impact.

Seeing as these matrices are determined by the previous steps in planning for interpretation, recommended media matrices for the Kruger National Park would depend on the previous steps. Some of the interesting media matrices already available are the “Learn the rules of the National Parks in South Africa” video (see <http://www.youtube.com/watch?v=1u-Zytbx-hQ>) as well as the Kruger sightings application. Furthermore, the Kruger National Park has quite comprehensive guide maps (Tinker & Tinker, 2011) providing directions, hot spots, photographic tips, tips for spotting game, park rules and the opening and closing times of gates.

#### **7.4.7 Implementation plan**

This step was mainly captured in the preceding steps. Ham *et al.* (2005:21) explain that this step is a major undertaking and critical for balancing the available budget against the priorities of the park and the time available.

#### **7.4.8 Evaluation process**

This step in the interpretation planning process refers to both the “goals of interpretation” as well as “behavioural change” in the interpretation framework in Figure 7.1.

Since repeated exposure to a setting can create mindlessness (Chanowitz & Langer, 1981:1052) and because visitors change, new desired outcomes emerge and hence new experiences are desired, as well as the fact that staff change (Ham *et al.*, 2005:16) mean that it is imperative to evaluate the success of the interpretation plan. Ham *et al.* (2005:22) explain that the interpretation programme can typically be evaluated before (to test efficiency before further money or staff are invested), during (to test immediate responses and determines further modifications) and after (to test whether the objectives were met). For these purposes, Ham and Weiler (2006) developed a research-based tool for evaluating interpretation which the Kruger National Park can consult. Evaluation is necessary since it assesses the performance of individuals (e.g. life interpreters), provides accountability, assesses the economic efficiency (e.g. increase in revenue), provides reasons why a communication programme is or is not effective and measures the impacts of the outcomes (Ham & Weiler, 2006:4). The Kruger National Park should make sure that each research goal is evaluated against the outcomes set out. These outcomes can be evaluated in several ways (e.g. observations of visitors, focus group interviews or visitor questionnaires) depending on the most efficient and cost effective way for the Kruger National Park to achieve this evaluation. It was also clear from the results of this study, that the Kruger National Park should include evaluation procedures that contain all three response categories as suggested by Ajzen (1988) – i.e. cognitive, affective and conative (Ham & Weiler, 2006:23) to evaluate attitude and behavioural change.

### **7.5 RECOMMENDATIONS FOR FUTURE RESEARCH**

Numerous future research recommendations arise from this study. These recommendations can be (i) park-specific as well as referring to (ii) general research recommendations that could contribute to the body of knowledge.

#### **7.5.1 Future research recommendations for the Kruger National Park**

With the aim of amending the current interpretation services of the Kruger National Park the following recommendations can be made:

- It is strongly recommended to determine which current interpretation services and/or settings are in line with the interpretation needs of the different markets. These interpretation services can then be tailored according to these needs and could be much more cost effective than amending all interpretation services. Furthermore, these programmes or services can be analysed by means of determining visitors' level of agreement with Ham *et al.*'s (2005) EROT model and other recommendations.
- Given that the current markets have children accompanying them to the park, it makes sound management sense to determine the interpretation services or programmes that could be developed for different age categories. It would also be interesting to see whether *primary* and *secondary interpretation* programmes or services are equally important to the different age categories and which services should be included in each of these interpretation programmes or services.
- Bearing in mind that visitors have indicated that *knowledgeable staff* is an important factor for their interpretation experience, it is strongly recommended that the skills and knowledge of the staff of the Kruger National Park pertaining to interpretation services as well as overall conservation practices be assessed. It can also be viable to determine which skills and how much knowledge on each level of the management hierarchy is necessary to fulfil visitors' interpretation experiences as well as contribute to the park's conservation mandate.
- Since the Kruger National Park attracts a large percentage of international visitors, it would also be valuable to determine the difference between the Kruger National Park's national and international visitors to determine how the current interpretation service could be amended to include interpretation for international visitors based on their needs and interpretation requirements.
- Once the current interpretation services are amended, the Kruger National Park management could analyse the rest of the Kruger National Park's interpretive potential empirically to develop cost effective and visitor-driven interpretation services.

### **7.5.2 General future research recommendations**

Comparative studies between different SANParks parks (e.g. Addo National Park which has an interpretive centre and the Kruger National Park) as well as SANParks and international parks could be worthy research topics to determine whether the type of park determines the type of interpretation that needs to be developed as well as

whether a standardised interpretation framework for SANParks can be developed that might also be applicable to all national parks.

It could also be important to analyse perceptions to interpretation from the supply side and compare it to the demand for interpretation to determine whether there is a gap between the two and how to address the gap.

More research is needed on effective interpretation development. Multi-disciplinary research is recommended between interpretation and education as well as marketing. These research topics can determine how information should be presented, the effect of using implicit and explicit messages in interpretation, the use of colours, layering and the use of certain types of interpretation's effectiveness for specific goals.

In combination with the above, there is a specific need for research on interpretation and children. Research that explicitly examines the development of effective interpretation programmes for the different developmental levels of children is required. This can be combined with various other research topics like determining a validated evaluation instrument to evaluate the effect of interpretation on children, the use of multimedia or specific media for certain goals of interpretation pertaining to children, and even examining the behavioural change as a result of exposure to interpretation at a young age to a mature age.

Other topics with little research available are the effect of interpretation on value for money, competitiveness, community engagement and socio-economic impacts. Researching these topics could lead to national parks developing competitive ecotourism products or addressing certain aspects of their mandate (e.g. community engagement) together with the further development of interpretation services to address specific goals of competitiveness. As suggested in Chapter 6, more research should be done to determine whether a new theory can be developed to explain the effect of interpretation on attitudes to behaviour and vice versa. More longitudinal studies are needed to verify the effect of interpretation on behavioural change. It is also important to develop a standardised questionnaire for different interpretation contexts and to do comparative studies between countries.

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**APPENDIX A: QUESTIONNAIRE**

**AFDELING A / SECTION A**  
**DEMOGRAFIESE PROFIEL / DEMOGRAPHIC PROFILE**

1. Geslag / **Gender?**

M	1
F	2

2. In watter jaar is u gebore? /  
**In which year were you born?**

19

3. Huistaal / **Home language?**

Afrikaans	1
Engels / <b>English</b>	2
Ander, spesifiseer / <b>Other, specify</b>	3

4. Huwelikstatus / **Marital status?**

Enkellopend / <b>Single</b>	1
Getroud / <b>Married</b>	2
Woonsaam / <b>Living together</b>	3
Geskei / <b>Divorced</b>	4
Wewenaar, Weduwee / <b>Widow/er</b>	5

5. Insluitend uself, hoeveel mense is in u toergroep? / **Including yourself, how many people are travelling in your group?**

Aantal / **Number?**

6. Insluitend uself, vir hoeveel persone betaal u in u toergroep? / **Including yourself, how many people are you paying for?**

Aantal / **Number?**

7a. Provinsie / **Province?**

Wes-Kaap / <b>Western Cape</b>	1
<b>Gauteng</b>	2
Oos-Kaap / <b>Eastern Cape</b>	3
Noordwes / <b>North West</b>	4
<b>Mpumalanga</b>	5
Noord-Kaap / <b>Northern Cape</b>	6
<b>KwaZulu-Natal</b>	7
<b>Limpopo</b>	8
Vrystaat / <b>Free State</b>	9
Buite RSA grense / <b>Outside RSA borders</b>	10

7b. Indien buite grense van RSA, dui asb. herkoms aan: / **If outside RSA borders, please specify your country of origin:**

8. Op watter ouderdom was u eerste bloedstelling aan Nasionale Parke? / **At which age were you first exposed to a National Park?**

9. Hoogste kwalifikasie / **Highest level of education**

Geenskool / <b>No school</b>	1
Matriek / <b>Matric</b>	2
Diploma, grad / <b>Diploma, degree</b>	3
Nagraads / <b>Post-graduate</b>	4
Professioneel / <b>Professional</b>	5
Ander, spesifiseer / <b>Other, specify</b>	6

10. Wat is u bruto jaarlikse inkomste / **What is your annual gross income?**

< R20 000	1
R20 000 – R140 000	2
R140 001 – R221 000	3
R221 001 - R305 000	4
R305 001 – R431 000	5
R431 001 – R552 000	6
R552 001 >	7

11. Wanneer het u besluit om die park te besoek? / **When did you make your decision to visit the park?**

Spontane besluit / <b>Spontaneous decision</b>	1
'n Maand gelede / <b>A month ago</b>	2
Meer as'n maand gelede / <b>More than a month ago</b>	3
Ander, spesifiseer / <b>Other, specify</b>	4

12. Met watter tipe vervoer reis u na die park / **Which mode of transport do you use to travel to the park?**

4x4	1
<b>Kombi</b>	2
Rekreasie-voertuig / <b>Leisure vehicle</b>	3
<b>Sedan</b>	4
2x4 / <b>Bakkie</b>	5
Ander, spesifiseer / <b>Other, specify</b>	6

13. Wie het die besoek aan die park geïnisieer / **Who initiated the visit to the park?**

<b>Self</b>	1
Vriende / <b>Friends</b>	2
Eggenoot / <b>Spouse</b>	3
Familie / <b>Family</b>	4
Ander, spesifiseer / <b>Other, specify</b>	5

**AFDELING B / SECTION B**  
**INTERPRETASIE IN DIE PARK / INTERPRETATION IN THE PARK**

14. Dui aan die linkerkant hoe belangrik die volgende interpretasie aspekte vir 'n kwaliteitervaring in die park is deur gebruik te maak van die gepaste skaal. / **Please indicate on the left how important the following interpretation aspects are for a quality experience in the park by making use of the scale.**

Dui dan aan die regterkant aan hoe goed u die aspekte ervaar het in die park. / **Then indicate on the right how well you have experienced these aspects in the park.**

1 Uiters belangrik / <b>Extremely important</b>						Baie swak / <b>Very poor</b>					5
2 Baie belangrik / <b>Very important</b>						Swak / <b>Poor</b>				4	
3 Nie baie belangrik of minder belangrik nie / <b>Neither very important nor less important</b>						Redelik / <b>Fair</b>			3		
4 Minder belangrik / <b>Less important</b>						Goed / <b>Good</b>		2			
5 Glad nie belangrik nie / <b>Not at all important</b>						Uitstekend / <b>Excellent</b>	1				
1	2	3	4	5	14.1	Inligtingsentrums en interpretasie sentrums in spesifieke ruskampe / <b>Information centres and interpretation centres in specific rest camps</b>	1	2	3	4	5
1	2	3	4	5	14.2	Uitkenbaarheid van bome, bv. naamplaatjies of inligtingsborde. / <b>Identification of trees, e.g. name plates or information boards</b>	1	2	3	4	5
1	2	3	4	5	14.3	Uitkykpunte in die park / <b>Lookout points in the park</b>	1	2	3	4	5
1	2	3	4	5	14.4	Voëlkykpunte in die park / <b>Birdhides in the park</b>	1	2	3	4	5
1	2	3	4	5	14.5	Ouditorium met natuurvideos / <b>Auditorium with nature videos</b>	1	2	3	4	5
1	2	3	4	5	14.6	Interpretasie-aktiwiteite bv. skyfievertonings, inligtingsessies en spesialispraatjies / <b>Interpretation activities, e.g. slideshows, informative sessions and specialist talks</b>	1	2	3	4	5
1	2	3	4	5	14.7	Geologiese en klimatologiese uitstallings / <b>Geological and climatological displays</b>	1	2	3	4	5
1	2	3	4	5	14.8	Opvoedkundige uitstallings / <b>Educational displays</b>	1	2	3	4	5
1	2	3	4	5	14.9	Inligting rakende die geskiedenis van die park / <b>Information regarding the history of the park</b>	1	2	3	4	5
1	2	3	4	5	14.10	Opvoedkundige praatjies, aktiwiteite en speletjies vir kinders / <b>Educational talks, activities and games for children</b>	1	2	3	4	5
1	2	3	4	5	14.11	Inligtingsborde rakende fauna/flora in die park / <b>Information boards regarding the faun/flora in the park</b>	1	2	3	4	5
1	2	3	4	5	14.12	Ingeligde en opgeleide personeel wat navrae kan hanteer rakende die interpretasie-aspekte binne die park / <b>Informed staff who can handle any queries concerning the interpretation aspects in the park</b>	1	2	3	4	5
1	2	3	4	5	14.13	Interpretasie-inligting op die web beskikbaar / <b>Information regarding interpretation in the park available on the web</b>	1	2	3	4	5
1	2	3	4	5	14.14	Bemarking van die park, sy wildlewe asook aktiwiteite op die web, in tydskrifte, koerante en op die radio / <b>Marketing of the park, its wildlife as well as activities on the web, in magazines and newspapers and on the radio</b>	1	2	3	4	5
1	2	3	4	5	14.15	Goeie uitleg van park, ruskampe en roetes / <b>Good layout of the park, rest camps and routes</b>	1	2	3	4	5
1	2	3	4	5	14.16	Toeganklikheid van die park / <b>Accessibility of the park</b>	1	2	3	4	5
1	2	3	4	5	14.17	Beskikbare en volledige roetekaarte met beskrywende inligting / <b>Available routemaps with descriptive information</b>	1	2	3	4	5
1	2	3	4	5	14.18	Duidelike aanwysings na ruskampe en piekniek areas / <b>Clear directions to rest camps and picnic areas</b>	1	2	3	4	5
1	2	3	4	5	14.19	Toepassing van parkreëls en regulasies / <b>Enforcement of park rules and regulations</b>	1	2	3	4	5
1	2	3	4	5	14.20	Interaktiewe veldgidse op wildritte en begeleide uitstappies / <b>Interactive fieldguides on game drives and guided walks</b>	1	2	3	4	5

1	2	3	4	5	14.21	Inligtingsborde waar diere aangetref word / <b>Information boards with animal tracking</b>	1	2	3	4	5
1	2	3	4	5	14.22	Beskikbare boeke, brosjures, inligtingspamflette en parkgidse (oor diere, insekte, voëls en bome) / <b>Available books, brochures, information pamphlets and park guides (for animals, insects, birds and trees)</b>	1	2	3	4	5
1	2	3	4	5	14.23	Lewenswerklike voorbeelde van verskillende diere, insekte, voëls en bome met beskrywende data (bv. Opgestopte leeus) / <b>Lifelike examples of different animals, insects, birds and trees with descriptive data</b>	1	2	3	4	5
1	2	3	4	5	14.24	Outentiekheid van interpretasie / <b>Authenticity of interpretation</b>	1	2	3	4	5

15. Evalueer asb die volgende stelling: As gevolg van goeie interpretasie...../ **Please rate the following statement: As a result of good interpretation I...../**

							<b>Stem ten volle saam / Strongly agree</b>					<b>5</b>
							<b>Stem saam / Agree</b>				<b>4</b>	
							<b>Neutraal / Neutral</b>			<b>3</b>		
							<b>Stem nie saam nie / Disagree</b>		<b>2</b>			
							<b>Stem glad nie saam nie / Strongly disagree</b>	<b>1</b>				
15.1						Is ek meer bereid om bewaringsinisiatiewe te ondersteun / <b>I am more willing to support conservation efforts</b>	1	2	3	4	5	
15.2						Implementeer ek herwinnings-en energiebesparingsmetodes by die huis om my impak op die omgewing te verminder / <b>I implement recycling and energy saving methods at home to lessen my impact on the environment</b>	1	2	3	4	5	
15.3						Het ek 'n sin van omgee rakende die welstand van diere en plante ontwikkel / <b>I developed a sense of care for animals and plants' well-being by participating in the interpretation activities in the park</b>	1	2	3	4	5	
15.4						Dink ek gereeld aan my parkervaring / <b>I regularly think about my park experience</b>	1	2	3	4	5	
15.5						Was my parkervaring meer outentiek (kontak was pret, deelnemend en interaktief) / <b>My park experience was more authentic (contact was fun, participatory and immediate)</b>	1	2	3	4	5	
15.6						Is ek meer geïnteresseerd om van omgewingsake te leer / <b>I became more interested in learning about environmental issues</b>	1	2	3	4	5	
15.7						Doen ek vrywillige werk vir omgewingsgroepe / <b>I do volunteer work for groups that help the environment</b>	1	2	3	4	5	
15.8						Soek ek aktief inligting oor omgewingsbewaring / <b>I actively search for information about environmental conservation</b>	1	2	3	4	5	
15.9						Kyk ek meer natuurprogramme op televisie / <b>I watch more environmental programmes on television</b>	1	2	3	4	5	
15.10						Het ek 'n sterker seining oor bewaringsaspekte / <b>I have a strong view point on conservation issues</b>	1	2	3	4	5	
15.11						Het my kinders meer kennis / <b>My children are more knowledgeable</b>	1	2	3	4	5	
15.12						Is ek geneig om meer natuur-gebaseerde produkte te besoek / <b>I tend to visit more nature-based products</b>	1	2	3	4	5	
15.13						Het ek 'n beter begrip rakende SANParke se bewaringspogings / <b>I have a better understanding of SANParks' conservation efforts</b>	1	2	3	4	5	
15.14						Moedig ek my familie en vriende aan om meer bewus te wees oor bewaring / <b>I encourage family and friends to be more conscious about conservation</b>	1	2	3	4	5	
15.15						Het ek 'n beter ervaring/tevredenheid by die park gehad / <b>I had a better experience/level of satisfaction at the park</b>	1	2	3	4	5	
15.16						Is ek 'n meer lojale ondersteuner van parke / <b>I am a more loyal supporter of parks</b>	1	2	3	4	5	
15.17						Het ek meer selfvertroue om opinies rakende bewaring te gee op sosiale netwerke en in gesprekke / <b>I have the confidence to express my views concerning conservation on the social media and in conversations</b>	1	2	3	4	5	

**AFDELING C / SECTION C  
BEMARKING / MARKETING**

16. Vergesel u kinders u na die Park? /  
**Are your children accompanying you to the Park?**

Ja / <b>Yes</b>	1
Nee / <b>No</b>	2

17. Hoeveel het u tydens u besoek aan die volgende bestee? / **How much did you spend during your visit to the Park on the following?**

17.1 Ingangs-en bewaringsfooi / <b>Entrance and conservation fee</b>	R
17.2 Akkommodasie / <b>Accommodation</b>	R
17.3 Restourante / <b>Restaurants</b>	R
17.4 Kos / <b>Food</b>	R
17.5 Drinkgoed / <b>Beverages</b>	R
17.6 Klere en skoene / <b>Clothes and footwear</b>	R
17.7 Vervoer na en by die park / <b>Transport to and at the park</b>	R
17.8 Aandenkings en juwele / <b>Souvenirs and jewellery</b>	R
17.9 Ander uitgawes nie hierbo vervat nie (Spesifiseer) / <b>Other expenses not listed above (Specify)</b>	R
	R
	R

17 Besit u 'n "WildCard"? / **Are you a Wild Card holder?**

Ja / <b>Yes</b>	1
Nee / <b>No</b>	2

18 Hoeveel keer het u hierdie Nasionale Park oor die afgelope drie jaar besoek, insluitend 2012? /  
**How many times have you visited this National Park over the past three years, including 2012?**

As 'n dagbesoeker / **As a day visitor**

As 'n oornagbesoeker / **As an overnight visitor**

19 Hoeveel nagte oornag u in die park? /  
**How many nights are you overnighting at this park?**

20 Van al die diere/voëls wat in Nasionale Parke gekry word, watter een is u gunsteling? Noem asb. slegs EEN diere/voël. /  
**Of all the animals/birds found in National Parks, which is your favourite? Please name only ONE animal/bird.**

21 Waar het u van die park te hore gekom? /  
**Where did you hear about the park?**

	Ja / <b>Yes</b>	Nee / <b>No</b>
22.1 Webwerf / <b>Website</b>	1	2
22.2 Skoue / <b>Shows (Getaway)</b>	1	2
22.3 Vriende & familie / <b>Friends &amp; family</b>	1	2
22.4 Radio	1	2
22.5 TV	1	2
22.6 Tydskrifte / <b>Magazines</b>	1	2
22.7 SANParke / <b>SANParks</b>	1	2
22.8 Vorige besoeke / <b>Previous visits</b>	1	2
22.9 Facebook	1	2
22.10 Twitter	1	2
22.11 Internet blogs	1	2
22.12 Ander / <b>Other</b> (Spesifiseer / <b>Specify</b> )	1	2

**AFDELING D / SECTION D  
DIENS / SERVICE**

23. Beoordeel volgens die skaal waarom u die park besoek het (beantwoord asb. al die moontlikhede). /  
*Rate on the scale of importance why you visited the park (please answer all possibilities).*

		<b>Uiters belangrik / Extremely important</b>				
		<b>Baie belangrik / Very important</b>				5
		<b>Belangrik / Important</b>			4	
		<b>Minder belangrik / Slightly important</b>		3		
		<b>Glad nie belangrik nie / Not at all important</b>	2			
		1				
23.1	Om weg te breek uit my roetine / <b>To get away from my routine</b>	1	2	3	4	5
23.2	Om te ontspan / <b>To relax</b>	1	2	3	4	5
23.3	Om'n nuwe bestemming te verken / <b>To explore a new destination</b>	1	2	3	4	5
23.4	Om tyd saam met my vriende te spandeer / <b>To spend time with my friends</b>	1	2	3	4	5
23.5	Tot voordeel van my kinders / <b>For the benefit of my children</b>	1	2	3	4	5
23.6	Hoofsaaklik om opvoedkundige redes (om dinge te leer, my kennis te verbreed) / <b>Primarily for educational reasons (to learn things, increase my knowledge)</b>	1	2	3	4	5
23.7	Om diere en plante te fotografeer / <b>To photograph animals and plants</b>	1	2	3	4	5
23.8	Dit is 'n geestelike ervaring / <b>It is a spiritual experience</b>	1	2	3	4	5
23.9	Ek is lojaal teenoor die park / <b>I am loyal to the park</b>	1	2	3	4	5
23.10	Die park het goeie akkommodasie en fasiliteite / <b>The park has great accommodation and facilities</b>	1	2	3	4	5
23.11	Dit is waarde vir geld / <b>It is value for money</b>	1	2	3	4	5
23.12	Om die Groot 5 te sien / <b>To see the Big 5</b>	1	2	3	4	5

**AFDELING E / SECTION E  
BEWARING / CONSERVATION**

24.1 Op'n skaal van 1 tot 5, waar 1 die gewildste en 5 die minder gewildste is, dui asb aan hoe graag u die volgende spesies van die Groot 5 sou wou sien tydens u besoek aan die park. /  
*Please rank the following Big 5 species according to your preference to see them while you visit the park, where 1 is the most popular and 5 is the least popular.*

Leeu / **Lion**   
Olifant / **Elephant**   
Buffel / **Buffalo**

Luiperd / **Leopard**   
Renoster / **Rhino**

24.2 Hoeveel is u bereid om te betaal in Rand waarde (R) om die Groot 5 spesies te sien? /  
*How much are you willing to pay in Rand (R) value to see the Big 5 species?*

Leeu / **Lion**  R  
Olifant / **Elephant**  R  
Buffel / **Buffalo**  R

Luiperd / **Leopard**  R  
Renoster / **Rhino**  R

25.1 Is u lid van enige omgewingsbewaringsorganisasie of skenk u geld?/

Ja / <b>Yes</b>	1
Nee / <b>No</b>	2

**Are you a member of any conservation organisations or do you donate money for conservation?**

25.2 Indien JA in 25.1, vir watter organisasie/s skenk u geld?/  
*If YES in 25.1, to which organisation/s do you donate money to?*

**AFDELING F / SECTION F  
ERVARING / EXPERIENCE**

26. Hoe het u dievolgende in die park ervaar? / *How did you experience the following in the park?*

		Nie van toepassing / <i>Not applicable</i>					6
		Uitstekend / <i>Excellent</i>				5	
		Goed / <i>Good</i>			4		
		Redelik / <i>Fair</i>		3			
		Swak / <i>Poor</i>	2				
		Baie swak / <i>Very poor</i>	1				
26.1	Restourante / <i>Restaurants</i>	1	2	3	4	5	6
26.2	Winkels / <i>Shops</i>	1	2	3	4	5	6
26.3	Pamflette/brosjures (aangekoop) / <i>Pamphlets/brochures (purchased)</i>	1	2	3	4	5	6
26.4	<b>Gratis</b> pamflette/brosjures / <i>Free pamphlets/brochures</i>	1	2	3	4	5	6
26.5	Staproete / <i>Hiking trail</i>	1	2	3	4	5	6
26.6	Wassery / <i>Laundry service</i>	1	2	3	4	5	6
26.7	Piekniekplek / <i>Picnic sites</i>	1	2	3	4	5	6
26.8	Braaifasiliteite by chalet/tent / <i>Braaifacilities at chalet/tent</i>	1	2	3	4	5	6
26.9	Vriendelikheid en diens van parkpersoneel / <i>Friendliness and service of park personnel</i>	1	2	3	4	5	6
26.10	Algemene onderhoud van akkommodasie-eenhede / <i>General maintenance of accommodation units</i>	1	2	3	4	5	6
26.11	Algemene onderhoudvanfasiliteite/ <i>Generalmaintenanceoffacilities</i>	1	2	3	4	5	6
26.12	Voldoende aktiwiteit in die park / <i>Adequate activities in the park</i>	1	2	3	4	5	6
26.13	Inboek-/registrasie proses / <i>Check-in process</i>	1	2	3	4	5	6
26.14	Genoegsame inligting rakende aktiwiteit, kontakpersone in geval van nood ens. / <i>Sufficient information regarding activities, contact persons in case of emergency etc.</i>	1	2	3	4	5	6
26.15	Vriendelikheid en diens by ontvangs / <i>Friendliness and service at reception</i>	1	2	3	4	5	6

27. Enige aanbevelings? / *Any recommendations?*

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**Dankie en geniet u  
besoek aan die park! /  
Thank you and enjoy your  
visit to the park!**

**Navorsing gedoen deur TREES, Noordwes-Universiteit, Potchefstroomkampus  
insamewerking met SANParke / Research done by TREES, North-West University,  
Potchefstroom Campus in collaboration with SANParks ©Kopiereg / Copyright2012**

## APPENDIX B: TABLES

**Table B 1: Chi-square results of the Kruger National Park's interpretation segments**

Characteristic	Cluster solutions				Chi-square value	df	Sig. level (p-value)	Phi-value (Φ-value)
	1 <i>Eager seeker</i> (n = 158)	2 <i>Inquisitive seeker</i> (n = 429)	3 <i>Comfort seeker</i> (n = 69)	4 <i>Quasi-interested seeker</i> (n = 31)				
<b>Gender</b>					5.019	3	.170	.09
Male	61%	51%	56%	57%				
Female	39%	49%	44%	41%				
<b>Home language</b>					38.779	9	.001 <sup>#</sup>	.24*
Afrikaans	58%	63%	66%	33%				
English	32%	30%	18%	52%				
Other African Languages	1%	4%	2%	11%				
Foreign Languages	9%	3%	15%	4%				
<b>Marital status</b>					7.033	12	.855	.10
Single	13%	10%	10%	10%				
Married	72%	77%	75%	71%				
Living together	7%	6%	8%	10%				
Divorced	6%	4%	4%	9%				
Widow/er	2%	3%	3%	0%				
<b>Province</b>					8.282	9	.506	.12
Western Cape	13%	13%	11%	10%				
Gauteng	60%	51%	46%	59%				
Mpumalanga	5%	12%	13%	10%				
Other provinces	22%	24%	30%	21%				
<b>Level of education</b>					15.806	9	.071	.16
Matric	17%	20%	14%	16%				
Diploma, degree	34%	45%	33%	52%				
Post-graduate	26%	18%	26%	16%				
Professional	23%	17%	27%	16%				
<b>Annual gross income</b>					20.566	18	.302	.18
< R20 000	5%	5%	5%	4%				
R20 001 – R140 000	11%	12%	11%	7%				
R140 001 – R221 000	12%	20%	11%	18%				
R221 001 – R305 000	10%	13%	18%	14%				
R305 001 – R431 000	13%	13%	10%	18%				
R431 001 – R552 000	10%	10%	3%	3%				

Characteristic	Cluster solutions				Chi-square value	df	Sig. level (p-value)	Phi-value (Φ-value)
	1 <i>Eager seeker</i> (n = 158)	2 <i>Inquisitive seeker</i> (n = 429)	3 <i>Comfort seeker</i> (n = 69)	4 <i>Quasi-interested seeker</i> (n = 31)				
R552 001 >	39%	27%	42%	36%				
<b>Decision to visit the park</b>					5.479	9	.791	.09
Spontaneous decision	11%	10%	14%	7%				
A month ago	14%	11%	10%	17%				
More than a month ago	63%	61%	61%	63%				
Approximately a year or more ago	12%	18%	15%	13%				
<b>Mode of transport</b>					10.845	12	.543	.13
4x4	40%	39%	28%	44%				
Kombi	6%	7%	14%	3%				
Leisure vehicle	10%	12%	12%	3%				
Sedan	21%	23%	26%	30%				
2x4/Bakkie	23%	19%	20%	20%				
<b>Initiated the visit to the park</b>					10.976	9	.277	.13
Self	56%	54%	54%	52%				
Friends	6%	8%	7%	13%				
Spouse	14%	16%	27%	19%				
Family	24%	22%	12%	16%				
<b>Accompanying children</b>					5.519	3	.138	.09
Yes	62%	72%	65%	66%				
No	38%	28%	35%	34%				
<b>Wild Card holder</b>					4.197	3	.241	.08
Yes	74%	79%	70%	70%				
No	26%	21%	30%	30%				
<b>Hear about the park via website</b>					4.766	3	.190	.08
Yes	32%	25%	34%	30%				
No	68%	75%	66%	70%				
<b>Hear about the park via shows</b>					1.773	3	.621	.05
Yes	9%	11%	6%	10%				
No	91%	89%	94%	90%				
<b>Hear about the park via friends and family</b>					6.248	3	.100	.10
Yes	64%	66%	52%	73%				
No	36%	34%	48%	27%				

Characteristic	Cluster solutions				Chi-square value	df	Sig. level (p-value)	Phi-value (Φ-value)
	1 <i>Eager seeker</i> (n = 158)	2 <i>Inquisitive seeker</i> (n = 429)	3 <i>Comfort seeker</i> (n = 69)	4 <i>Quasi-interested seeker</i> (n = 31)				
<b>Hear about the park via radio</b>					5.145	3	.161	.09
Yes	4%	9%	6%	3%				
No	<b>96%</b>	<b>91%</b>	<b>94%</b>	<b>97%</b>				
<b>Hear about the park via TV</b>					1.168	3	.761	.04
Yes	18%	16%	16%	10%				
No	<b>82%</b>	<b>84%</b>	<b>84%</b>	<b>90%</b>				
<b>Hear about the park via magazines</b>					5.379	3	.146	.09
Yes	32%	25%	22%	37%				
No	<b>68%</b>	<b>75%</b>	<b>78%</b>	<b>63%</b>				
<b>Hear about the park via SANParks</b>					1.375	3	.712	.05
Yes	23%	28%	25%	27%				
No	<b>77%</b>	<b>72%</b>	<b>75%</b>	<b>73%</b>				
<b>Hear about the park via previous visits</b>					4.567	3	.206	.08
Yes	<b>59%</b>	<b>62%</b>	<b>59%</b>	43%				
No	41%	38%	41%	<b>57%</b>				
<b>Hear about the park via Facebook</b>					4.755	3	.191	.08
Yes	6%	3%	3%	0%				
No	<b>94%</b>	<b>97%</b>	<b>97%</b>	<b>100%</b>				
<b>Hear about the park via Twitter</b>					2.245	3	.523	.06
Yes	2%	1%	0%	0%				
No	<b>98%</b>	<b>99%</b>	<b>100%</b>	<b>100%</b>				
<b>Hear about the park via internet blogs</b>					4.422	3	.219	.08
Yes	3%	3%	3%	10%				
No	<b>97%</b>	<b>97%</b>	<b>97%</b>	<b>90%</b>				
<b>Member of any conservation organisation</b>					3.911	3	.271	.08
Yes	30%	26%	18%	30%				
No	<b>70%</b>	<b>74%</b>	<b>82%</b>	<b>70%</b>				

# indicates significant differences ( $p \leq .05$ )

\* $d = 0.2$ : small effect; \*\*  $d = 0.5$ : medium effect; \*\*\*  $d = 0.8$ : large effect