

**CAUSAL DETERMINANTS OF THE PUBLIC'S ATTITUDES
TOWARDS HUNTING AS A BASIS FOR STRATEGIES TO
IMPROVE THE SOCIAL LEGITIMACY OF HUNTING**

By

Wentzel Christoffel Coetzer


Submitted in complete fulfilment of the requirements for the degree of
Doctoris Technologiae in Nature Conservation in the Faculty of
Science at the Nelson Mandela Metropolitan University

November 2014

Promoter: Prof. Pieter du Preez van Niekerk

DECLARATION

I, Wentzel Christoffel Coetzer (student number 20411675), hereby declare that the thesis for the degree of Doctoris Technologiae is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification. The thesis includes a full bibliography or resource list of the material, whether published or otherwise, used in its preparation.

Signature: 

Date: 2014 - 11 - 30

Wentzel Christoffel Coetzer

ACKNOWLEDGEMENTS

I gratefully acknowledge the assistance, advice, support and encouragement received from a number of persons and institutes. This research would never have been possible without it. I sincerely thank all who made a contribution to this study.

Specifically I wish to acknowledge and sincerely thank the following:

- Ons hemelse Vader vir die geleentheid wat Hy aan my geskenk het, asook vir Sy teenwoordigheid deur my lewe.
- Prof. Pieter van Niekerk vir sy aanmoedigende manier waarop hy my deur die studie begelei het, asook vir sy waardevolle insette, ondersteuning, en bydraes tot die studie.
- The Dormehl-Cunningham Scholarship, the Nelson Mandela Metropolitan University, and the Professional Hunters Association of South Africa (PHASA) for their generous financial assistance that made this study possible.
- Dr. Jacques Pietersen at the Institute for Statistical Consultation at Nelson Mandela Metropolitan University for his involvement with the statistical analysis of the data. Thank you for your valuable inputs, time and friendly assistance.

- All the lecturers and administrators from the Department of Agriculture and Game Management at the Nelson Mandela Metropolitan University for their encouragement, continuous support, and understanding.
- The friendly administrative staff from the Faculty of Science at the Nelson Mandela Metropolitan University for the support and dedicated assistance during my studies.
- My ouers vir die opvoeding wat ek ontvang het en vir hulle ondersteuning deur my lewe. Dankie vir julle geloof in my, vir julle aanmoediging, asook vir die geleenthede wat julle vir my in die lewe gegee het.
- My vrou Michelle, dankie vir jou geloof in my en vir jou stille aanmoediging. Dankie ook vir jou begrip en ondersteuning.

OUTLINE OF CONTENTS

	Page
Table of contents	v
List of Tables	xv
List of Figures	xviii
Summary	xix

TABLE OF CONTENT

	Page
CHAPTER 1	
INTRODUCTION TO THE STUDY	
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENT	6
1.3 SUB-PROBLEMS	8
1.4 OBJECTIVES OF THE RESEARCH	9
1.5 ASSUMPTIONS	10
1.6 DELIMITATION OF THE RESEARCH	12
1.7 SIGNIFICANCE OF THE RESEARCH	14
1.8 DEFINITION OF CONCEPTS	16
1.8.1 Public	16
1.8.2 Hunting	17

1.8.3	Attitudes towards hunting	19
1.8.4	Social legitimacy	19
1.8.5	Hunting industry	21
1.8.6	Game industry	21
1.9	SUMMARY	22

CHAPTER 2

THE PSYCHOLOGY OF ATTITUDES: A CONCEPTUAL ORIENTATION TO UNDERSTANDING AND CHANGING ATTITUDES

2.1	INTRODUCTION	25
2.2	THE PSYCHOLOGY OF ATTITUDES	26
2.2.1	Defining and measuring attitude	27
2.2.2	Structure of attitudes	30
2.2.3	Instrumental versus experiential aspects of attitudes	33
2.2.4	Attitudinal ambivalence	36
2.2.5	The psychology of strong attitudes	40
2.2.6	Cognitive dissonance theory	44
2.2.7	Suitability of standard attitude scales for assessing attitudes and understanding its causal determinants	46

2.3	SELECTING AN ADEQUATE AND VALID RESEARCH APPROACH FOR ASSESSING, UNDERSTANDING AND CHANGING ATTITUDES TOWARDS HUNTING	49
2.3.1	Descriptive approaches versus theoretical approaches	50
2.3.2	Empirical validity of the reasoned action approach and its adequacy as a conceptual framework for research pertaining to human dimensions of wildlife and natural resources	56
2.4	THE THEORY OF REASONED ACTION AS A CONCEPTUAL FRAMEWORK FOR INVESTIGATING ATTITUDES TOWARDS HUNTING AND ITS CAUSAL DETERMINANTS	58
2.4.1	Basic outline of the theory of reasoned action	59
2.4.2	Aligning the reasoned action approach with the research purpose of this particular study	66
2.4.3	Standard procedure for applying the theory of reasoned action	68
2.4.4	Defining the behaviour of interest and the principle of compatibility	70
2.4.5	Salient beliefs as the prevailing determinants of attitude	82
2.4.6	Attitudes and its determinants	96
2.4.6.1	Salient beliefs as a basis of attitudes and the expectancy-value model	96
2.4.6.2	Assessing attitudes, belief strength and outcome evaluation	101

2.4.6.3	Verifying salient behavioural beliefs as the determinants of an attitude	108
2.4.6.4	Empirical support for the expectancy-value model	110
2.4.7	The expectancy-value model and attitudinal ambivalence	112
2.4.8	Origins of beliefs and the role of background factors	114
2.4.8.1	Belief formation	114
2.4.8.2	Differences in beliefs and the role of background factors	117
2.4.8.3	Identifying background factors that affect attitudes towards hunting	119
2.5	INTRODUCING THE THEORY OF REASONED ACTION AS A CONCEPTUAL FRAMEWORK FOR CHANGING ATTITUDES	126
2.5.1	Basic principle of the theory of reasoned action's approach to changing attitudes: salient beliefs as the informational foundation of attitudes	127
2.5.2	The theory of reasoned action's routes to attitude change	129
2.5.2.1	Producing attitude change through modification of existing salient beliefs	129
2.5.2.2	Producing attitude change by establishing new beliefs	134
2.5.3	General considerations influencing the effectiveness of attitude change interventions based on the theory of reasoned action	136
2.5.4	Validity and adequacy of the expectancy-value model's approach to changing attitudes	140

2.6	SUMMARY	142
-----	---------	-----

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1	INTRODUCTION	146
3.2	BROAD OUTLINE OF THE RESEARCH DESIGN	147
3.2.1	Nature of the data and data gathering	147
3.2.1.1	Literature component of the study	149
3.2.1.2	Empirical component of the study	152
3.2.2	Research design of the study's empirical component	153
3.3	METHODOLOGICAL DESIGN OF THE FORMATIVE SURVEY	155
3.3.1	Purpose of the formative survey	156
3.3.2	Selection of a suitable survey research method	158
3.3.3	Selection of a suitable research sample	162
3.3.4	Sample size and composition	172
3.3.5	Design of the formative survey's research instrument	178
3.3.5.1	Question contents	180
3.3.5.2	Question types and wording of the questions	182
3.3.5.3	Question order	187

3.3.5.4	Format and layout of the questionnaire	189
3.3.5.5	Length of the questionnaire	191
3.3.6	Pre-testing	193
3.3.7	Administering the formative survey and the response	194
3.3.8	Capturing and processing of the formative survey's data	196
3.4	METHODOLOGICAL DESIGN OF THE PRIMARY SURVEY	203
3.4.1	Purpose of the primary survey	204
3.4.2	Selection of a suitable survey research method	205
3.4.3	Selection of a suitable research sample	207
3.4.4	Sample size and composition	212
3.4.5	Design of the primary survey's research instrument	218
3.4.5.1	Question contents	219
3.4.5.2	Question types and wording of the questions	221
3.4.5.3	Question order	224
3.4.5.4	Format and layout of the questionnaire	225
3.4.5.5	Length of the questionnaire	226
3.4.6	Pre-testing	227
3.4.7	Administering the primary survey and the response	228
3.4.8	Capturing and processing of the primary survey's data	230

3.4.9	Illustrating the logic of the theory of reasoned action at the level of individual salient beliefs	234
-------	--	-----

3.5	SUMMARY	239
-----	---------	-----

CHAPTER 4

PRIMARY INFORMATION ON ATTITUDES TOWARDS HUNTING AND ITS CAUSAL DETERMINANTS

4.1	INTRODUCTION	244
4.2	FORMATIVE SURVEY RESULTS	244
4.2.1	Saliency of behavioural beliefs about hunting	245
4.2.2	Identifying the salient behavioural beliefs that are the causal determinants of attitudes towards hunting	250
4.3	PRIMARY SURVEY RESULTS	253
4.3.1	Empirical validation of the modal set of salient beliefs as the underlying causal determinants of attitudes towards hunting	254
4.3.2	Broad outline of the primary survey's research results for the entire research sample	258
4.3.3	Attitudes towards hunting and its causal determinants	265
4.3.3.1	Supporters' attitudes towards hunting and their causal determinants	280

4.3.3.2	Opposers' attitudes towards hunting and their causal determinants	283
4.3.3.3	Moderates' attitudes towards hunting and their causal determinants	288
4.3.4	Influences of background factors on attitudes towards hunting and its underlying salient beliefs	298
4.3.4.1	The effect of direct exposure on attitudes towards hunting and its causal determinants	298
4.3.4.2	The effect of social ties on attitudes towards hunting and its causal determinants	311
4.3.4.3	The effect of gender differences on attitudes towards hunting and its causal determinants	321
4.3.4.4	The effect of ethnical differences on attitudes towards hunting and its causal determinants	331
4.3.4.5	The effect of educational differences on attitudes towards hunting and its causal determinants	343
4.3.4.6	The effect of age differences on attitudes towards hunting and its causal determinants	351
4.4	SUMMARY	360

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1	INTRODUCTION	364
5.2	SUMMARY OF THE RESEARCH	365
5.2.1	Introduction and problem statement	365
5.2.2	Literature study on the psychology of attitudes	366
5.2.3	The theory of reasoned action as a conceptual framework	370
5.2.4	Research design and methodology	375
5.2.5	Main research findings	377
5.2.5.1	Main research findings of the formative survey	377
5.2.5.2	Main research findings of the primary survey	378
5.3	CONCLUSIONS AND RECOMMENDATIONS	386
5.3.1	Theory of reasoned action as a conceptual framework	386
5.3.2	The findings of the study	387
5.3.3	General remarks	394
5.4	SUGGESTIONS FOR FUTURE RESEARCH	397
5.5	SUMMARY	400

LIST OF SOURCES	402
-----------------	-----

ANNEXURE A: Formative survey preamble letter and questionnaire	428
--	-----

ANNEXURE B: Primary survey preamble letter and questionnaire	436
--	-----

APPENDIX 1: Content analysis grids of participants' emitted <i>likes</i> and <i>positive consequences</i> of hunting.	448
--	-----

APPENDIX 2: Content analysis grids of participants' emitted <i>dislikes</i> and <i>negative consequences</i> of hunting.	449
APPENDIX 3: Summary of the mean $b \times e$ products, belief strength measures (b_i) and outcome evaluations (e_i), for all five attitudinal sub-groups	450

LIST OF TABLES

TABLE:	Page
3.1 Primary survey's sample size and composition: attitudinal categories, as well as demographical, social and behavioural background variables.	214
4.1. Mean number of positive and negative salient behavioural beliefs about hunting emitted.	246
4.2. Belief categories representing the frequency of emission of positive and negative behavioural beliefs about hunting for the entire research sample ($n = 60$).	251
4.3. Behavioural beliefs about hunting: belief strength, outcome evaluation, belief-evaluation product, and correlations of belief-evaluation products with direct attitude measure for the entire research sample ($n = 327$).	257
4.4. Mean belief-evaluation product for behavioural beliefs about hunting: differences between three attitudinal sub-groups.	277
4.5. Mean belief strength for behavioural beliefs about hunting: differences between three attitudinal sub-groups.	278
4.6. Mean outcome evaluation for behavioural beliefs about hunting: differences between three attitudinal sub-groups.	279
4.7. Correlations of belief-evaluation product with direct attitude measure: differences between frequencies of participation in hunting.	307

4.8.	Mean belief-evaluation product for behavioural beliefs about hunting: differences between frequencies of participation in hunting.	308
4.9.	Mean belief strength for behavioural beliefs about hunting: differences between frequencies of participation in hunting.	309
4.10.	Mean outcome evaluation for behavioural beliefs about hunting: differences between frequencies of participation in hunting.	310
4.11.	Correlations of belief-evaluation product with direct attitude measure: differences between social ties with hunters.	318
4.12.	Mean belief-evaluation product for behavioural beliefs about hunting: differences between social ties with hunters.	319
4.13.	Mean belief strength and outcome evaluation for behavioural beliefs about hunting: differences between social ties with hunters.	320
4.14.	Correlations of belief-evaluation product with direct attitude measure: differences between genders.	328
4.15.	Mean belief-evaluation product for behavioural beliefs about hunting: differences between genders.	329
4.16.	Mean belief strength and outcome evaluation for behavioural beliefs about hunting: differences between genders.	330
4.17.	Correlations of belief-evaluation product with direct attitude measure: differences between various ethnic groups.	339
4.18.	Mean belief-evaluation product for behavioural beliefs about hunting: differences between various ethnic groups.	340

4.19. Mean belief strength for behavioural beliefs about hunting: differences between various ethnic groups.	341
4.20. Mean outcome evaluation for behavioural beliefs about hunting: differences between various ethnic groups.	342
4.21. Correlations of belief-evaluation product with direct attitude measure: differences between various levels of education.	347
4.22. Mean belief-evaluation product for behavioural beliefs about hunting: differences between various levels of education.	348
4.23. Mean belief strength for behavioural beliefs about hunting: differences between various levels of education.	349
4.24. Mean outcome evaluation for behavioural beliefs about hunting: differences between various levels of education.	350
4.25. Correlations of belief-evaluation product with direct attitude measure: differences between various age groups.	356
4.26. Mean belief-evaluation product for behavioural beliefs about hunting: differences between various age groups.	357
4.27. Mean belief strength for behavioural beliefs about hunting: differences between various age groups.	358
4.28. Mean outcome evaluation for behavioural beliefs about hunting: differences between various age groups.	359

LIST OF FIGURES

FIGURES:	Page
2.1 Schematic presentation of the reasoned action model	65
3.1 Classification of survey methods	158

SUMMARY

It is widely acknowledged that the organised wildlife and hunting industry in South Africa contributes significantly to the country's economy, as well as to the effective management and conservation of wildlife on privately owned land. Despite this, hunting has come under increasing attack by anti-hunting proponents who wish to bring a ban on hunting. A number of broad shifts across society at large and lobbying against hunting by anti-hunting proponents have given rise to legitimate concerns regarding the social acceptability of hunting. To maintain the social legitimacy of hunting, it is imperative to put strategies in place to actively broaden the base of public acceptance of hunting. Towards this aim, this study is an empirical investigation of the causal determinants of the public's attitudes towards hunting and of the implications it holds for improving the social legitimacy of hunting. The study commenced by building a sound theoretical foundation from the available literature on the measurement of attitudes, the structure and formation of attitudes, the instrumental and experiential aspects of attitudes, attitudinal ambivalence, the psychology of strong attitudes, as well as the phenomenon of cognitive dissonance. Thereafter, the study turned to identify an adequate and empirically valid research approach for investigating attitudes and its causal determinants. A popular attitude theory in social psychology, namely the theory of reasoned action, was identified as a suitable conceptual framework for conducting this study. According to the reasoned action model, the salient behavioural beliefs people associate with a particular behaviour form the informational foundation (or cognitive foundation) on which their attitudes towards the behaviour are based. More specifically, the model suggests that peoples' overall attitude towards a behaviour is a function of their

perceived probability that a behaviour will produce certain outcomes (belief strength), as well as the degree to which they judge the perceived outcomes of the behaviour as positive or negative (outcome evaluation).

The methodological design of the study's empirical component was strictly based on the standard procedures prescribed by the theory of reasoned action. Two consecutive and methodologically interrelated surveys were conducted amongst members of the public to collect the study's primary data. The main salient behavioural beliefs on which different attitudes towards hunting are based were identified and further investigated. The results were analysed from the perspective of the theory of reasoned action and a clear understanding of the causal determinants of different attitudes towards hunting were attained. Based on the findings of the study, a number of conclusions and recommendations were made that may guide the development of future strategies to improve the social legitimacy of hunting. Amongst other things, it was suggested that public education programmes should be developed to address the public's misconceptions of hunting; that public relation campaigns be undertaken to improve the public's negative image of hunters; and that hunter education programmes be put in place to make hunters aware of the role they could play at community level to improve the social acceptability of hunting. Detailed guidelines regarding the contents of such education programmes and public relation campaigns were provided.

Key words: hunting; public; social legitimacy; theory of reasoned action; attitudes; changing attitudes; wildlife management.

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

Conventional hunting, as we knew it, has been transformed completely over the years. By the end of the 20th Century, game farming and hunting were commercialised and is currently considered to be one of the important agricultural industries in South Africa (Van Niekerk, 2002, p.1 & pp.98 – 105). Today, hunting not only contributes significantly to the South African economy but also contributes significantly to the conservation of South Africa's natural resources through sustainable utilisation practices.

The income generated by the hunting industry could be viewed as an indication of the importance of the industry to the economy of South Africa. According to Eloff (2001, p.83) the gross income for trophy and biltong hunting in South Africa was estimated to amount to R603 million in the year 2000. Since then the industry has grown even larger and by the year 2009 Bothma, Suich and Spenceley (2009, p.154) stated that the local hunting sector alone is worth around R2.9 billion. More recent estimates indicate that the South African trophy and biltong hunting industry has an annual gross income of

about R7.7 billion (Bezuidenhout, 2012, p.49). Furthermore, hunting is by far the most important income-generating activity in the game industry (Van Niekerk, 2002, p.104). Bothma *et al.* (2009, p.151) estimated that 54% of the direct gross income of wildlife ranchers are derived from local hunters and 18% from foreign trophy hunters, whereas the remaining 28% are derived from live animal sales, ecotourism and wildlife meat production. Clearly, hunting is the largest income generating activity within the game industry and is therefore the primary economic driving force behind the game industry. In addition to the latter, an estimated 6000 jobs are provided directly by the hunting industry in South Africa while a further 60 000 jobs are provided by secondary industries such as taxidermy, professional hunters and skimmers (Bothma *et al.*, 2009, p.154).

Wildlife ranching on private land has had a broadly positive impact on biodiversity (Aylward & Lutz, as cited in Bothma *et al.*, 2009, p.150). As a result of sustainable hunting practices, wildlife numbers have increased dramatically, and it is currently estimated that about 60% of South Africa's wildlife occur on private land outside of officially declared protected areas such as national and provincial parks (Bezuidenhout, 2012, p.49). Not only have game numbers increased dramatically, but also the total land area used for wildlife production. In 2007 wildlife ranches were estimated to cover 16.8% of South Africa, compared to a mere 6.1% for officially declared provincial and national protected areas (Bothma & Von Bach, 2009, p.149). Thomson (2006, p.110) points out that the game industry plays an extremely significant role in conserving habitats not only for the bigger game animals,

but also for smaller mammals, birds, reptiles and many other species. If the above is considered in the light of the fact that the greatest threat to all wildlife on our planet is habitat loss (Knezevic, 2009, p.13), it is clear that the game industry (of which the hunting industry is the primary segment) contributes significantly to the conservation of natural habitats and thereby ensures a future for wildlife in South Africa.

In the above discussion it was pointed out that the hunting industry contributes significantly to the country's economy, as well as to effective wildlife management and conservation. Strangely, however, economic realities and ecological facts do not necessarily dictate how a nation will manage its wildlife. Its wildlife culture – which supports only those practices that are socio-politically acceptable to its people – is a very much stronger motivating force (Thomson, 2006, p.xv). Ordinary people in society are encouraged to become involved in the decision-making processes of government (Thomson, 2006, p.iii). The game industry in South Africa, and hunting itself, is regulated by rules laid down by government legislation and regulations. Government is concerned with what is socially acceptable to its people and what is not, and they formulate legislation and regulations within these boundaries. Thus, the nature of government legislation and regulations regarding the hunting industry depends to a large extent on public acceptance of hunting. Clearly then, the hunting industry needs the public's acceptance in order to ensure a favourable and supportive legislative environment.

Concerns regarding the public's attitude towards hunting have also developed in response to a variety of broad shifts across society at large. Urbanisation has contributed to important social trends as fewer people are connected to the land, leading to reduced exposure to wildlife and hunting as part of a rural lifestyle (Campbell & Mackay, 2009, p.21). As a consequence, the public is incognisant about matters affecting wildlife and hunting. They fail to understand the basic principles of wildlife management and are often unable to comprehend the importance of hunting to wildlife management and conservation. Furthermore, there has been an increased romanticised view of nature in balance amongst society at large and even amongst new wildlife management professionals (Campbell & Mackay, 2009, p.21). As a consequence, hunting may often be perceived to upset the balance of nature and to be environmentally disastrous. Moreover, death associated with hunting results in hunting being perceived as a practice that perpetuates the ideology of human domination over nature (Knezevic, 2009, p.15). This perception of hunting is increasingly in conflict with society's romanticised view of nature and, as a result, negative attitudes towards hunting are formed.

In addition to these broad shifts across society, perhaps the greatest concern regarding the public's attitude towards hunting have developed in response to the operations of the animal-rights movements. Successful lobbying against hunting by animal-welfare and animal-rights movements have given rise to legitimate concerns regarding the future of both hunting and the nature of wildlife management itself (Peterson, 2004, p.310). The animal rightists'

destruction of South Africa's wildlife industry is progressing slowly but surely (Thomson, 2006, p.110) as the public is overwhelmed with images of hunting as unethical, immoral, and environmentally disastrous (DiCamillo, 1995, p.616). Animal rightists, the world over, are intent on stopping hunting in all its forms (Thomson, 2006, p.104). In addition to banning hunting, the animal-rights movements want the South African government to eliminate the wildlife industry altogether because they disapprove of man using wild animals for financial gain (Thomson, 2006, p.109). To achieve this, they strive to gain public support for their cause and to provoke public protest against hunting, thereby exerting pressure on governments to ban hunting. According to Swan (as cited in Peterson, 2004, p.311), "public protest can be seen as a social reaction to conditions deemed unethical by the public". He further states that "only those minorities sharing an ethical foundation with the public at large maintain social legitimacy. As a minority group, hunters must therefore forge a coherent ethical stance shared at least in part with society because the future of practices in liberal democracies depends on their social legitimacy".

It should now be clear that negative attitudes towards hunting amongst the public have become a potential social threat to the hunting industry, which in turn may jeopardise the future of wildlife in South Africa. Not only will a ban on hunting jeopardise the effective management of wildlife on game ranches (which may consequently lead to overpopulation of game species, habitat damage and ultimately a loss of biodiversity), but it will also have a substantial negative impact on the financial viability of game ranching. The latter, in effect, will most likely have a detrimental impact on the extent and growth of

the game industry as a whole, as well as on the countless contributions it makes towards the conservation of wildlife and natural habitats.

In light of the above discussion, this chapter will introduce the main research problem and sub-problems of the study, followed by a discussion on the objectives of the study. The critical assumptions and delimitations of this study will then be specified to ensure that the limitations of the study are understood and that the study's focus is clearly defined. The significance of the research will be pointed out, followed by a definition of the concepts and terminology that appear in the study and a brief summary of the chapter.

1.2 PROBLEM STATEMENT

The conservational and economic value of the hunting industry emphasises the importance of hunting to South Africa. The future of hunting in South Africa depends on its social legitimacy and on the extent to which its social legitimacy can be maintained in the future.

To date very little research has been conducted on the public's attitudes towards hunting in South Africa and, consequently, little concrete information regarding this issue is available. Due to this lack of information, the morality and social acceptability of hunting is often brought into question by various interest groups who oppose hunting (Campbell & Mackay, 2009, p.21; Muth &

Jamison, 2000, p.21). This, of course, complicates the task of the organised hunting industry to maintain a favourable and supportive legislative environment for the hunting industry and, as a consequence, the conservational and economical value of the hunting industry is jeopardised. Furthermore, the lack of concrete information regarding the public's attitudes towards hunting makes it almost impossible to form an understanding of how these attitudes are formed and how it can be influenced. As a consequence, it becomes an increasingly difficult task to promote or maintain the social legitimacy of hunting. Woolf and Roseberry, as well as Brown, Decker, Riley, Enck, Laubner, Curtis and Mattfeld (as cited in Holsman, 2000, p.809) are in agreement that traditional justifications for allowing regulated hunting (e.g., population regulation) are increasingly ringing hollow amongst the non-hunting public and even amongst some wildlife professionals. It is thus likely that more concrete persuasive rationales than traditional justifications will be needed to maintain the social legitimacy of hunting in the future (Holsman, 2000, p.809). Therefore, taking the abovementioned into account, the main research question is:

What are the primary causal determinants of the public's attitudes towards hunting and what implications do those causal determinants hold for improving the social legitimacy of hunting?

From the main research question, it should be clear that this study has two main goals. The first is to identify the main causal determinants of the public's

attitudes towards hunting and to form an understanding of the cognitive foundations on which their different attitudes towards hunting are based. The second main goal of this study is to explore the implications that the causal determinants of attitudes towards hunting hold for broadening the base of public acceptance of hunting.

1.3 SUB-PROBLEMS

This study will be aimed at solving the following sub-problems, which will jointly solve the main research problem:

- 1.3.1 What systematic and empirically validated conceptual framework or research approach would be adequate for investigating, understanding and potentially influencing the cognitive foundation on which people base their attitudes towards hunting?
- 1.3.2 What are the main causal determinants of members of the public's attitudes towards hunting?
- 1.3.3 How do these main causal determinants discriminate between members of the public with positive, negative and neutral attitudes towards hunting?
- 1.3.4 Which particular causal determinants of members of the public's attitudes towards hunting are likely to have the most significant potential in terms of broadening the base of public acceptance of hunting?

1.3.5 What impact or effect do various demographical and social variables of interest have on attitudes towards hunting and its underlying causal determinants?

1.3.6 What implications do the causal determinants of the public's attitudes towards hunting hold in terms of guiding the development of future strategies to improve the social legitimacy of hunting?

1.4 OBJECTIVES OF THE RESEARCH

From the problem statement it is clear that this study has two main objectives: firstly to understand how members of the public attain their attitudes towards hunting; and secondly to specify the implications that the causal determinants of their attitudes towards hunting hold for improving the social acceptability of hunting. These two main objectives can be divided into the following specific sub-objectives, namely to:

- Form a detailed understanding of the psychology of attitudes, the cognitive structure of attitudes, and how attitudes are formed.
- Identify a systematic and empirically valid conceptual framework that would be adequate for investigating and understanding members of the public's various attitudes towards hunting and for making inferences with respect to improving the social legitimacy of hunting.
- Identify the main underlying causal determinants of members of the public's attitudes towards hunting.

- Understand how these causal determinants form members of the public's positive, negative, and neutral attitudes towards hunting.
- Specify the particular causal determinants of attitudes towards hunting that are likely to have the most significant potential with respect to improving the social legitimacy of hunting.
- Explore the overall implications that the causal determinants of the public's positive, negative, and neutral attitudes have for guiding the development of future strategies aimed at broadening the base of public acceptance of hunting.
- Identify important demographical and social differences that may influence members of the public's attitudes towards hunting.
- Investigate how these demographical and social differences influence attitudes towards hunting and its underlying causal determinants.
- Provide general information and guidelines pertaining to the development of effective strategies to improve the social legitimacy of hunting.

1.5 ASSUMPTIONS

This study is firstly based on the assumption that the public's attitudes towards hunting are a reflection of the social acceptability of hunting. It is argued that an individual's attitude towards hunting is an overall reflection of their own personal opinion, feelings, values and beliefs regarding hunting. However, unlike the attitude of an individual, the public's attitudes towards hunting reflect the acceptability or appropriateness of hunting within a larger,

socially constructed system of norms, values, value orientations, beliefs, and ideologies. Based on this argument, it is thus assumed that the public's attitudes towards hunting are a reflection of the social legitimacy of hunting.

Secondly, the assumption is made that a change in the public's attitudes towards hunting will ultimately result in a corresponding change in the social legitimacy of hunting. In other words, this study assumes that the social legitimacy of hunting may be improved by effectuating a positive change in the public's attitudes towards hunting.

The third assumption of this study is that an investigation into the causal determinants of members of the public's attitudes towards hunting would provide information that may guide the development of effective strategies aimed at broadening the base of public acceptance of hunting.

In the fourth and final place, the research in this study was based on a conceptual framework which is, in itself, based on certain assumptions. Consequently, the study is thus subjected to those particular assumptions of the conceptual framework on which it is based. Since a detailed understanding of the implicated conceptual framework is necessary to fully understand the assumptions on which it is based, the particular assumptions could not be discussed under this section. Instead, the conceptual framework

of interest as well as the assumptions on which it is based will be discussed throughout chapter 2 of this study.

1.6 DELIMITATION OF THE RESEARCH

All research is inevitably subject to limitations of some kind. This study will be limited in a number of ways. A discussion of these limitations will now follow.

Firstly, the study is subject to some theoretical constraints and limitations. Sub-problem 1.3.1 of this study stipulates that a systematic and empirically validated conceptual framework or research approach be identified that will be able to meet the objectives of this study. Clearly then, this study will be conducted from the perspective of some existing conceptual framework. Any given conceptual framework is always subject to limitations of some kind and, as a result, the information produced by research that is conducted within such a framework will inevitably be subjected to the same limitations. Thus, the information produced by this study will inevitably be subject to the specific theoretical constraints and limitations as that of the particular conceptual framework in which the research will be conducted. The selection of an adequate and valid conceptual framework for this study, along with a discussion of its relevant limitations, will follow in chapter 2 of this study.

Secondly, the study is limited to specific geographical boundaries. The study is strictly limited to South Africa. No attempt will be made to investigate any attitudes towards hunting outside of this geographical boundary, nor will any attempt be made to investigate the implications this research has in terms of improving the social legitimacy of hunting beyond this geographical boundary.

Thirdly, the study did not aim to produce information that may be regarded as representative of any particular sub-population amongst the public of South Africa. Instead, the study was based on a non-probability sampling design and was subjective in nature. The research thus relied on non-representative samples that consisted of members of the public in South Africa. As a result, the utilisation of the results is limited in the sense that it does not produce conclusive results that could be generalised to the research population at large.

Fourthly, in order to comply with the guidelines laid down by the Research Ethics Committee at Nelson Mandela Metropolitan University, the study had to be limited to participants from 18 years of age and older. No persons under the age of 18 were allowed to participate in the study. Despite this necessary age limitation, the research population of this study were still comprised of individuals across a wide spectrum of demographical and social characteristics.

Fifthly, this study provides only a snapshot of the present situation. Research in the United States indicates that people's attitudes towards hunting do not change rapidly. It is rather subject to very slow, gradual and constant changes over time (Duda & Jones, 2008, p.2 & p.10; Heberlein & Willebrand, 1998, pp.1072 – 1073; Responsive Management, 1995, p.6). Thus, the results from the research are limited to the particular point in time when the research was conducted, and it must be kept in mind that it may be subject to change over time.

Finally, this research study was specifically aimed at collecting information regarding attitudes towards hunting. The study was not meant to investigate attitudes towards any other activities or segments of the game industry, such as cropping of game (culling), tourism-related activities, or the capture or live sales of game.

1.7 SIGNIFICANCE OF THE RESEARCH

It is believed that this research could be significant in four main areas. To date very little research has been done on attitudes of members of South Africa's public towards hunting and, consequently, very limited information regarding this issue is available. This study will thus firstly contribute towards the existing body of knowledge on public attitudes towards hunting.

It was stated earlier that the South African government is concerned with what is socially acceptable to its people and what is not, and they tend to formulate legislation and regulations within these boundaries. As a consequence, it is essential that the social legitimacy of hunting be maintained or improved. However, with a lack of concrete information regarding the public's attitudes towards hunting, it is virtually impossible to form an understanding of how these attitudes are attained and how it can be influenced. Thus, in the second place, this research will provide valuable insight into the underlying causal determinants of the public's various attitudes towards hunting and provide guidance with respect to formulating strategies aimed at improving the social legitimacy of hunting. Information of this nature would, of course, enable the hunting industry to develop strategies to maintain or improve its social legitimacy. This, in effect, will also increase the hunting industry's ability to maintain a favourable and supportive legislative environment for the hunting industry.

Following from the discussion in the paragraph above, this study will, in the third place, most likely have a substantial positive impact on the overall growth and development of the game and hunting industry. This, in effect, may lead to an overall increase in the economic benefits provided by the game and hunting industry, as well as the conservation of even more wildlife and natural habitats on private land.

Fourthly, this study will hopefully highlight the shortcomings of the existing knowledge with regard to the public's attitudes towards hunting, identify the areas where future research is necessary, and serve as a starting point for similar research projects in the future.

1.8 DEFINITION OF CONCEPTS

Throughout this study, some general concepts and terminology are used. In this section, the most crucial concepts and terminology that appear in the study are defined.

1.8.1 Public

For the purpose of this study the public is defined as members of the general population of South Africa that are 18 years of age and older. It is worth noting that, in this study, the term public is often used to refer to the broader population from which the non-probability samples were drawn for the purpose of the research.

1.8.2 Hunting

Van Niekerk (2002, p.14) explains that hunting does not merely refer to the shooting of game animals, but it also refers to other tangible and intangible benefits like being in nature, socialising with friends, and the opportunity to view game. Van Niekerk (2002, pp.14 – 15) state that, “from the perspective of the hunter, the total experience associated with hunting is important”. It should be noted, however, that this study does not focus on hunting from the perspective of the hunter, but rather from the perspective of the general public – irrespective of how much or how little they may know about hunting. It is thus necessary to further investigate the concept of hunting in order to supply a definition of the term hunting that would be adequate for the purpose of this study.

According to Heberlein and Willebrand (1998, p.1071), hunting alone is too broad an object to define. They are of the opinion that hunting could be divided into three broad segments based on the motivation for hunting, namely hunting for recreation and meat (most local hunters or biltong hunting), hunting for recreation or sport (trophy hunting), and traditional/subsistence hunting (people who are dependent on hunting for food). Radder and Bech-Larsen (2008, pp.252 – 253) explain that while biltong hunters combine the experience of hunting with the desire to obtain meat, trophy hunters combine the experience of hunting with the desire to bag trophy animals. Biltong hunting and trophy hunting differs from

traditional/subsistence hunting, which is typically non-commercialised, non-regulated and outlawed, aimed at supplementing protein intake and/or ritual, ceremonial, or medicinal purposes (Report to the Minister of Environmental Affairs and Tourism, as cited in Radder & Bench-Larsen, 2008, p.252 – 253). Furthermore, research has found that people generally hold significantly different attitudes towards legal hunting practices than towards illegal hunting practices. Since traditional/subsistence hunting practices are typically outlawed, and since there is evidence of significant differences between the public's attitudes towards legal hunting practices and illegal hunting practices (Duda & Jones, 2008, p.2), it is clearly necessary to make a very clear distinction between these two practices in defining the term hunting.

For the purpose of this study, hunting does not only refer to the killing of wild game animals, but also to be in nature and enjoying the total experience while pursuing wild game animals with the intent to kill. Furthermore, it refers to hunting in general terms and thus includes all types of legal hunting (bow hunting, rifle hunting etc.) and general motivations for hunting (recreational hunting, hunting for meat, and trophy hunting). The term hunting also includes the hunting of all types of game animals that are generally hunted and no distinction will be made between the hunting of various game species. However, it should be noted that for the purpose of this study the definition does not include traditional/subsistence hunting or any illegal hunting practices, nor does it include the professional cropping of wild animals (otherwise known as culling).

1.8.3 Attitudes towards hunting

It will be seen later in chapter 2 that there is general consensus amongst investigators in contemporary social psychology that an attitude is best considered to be “a person’s latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object” (Fishbein & Ajzen, 2010, p.76). Fishbein and Ajzen (2010, p.76) explain that “the attitude object can be any discriminable aspect of an individual’s world, including a behaviour”. For the purpose of this study the concept of attitudes towards hunting is in line with Fishbein and Ajzen’s abovementioned definition of attitude. Thus, for the purpose of this study, attitudes towards hunting refer to the public’s latent disposition or tendency to respond with some degree of favourableness or unfavourableness to hunting. Clearly, in terms of this definition the attitude object refers to the behaviour of hunting.

1.8.4 Social legitimacy

Earlier in section 1.1, it was said that public protest can be seen as a social reaction to conditions deemed unethical by the public (Swan, as cited in Peterson, 2004, p.311). Swan (as cited in Peterson, 2004, p.311) states that “only those minorities sharing an ethical foundation with the public at large maintain social legitimacy. As a minority group, hunters must therefore forge

a coherent ethical stance shared at least in part with society because the future of practices in liberal democracies depends on their social legitimacy". Suchman (1995, p.575) explains that "legitimacy", or social legitimacy for that matter, "can be regarded as an operational resource". Social legitimacy is an intangible resource that an organisation, industry (e.g., hunting industry, game industry) or practice (e.g., hunting) requires in order to operate. Certain actions or events may increase that social legitimacy, while others may decrease it. Low social legitimacy could have particularly severe consequences for an organisation, which may ultimately lead to the forfeiture of their right to operate (Tilling, 2004, p.4).

According to Suchman (1995, p.574), social legitimacy is "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions". Kaplan and Ruland (1991, p.370) regard social legitimacy as "a process by which an entity seeks approval (or avoidance of sanction) from groups in society". For the purpose of this study then, social legitimacy refers to the generalised perception or assumption that the actions of an entity (such as hunting) are desirable, appropriate, and acceptable within the general public's (society at large) socially constructed system of norms, values, beliefs, definitions, and ideologies.

1.8.5 Hunting industry

Van Niekerk (2002, p.15) states that “the hunting industry does not only refer to hunting of animals, but also to related activities like accommodation of hunters, products on offer for non-hunting companions, taxidermy, products sold to hunting parties, professional hunting services (guides, trackers, professional hunters), and other activities directly related to the hunting experience”. Consistent with this view, for the purpose of this study the hunting industry is defined as all activities that are closely related to offering clients the opportunity to shoot game animals.

1.8.6 Game industry

The game industry covers a wider field than only the hunting industry. Van Niekerk (2002, p.15) explains that the game industry includes the hunting industry and all activities related to the management and utilisation of game. It includes activities such as management of game ranches and game herds, capture and live sales of game, non-consumptive utilisation practises (such as tourist-related activities), as well as consumptive utilisation practises (such as cropping of game, hunting and venison sales). For the purpose of this study the game industry will be defined as by Van Niekerk (2002, p.15), as “all activities associated with the management and utilization of game”.

1.9 SUMMARY

Chapter one commenced with a brief introduction to the study. It was explained that hunting is the primary economical driving force behind the game industry. In addition, it was explained that the game and hunting industry contributes significantly to the country's economy, as well as to the conservation and effective management of wildlife. It was seen that despite the importance of the hunting industry, government is often more concerned with what is socially acceptable to its people and what is not. It was said that the future of practices in liberal democracies depends on their social legitimacy. Thereafter, it was explained that a variety of broad shifts across society at large, as well as successful lobbying against hunting by animal-rights movements have given rise to legitimate concerns regarding the social acceptability of hunting. It was pointed out that traditional justifications for allowing regulated hunting are increasingly ringing hollow amongst the public, and that more concrete persuasive rationales will be needed to maintain the social legitimacy of hunting in the future.

The introduction to the study was followed by identifying the main research problem, the sub-problems and objectives of the study. In sum, it was explained that this study has two main goals. Firstly, this study will provide a clear understanding of the causal determinants of the public's various attitudes towards hunting and how these attitudes are formed. This will be done by obtaining and analysing information regarding the causal

determinants of the public's attitudes towards hunting. Secondly, this study will provide guidelines for improving the social legitimacy of hunting. This will be done by exploring the implications that the causal determinants of the public's attitudes towards hunting hold in terms of developing effective strategies to influence attitudes towards hunting and broaden the base of public acceptance of hunting.

The assumptions made in the study were then discussed. It was said that the study is firstly based on the assumption that the public's attitudes towards hunting are a reflection of the social legitimacy of hunting. Secondly, this study assumes that an investigation into the cognitive structures of the public's attitudes towards hunting may provide information that could give some guidance for the development of strategies to improve the public's attitudes towards hunting. The third assumption of this study is that a change in the public's attitudes towards hunting will ultimately result in a corresponding change in the social legitimacy of hunting. In the fourth and final place, this study is subjected to those particular assumptions of the conceptual framework on which it is based.

Following the discussion of the assumptions made in this study, an explanation of the delimitation of the research was provided. It was explained that the study will be subject to some theoretical limitations. Furthermore, it was explained that the study will be limited to the geographical area of South Africa, as well as to all members of the general public within this geographical

area who is 18 years of age or older. In addition, the study is limited in the sense that it does not produce conclusive results that could be generalised to the research population at large. Moreover, it was explained that the results from the research will be limited to the particular point in time when the research was conducted, and that the results of the study will be applicable to no segments of the game industry other than the hunting industry.

The significance of this research study was then discussed and it was pointed out that this study will, firstly, contribute towards the existing body of knowledge of the game and hunting industry; secondly, be of strategic importance to the leaders in the game and hunting industry and assist them in maintaining a favourable and supportive legislative environment for the hunting industry; thirdly, contribute to the growth and development of the hunting and game industry, as well as to conservation and the economy; fourthly, highlight the shortcomings of the existing knowledge with regard to the public's attitudes towards hunting, identify the areas where future research is necessary, and serve as a starting point for similar research projects in the future; and finally, it was pointed out that this study will produce information that may be used for comparison purposes with similar research in the future.

The discussion of the significance of the research was then followed by defining and explaining the major concepts and important terms used in the study. In conclusion of this chapter, the major aspects that were addressed in this study were then summarised.

CHAPTER 2

THE PSYCHOLOGY OF ATTITUDES: A CONCEPTUAL ORIENTATION TO UNDERSTANDING AND CHANGING ATTITUDES

2.1 INTRODUCTION

Amongst those who care about wildlife and nature, few activities arouse such disparate attitudes and feelings as hunting (Clark, 2007, p.3). Some people feel just as passionate about hunting as others are enraged by it (Thomson, 2006, p.105). Clearly, hunting has become a controversial issue amongst some. The ongoing debate over hunting has been and will continue to be influenced by perception (Campbell & Mackay, 2009, pp.21 – 22).

In chapter 1 it was demonstrated that negative attitudes towards hunting have become a social threat facing the hunting industry and, consequently, jeopardise the future of wildlife and conservation on privately owned land in South Africa. It is thus essential to maintain the social legitimacy of hunting. However, effective interventions to address this social threat cannot be designed without a thorough understanding of the factors determining peoples' attitudes towards hunting. Only by understanding how people come to hold their attitudes towards hunting is it possible to facilitate a change in

those attitudes and alleviate this social threat. In light of the latter, this study thus sets out to form an understanding of the public's attitudes towards hunting, as well as to investigate the implications this information has in terms of effectuating a positive change in the public's attitudes towards hunting. Towards this aim, the chapter will commence with a discussion of some general concepts in contemporary social psychology that are of relevance to this particular study. Thereafter, this chapter sets out to select a conceptual framework in social psychology that provides an adequate and valid research approach to the study's main research goals. A detailed discussion of the chosen conceptual framework then follows, and provides an understanding of the research approach and how the conceptual framework will be used to achieve the main research goals of the study. This chapter is thus aimed mainly at solving sub-question 1.3.1 (see section 1.3 of chapter 1). Lastly, the chapter will be concluded with a summary of the most important aspects that were addressed in the chapter.

2.2 THE PSYCHOLOGY OF ATTITUDES

In this section, some important concepts in contemporary social psychology that are of relevance to this study will be discussed. The section commences by defining the term attitude, followed by a brief overview of how attitudes are measured in contemporary social psychology. Thereafter, the most popular models of attitude formation and structure are introduced, followed by an overview of the major components of attitude. This section then explains the

concept of attitudinal ambivalence and its relevance to understanding and changing attitudes. This is followed by a brief overview of the psychology of strong attitudes, its effect on behaviour, and its implications for attitude change. Finally, this section considers the suitability of standard attitude scales for assessing attitudes and understanding its underlying causal determinants.

2.2.1 Defining and measuring attitude

Many social psychologists, theorists and researchers devoted a great deal of effort to the definition and measurement of attitudes (Fishbein & Ajzen, 2010, pp.75 – 76; Kiesler, Collins & Miller, 1969, p.1). Initially great difficulty was encountered in attempts to identify the essential characteristics of attitudes and therefore early definitions of attitude were often broad, complex and all-encompassing views of attitudes (Fishbein & Ajzen, 2010, p.76). Allport (1935, pp.784 & 810) for example defined attitude as “a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related”. A similarly complex definition was supplied by Krech and Crutchfield (1948, p.152) who defined attitude as “an enduring organisation of motivational, emotional, perceptual, cognitive processes with respect to some aspect of the individual’s world”. Such complex views of attitude were often shared amongst theorists. However, many researchers interested in the measurement of attitudes (although acknowledging the

complexity of attitudes) realised that such multi-dimensional definitions were unworkable and unpractical (Fishbein & Ajzen, 2010, pp.76 – 77). Campbell (1950, pp.31 – 32) and Triandis (1967, p.228) also acknowledged the gap between those who are primarily concerned with the measurement of attitudes and those who have written theoretically about it.

From a historical perspective, Thurstone (1928, 1931) made the major breakthrough in defining and measuring attitudes and was the first to apply psychometric methods to the measurement of attitudes. He argued that when measuring attitudes it is necessary to restrict the definition of attitude in such a way that its evaluative dimension is emphasised, instead of its complexity. In other words, Thurstone was of the opinion that, when measuring attitudes, it is necessary to have a uni-dimensional definition of attitude where the evaluative dimension is regarded as the critical continuum along which the measurement is to take place. Consequently, Thurstone (1931, p.261; 1946, p.39) defined attitude as “the intensity of positive or negative affect for or against a psychological object”. On the basis of this definition, Thurstone developed a scaling procedure, namely the equal-appearing interval scale, which resulted in a single attitude score indicating the respondent’s degree of favourableness or unfavourableness towards a given attitude object. According to Fishbein and Ajzen (2010, p.77) as well as Perloff (2010, p.107), Thurstone’s groundbreaking work stimulated the development of several other standard attitudinal scaling techniques which are commonly used in contemporary research, namely Likert’s (1932) method of summated ratings, Guttman’s (1944) cumulative scaling method, and Osgood, Suci and Tannenbaum’s

(1957) semantic differential scale. These standard attitude scales are widely accepted and most frequently used in contemporary attitudinal research (Manfredo, 2008, p.79). For specific descriptions of the development and use of these scales, see Miller (2002).

Fishbein and Ajzen (2010, p.77) assert that previous discrepancies between the theory and measurement of attitudes is no longer an issue in basic research on attitudes, because theory and measurement have to a large extent converged on an uni-dimensional conception of attitude. Although there is no single definition of attitude that is acceptable to all who do attitudinal research, there is widespread consensus amongst contemporary theorists and investigators engaged in basic research on attitudes that an attitude's essential characteristic is its bipolar evaluative dimension (Albarracín, Johnson, Zana & Kumkale, 2005, p.4; Eagly & Chaiken, 1993, pp.1 – 3; Krosnick, Judd & Wittenbrink, 2005, pp.22 – 24; Maio & Haddock, 2009, pp.4 & 24; Manfredo, 2008, pp.78 – 79; Perloff, 2010, p.44). Fishbein and Ajzen (2010, p.76) also agree with the latter and explain that “attitudes are evaluative in nature, ascribing to individuals a position on an unitary evaluative dimension with respect to an object” – that is, a bipolar evaluative dimension that ranges from negative to positive through a neutral point. There seems to be general agreement that attitude is best considered to be a person's “latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object” (Fishbein & Ajzen, 2010, pp.76 – 77). This view of attitudes is generally shared amongst contemporary investigators (see Albarracín *et al.*, 2005, p.4; Eagly & Chaiken,

1993, p.1; Edward, 1957, p.2; Krosnick *et al.*, 2005, pp.22 – 24; Maio & Haddock, 2009, p.4; Manfredo, 2008, pp.78 – 79).

In sum, it should be clear that for the purposes of this study, a suitable definition for attitude is **a person's latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object**. The essential problem of attitude measurement is thus to obtain a single score that represents a person's position on a bipolar evaluative dimension with respect to the attitude object. Such attitudinal scores can be obtained in a reliable and valid fashion through most standard attitudinal scaling techniques, such as Likert's (1932) method of summated ratings, Guttman's (1944) cumulative scaling method, and Osgood *et al.*, (1957) semantic differential scale.

2.2.2 Structure of attitudes

The concept of attitude structure has to do with one's conceptualisation of attitude (Fabrigar, MacDonald & Wegener, 2005, p.80) and the way in which the major cognitive components of attitudes are organised (Perloff, 2010, p.50). The structure of attitude is important because it explains how attitudes are formed and it holds important implications for persuasion and attitude change (Perloff, 2010, p.54). This section highlights the major cognitive and

affective components of attitude and briefly introduces the most popular model of attitude formation and structure.

Eagly and Chaiken (1993, p.103) assert that the assumption is common amongst attitude theorists that people have beliefs about attitude objects or behaviours, and that those beliefs are in some sense the primary building blocks or causal determinants of attitudes. One of the most popular and influential models of attitude formation and structure is the **expectancy-value model** (Fishbein & Ajzen, 2010, pp.97 & 126; Kruglanski & Stroebe, 2005, p.328). The expectancy-value approach to attitude structure provides an explanation of how beliefs are combined to form attitudes (Eagly & Chaiken, 1993, p.231). The model contains insight about the underlying structure and dynamics of people's attitudes and is of interest to investigators who hope to understand and change attitudes (Eagly & Chaiken, 1993, pp.109 & 231; Perloff, 2010, p.54).

According to the expectancy-value approach, attitudes have two components. The first component is of a cognitive nature and has to do with the strength of beliefs that an object or behaviour has certain attributes or outcomes, for example, the strength with which a person believes that hunting (the behaviour) leads to the conservation of wildlife (the outcome). The second component of attitude is of an affective nature and has to do with the feelings associated with the beliefs about the attributes or outcomes of the object or

behaviour, for example, a person may hold positive evaluations (feelings) towards conserving wildlife (the outcome of the behaviour).

Simply put, the expectancy-value model postulates that attitude is a combination of what a person believes or expect of a certain object or behaviour and how that person feels about these expectations (Perloff, 2010, p.50). Attitude is thus considered to be a multiplicative combination of the strength of beliefs that an object or behaviour has certain attributes or outcomes, and the positive and negative evaluations of these attributes or outcomes (Fishbein & Ajzen, 2010, p.97). For example, if a person believes that hunting is beneficial to wildlife populations, contributes towards the conservation of wildlife, and is a dangerous activity, these outcomes would be represented by the subjective probability that hunting has each outcome (for example, a high probability that hunting is beneficial to wildlife populations, contributes to conservation, and that it is a dangerous activity) as well as by the evaluation of each outcome (i.e., a positive evaluation of wildlife populations benefitting and that wildlife are conserved, and a negative evaluation of dangerous activities). A detailed discussion of the expectancy-value model is provided in section 2.4.6 of this chapter.

2.2.3 Instrumental versus experiential aspects of attitudes

As mentioned earlier, it is possible to distinguish between two components of attitudes, one cognitive and the other affective in nature. Fishbein and Ajzen (2010, p.82) explain that this distinction can be traced back to the multi-component model of attitude (see Rosenberg, 1956), which holds that attitudes are composed of cognitive, affective, and behavioural components. According to Fishbein and Ajzen (2010, pp.82 & 126), the cognitive and affective components are more appropriately termed **instrumental** and **experiential** aspects of attitude, respectively. The instrumental aspects of attitude reflect the beliefs people hold about the positive or negative consequences associated with the performance of the behaviour, whereas the experiential aspects of attitude reflects the beliefs people hold about the positive or negative feelings or emotions associated with the performance of the behaviour (Eagly & Chaiken, 1993, p.10; Fabrigar *et al.*, 2005, p.82; Fishbein & Ajzen, 2010, pp.82 – 84; Maio & Haddock, 2009, pp.25 & 27; Sutton, French, Hennings, Mitchell, Wareham, Griffin, Hardeman & Kinmonth, 2003, pp.234 – 237). From a measurement perspective, instrumental aspects of attitude are featured in such adjective dimensions as beneficial–harmful, useful–useless, valuable–worthless, perfect–imperfect, healthy–unhealthy, and wise–foolish, whereas experiential aspects are reflected in such adjective dimensions as love–hate, pleasant–unpleasant, interesting–boring, like–dislike, calm–tense, joy–sorrow, acceptance–disgusted, and enjoy–heartache (Fishbein & Ajzen, 2010, p.82; Maio & Haddock, 2009, p.27; Sutton *et al.*, 2003, pp.234 – 237).

Clearly, instrumental and experiential components differ from one another in that they capture different aspects of an attitude (Maio & Haddock, 2009, p.26; Sutton *et al.*, 2003, pp.235 – 237). It is important to understand that both the instrumental and experiential components may have an influence on the overall attitude (Fishbein & Ajzen, 2010, p.85). Fabrigar *et al.* (2005, p.82) explain that an attitude does not consist of these two elements, but is instead a general evaluative summary of the information derived from these bases. Consider, for example, the differences in the instrumental and experiential beliefs that Manstead and Parker (1995) identified in their study on attitudes towards driving violations such as speeding. They report that respondents variously indicated that speeding reduces journey times, can cause an accident, might result in being stopped by the police, and so on (instrumental beliefs). Respondents also indicated that speeding made them feel exhilarated, or nervous, or powerful, or frightened, and so on (experiential beliefs). Clearly, the instrumental component captures the beliefs about the consequences of speeding, whereas the experiential component captures the feelings or emotions associated with speeding. Together, these instrumental and experiential beliefs may form a general positive or negative evaluative summary (in other words, an attitude) towards driving violations such as speeding.

While the instrumental and experiential components both capture different aspects of an attitude, this does not mean that they are completely independent of each other (Maio & Haddock, 2009, p.26). Sutton *et al.* (2003, p.235) explain that in some cases there may be some overlap between

instrumental and experiential beliefs. Consider, for example, the overlap between instrumental and experiential beliefs that Ajzen and Driver (1991) noticed in their study on participation in recreational activities such as mountain climbing, biking, and boating. They found that beliefs such as experiencing a sense of accomplishment and feeling tired or exhausted appeared in both sets of instrumental and experiential beliefs regarding mountain climbing. Beliefs with respect to boating, on the other hand, showed no overlap.

It is important to realise that an attitude is not necessarily always comprised of both instrumental and experiential elements. Instead, an attitude can be formed primarily or exclusively on the basis of any one of these two aspects, or by a combination of these two aspects (Eagly & Chaiken, 1993, p.16; Fishbein & Ajzen, 2010, p.82). Fishbein and Ajzen (2010, p.85) explain that while some attitudes may be largely based on instrumental beliefs, the underlying beliefs of other attitudes may be primarily experiential in nature. In most instances, however, attitudes are composed of both instrumental and experiential items. For example, Sutton *et al.* (2003, p.237) – who conducted an analysis of the beliefs people hold about being more physically active – speculated that physical activity may be a domain in which experiential outcomes (e.g., the pleasure of breathing fresh air or the discomfort of being hot and sweaty) may be expected to be as, or more, important influences on attitudes than instrumental outcomes such as weight reduction or reduction in cardiovascular risk.

There may also be discrepancies or inconsistencies between the evaluative implications of the instrumental and experiential components of an attitude (Fishbein & Ajzen, 2010, pp.83 – 85; Maio & Haddock, 2009, p.26). Thus, many behaviours may, for example, be judged favourably in terms of their instrumentality, but more negatively in terms of the experience of engaging in the behaviours (Fishbein & Ajzen, 2010, p.84). To demonstrate, a person may believe that physical exercise may improve his general health – thus implying a positive instrumental evaluation towards physical exercise. At the same time, however, the person may believe that physical exercise will cause him to feel exhausted and the discomfort of being hot and sweaty – thus implying a negative experiential evaluation towards physical exercise. Clearly, a single attitude may contain many positive and many negative elements, leading to attitudinal ambivalence (see section 2.2.4).

2.2.4 Attitudinal ambivalence

It is often incorrectly assumed that the existence of positive beliefs and feelings inhibits the occurrence of negative beliefs and feelings (Maio & Haddock, 2009, p.34). This would mean, for example, that an individual with positive beliefs and feelings about hunting is unlikely to also have negative beliefs and feelings about it. Clearly, this would imply that there is some form of evaluative consistency between the beliefs and feelings underlying an individual's attitude towards an object or behaviour. In actuality, however, an individual's attitude may simultaneously contain many positive and many

negative beliefs and feelings (Eagly & Chaiken, 1993, p.123; Maio & Haddock, 2009, p.34). This coexistence of positive and negative reactions to an attitude object or behaviour is known as **attitudinal ambivalence** (Fishbein & Ajzen, 2010, p.118; Kruglanski & Stroebe, 2005, p.331). Attitudinal ambivalence is thus a state of conflict that exists when an individual simultaneously possess positive and negative evaluations of a single attitude object or behaviour (Eagly & Chaiken, 1993, p.123; Fabrigar *et al.*, 2005, p.84; Kruglanski & Stroebe, 2005, p.332; Maio & Haddock, 2009, pp.36 – 37; Manfredi, 2008, p.95).

As could be seen in the example of physical exercise that was given in section 2.2.3, while many people realise the health benefits of engaging in physical exercise (positive instrumental beliefs), they may also at the same time believe that performing physical exercise would be unpleasant (negative experiential beliefs). Clearly then, there may be evaluative inconsistencies or conflict between how individuals think (instrumental beliefs) and feel (experiential beliefs). This pattern may be labelled as instrumental–experiential ambivalence (Maio & Haddock, 2009, pp.36 – 37). In addition, evaluative discrepancies or conflict may also exist within the instrumental beliefs (instrumental ambivalence) and within the experiential beliefs (experiential ambivalence) about an attitude object or behaviour (Eagly & Chaiken, 1993, p.124). For example, a person may simultaneously believe that hunting contributes to the conservation of wildlife (positive instrumental belief) and that hunting is a dangerous activity (negative instrumental belief). In a similar fashion, a person may simultaneously hold the belief that hunting

is a way of enjoying nature (positive experiential belief) and that the killing of a wild animal makes them feel sad (negative experiential belief).

From the above discussion it should be clear that attitudinal ambivalence is a state of conflict that exists when an individual simultaneously possess positive and negative evaluations of an attitude object or behaviour. It is possible to calculate the amount of conflict between people's positive and negative evaluations of an attitude object or behaviour. Although several different mathematical formulas have been developed to compute an index of attitudinal ambivalence (see Priester & Petty, 1996; Riketta, 2000; Thompson, Zanna & Griffin, 1995), Fishbein and Ajzen (2010, p.119) explain that they tend to produce very similar results. According to Fishbein and Ajzen (2010, p.119), the most popular method of computation in contemporary use was developed by Griffin (see Thompson *et al.*, 1995). In this model, attitudinal ambivalence is estimated by adding the positive (P) and negative (N) evaluations of the object or behaviour, dividing the sum by two, and subtracting the absolute value of the difference between P and N . This computation is shown in Equation 3.1:

$$\frac{(P + N)}{2 - |P - N|}$$

(Equation 3.1)

Alternatively, it is also possible to measure attitudinal ambivalence in a fairly direct manner by simply asking respondents to rate the extent to which their

beliefs or feelings are conflicted, mixed, and indecisive (Kruglanski & Stroebe, 2005, p.331; Maio & Haddock, 2009, p.37). However, Fishbein and Ajzen (2010, p.119) explain that this direct approach to measuring attitudinal ambivalence provides relatively little information about the reason for conflicted valence, and is thus of limited value.

Attitudinal ambivalence is an important property of attitudes, because it has the potential to explain why people sometimes react in polarised ways to controversial issues (Maio & Haddock, 2009, p.37). The degree to which an attitude is ambivalent is assumed to have important implications for its function and predictive validity. Specifically, Armitage and Conner (2000, pp.1421 – 1430) report that compared to non-ambivalent attitudes, ambivalent attitudes are said to be more likely to change over time, to be less resistant to persuasive appeals, to be less likely to bias processing of attitude-relevant information, and to be less likely to influence or guide behaviour. Furthermore, according to Muth and Jamison (2000, p.842), the public is often ambivalent about wildlife issues. Thus, since attitudinal ambivalence towards wildlife issues are generally present amongst the public, and since attitudinal ambivalence clearly has important implications for attitude change and persuasion, it is argued that the concept of attitudinal ambivalence may be of some importance to this particular study.

2.2.5 The psychology of strong attitudes

Amongst those who care about wildlife and conservation, few activities arouse such disparate feelings as hunting (Clark, 2007, p.3). “For many, hunting is associated with strong positive sentiments, such as connecting with nature, spending time with friends or family, conserving habitats and wildlife, and wildlife management. For others, hunting evokes strong negative thoughts of endangered species, the international bush-meat crisis and poaching, the risk of injuries from firearms, gun violence, and ethical issues with regard to killing animals” (Clark, 2007, p.3). Hunting is a controversial issue that has come under increasing scrutiny by various interest groups (Campbell & Mackay, 2009, pp.21 – 22). It is a topic that often arouses strong emotions and attitudes amongst those who care about wildlife and conservation, and perhaps more specifically amongst hunting and animal rights communities. For this reason, the dynamics of strong attitudes may be of some relevance to this particular study. In this section, the major characteristics and implications of dealing with strong attitudes will be summarised.

Strong attitudes are generally involving, emotional, and invariably complex (Perloff, 2010, p.60), and are generally assumed to involve issues of personal relevance and are held with great conviction or certainty (Fishbein & Ajzen, 2010, p.261). Consequently, strong attitudes are particularly likely to persist over time, affect judgements, guide behaviour, and prove resistant to change (Fishbein & Ajzen, 2010, p.261; Maio & Haddock, 2009, p.42; Manfredo,

2008, pp.94 – 95; Perloff, 2010, p.60). Wang, Erber, Hodges and Wilson (as cited in Perloff, 2010, pp.60 – 61) explain that strong attitudes are generally stable, firstly because they are most likely anchored by other beliefs and values, thus making them more resistant to change. Thus, if a person were to change his basic religious beliefs, for example, many other attitudes and values linked to these beliefs would have to be changed as well. Secondly, people are likely to know more about issues they feel strongly about, making them more resistant to counterarguments and persuasive messages. Thirdly, people are likely to associate with others who feel similarly on issues they consider important. Social associations such as these are thought to help maintain and reinforce peoples' attitudes. Fourthly, strong attitudes are often more elaborated and salient, making it more likely that people will simply recall their attitude when confronted with the attitude object or behaviour on different occasions. Lastly, people with strong attitudes are likely to attend to and seek out information relevant to the topic, thereby reinforcing their strongly held attitudes and arming them with even more arguments with which to resist attempts to change their attitudes. The fact that strong attitudes are generally persistent over time and resistant to change may hold some important implications for this particular study.

Strong attitudes also influence how people process and evaluate attitude-relevant information. People tend to process information in a way that is consistent with their existing attitudes, and strong attitudes are more influential in this regard (Manfredo, 2008, p.94). Manfredo (2008, p.94) explains that even though there may be balanced information in a persuasive message,

people will focus on arguments that are consistent with their existing attitudes. Thus, a person who holds a strong attitude in opposition to hunting wild animals may be expected to process information about this issue in a biased manner – such a person is likely to automatically reject the credibility of information that supports the need for hunting wild animals, and to accept information consistent with their existing negative attitude towards hunting. Given their stability over time and the influence they have on processing information, strong attitudes are enduring and resistant to attempts at persuasion or attitude change.

Strong attitudes have profound influences on thoughts and behaviours (Manfredo, 2008, p.95; Perloff, 2010, p.59). Consider, for example, the continuous conflict between hunters and anti-hunting movements (Knezevic, 2009, p.13). Because of their strong attitudes, animal rights activists often engage in extreme actions, such as acts of violence or terrorism perpetrated against those who hunt or support hunting. Not only do strong attitudes influence thoughts and behaviours, but it also affects the intensity of behavioural response and the consistency of one's attitude and action over time (Manfredo, 2008, p.94).

Social psychologists who study strong attitudes suggest that attitude strength is a multifaceted concept and that there are a variety of elements that differentiate strong attitudes from weak ones (see Holbrook, Berent, Krosnick,

Visser & Boninger, 2005; Krosnick, Boninger, Chuang, Berent & Carnot, 1993; Petrocelli, Tormala & Rucker, 2007). Strong attitudes are characterised by:

- Importance – a deep concern about an issue;
- Ego involvement – the attitude is linked to core values or the self concept of a person;
- Attitude extremity – this refers to how favourable or unfavourable a person evaluates an attitude object. A strongly held attitude deviates significantly from neutrality;
- Attitude certainty – a strong conviction that the attitude is correct;
- Attitude accessibility – the attitude comes quickly to mind without much cognitive effort;
- Knowledge – highly informed about the topic;
- Hierarchical organisation – the attitude is internally consistent (thus, not ambivalent) and deeply embedded in an elaborate attitudinal structure; and
- Attitude ambivalence – strong attitudes involve either mostly positive or mostly negative beliefs about an attitude object or behaviour. Thus, with strong attitudes there is very little conflict between a person's positive or negative evaluative components of a single attitude object or behaviour (low in ambivalence).

Note, however, that any particular strong attitude may not necessarily possess all of these characteristics.

Consistent with the abovementioned information pertaining to the psychology of strong attitudes, previous research has shown that staunch opponents to

hunting are very resistant to changing their attitudes, and that those with moderate attitudes towards hunting are the most promising audience for strengthening support for hunting (Campbell & MacKay, 2003; Herzog, 1993; Shaw, 1977). This suggests that efforts to broaden the base of public acceptance of hunting should be directed at the segment of the public which is presently not strongly committed for or against hunting.

2.2.6 Cognitive dissonance theory

Festinger's (1957) theory of cognitive dissonance is one of the most widely discussed theories in social psychology. According to McCool and Braithwaite (1992, p.301) as well as Perloff (2010, p.238), the phenomenon of **cognitive dissonance** may be formally defined as "a negative, unpleasant state that occurs whenever a person holds two cognitions that are psychologically inconsistent". Two cognitions are in a dissonant relationship when the opposite of one cognitive element follows from the other. Cognitive dissonance is psychologically uncomfortable and result in feelings of discord. This, in turn, motivates people to take steps to reduce psychologically inconsistent cognitions that are the cause of dissonance.

Researchers have identified several techniques people employ to reduce dissonance. Many of these techniques are beyond the scope of this study, but are discussed in Perloff (2010, p.240). However, it is important to take

note of two of the techniques people employ to reduce dissonance, since it holds important implications for promoting and maintaining the social acceptability of hunting. Perloff (2010, p.239) explains that steps to reduce cognitive dissonance very often involve people changing their attitudes on a topic. Therefore, under certain circumstances, if a persuasive message is effectively designed to induce cognitive dissonance it could result in people changing their attitudes towards a topic in an attempt to reduce the dissonance in their cognitions. Thus, when people experience cognitive dissonance, they often persuade themselves to adopt a new attitude on a topic in an attempt to reduce dissonance. According to Perloff (2010, p.239), “the cognitive dissonance theory thus assigns central importance to the power of self-persuasion”. It is important to note, however, that people do not always reduce dissonance by altering their attitudes. Instead, people may also reduce dissonance by rejecting information or new cognitions that are in dissonance with their existing cognitions. This is most likely to happen when the newly formed cognitions are in dissonance with any existing cognitions that are held with great certainty. If people’s existing cognitions are strongly held, they would in all likelihood reject information that would cause cognitive dissonance.

Shay (1977, pp.130 – 131) suggests one way in which the cognitive dissonance theory may be employed to maintain the social legitimacy of wildlife management practices such as hunting. Shay (1977, pp.130 – 131) suggests that if a wildlife agency builds a strong enough image as the protector of all species in the minds of the non-hunting public, what the

agency says about hunting (or other issues) will automatically take on more strength. If the agency's image is strong enough, the non-hunter will tend to reject the discrediting proclamations of anti-hunters because they create dissonance. If the agency responds to the plight of all species and every problem of wildlife, it will become a known, accepted friend and benefactor of all wildlife, and the validity of game management programs may not be seriously questioned by the largest segment of the public. Hence, propaganda of hunting antagonists will become self defeating.

2.2.7 Suitability of standard attitude scales for assessing attitudes and understanding its causal determinants

In section 2.2.1 it was explained that attitudes can be assessed in a reliable and valid fashion through most standard attitudinal scaling techniques, and that these techniques are widely accepted and commonly used in contemporary attitudinal research. Fishbein and Ajzen (2010, p.96) note that although items on standardised attitude scales might be good indicators of the underlying attitude, they do not necessarily provide any valid information about the causal determinants of the attitude. In fact, the item selection criteria and procedures inherent in standard attitude scaling methods virtually guarantee that some of the most important causal determinants of an attitude are eliminated from consideration (Fishbein & Ajzen, 2010, p.93). Fishbein and Ajzen (2010, pp.85 – 96) gives a clear and comprehensive explanation in support of this argument. To summarise, Fishbein and Ajzen explain that

investigators who use standard attitudinal scaling techniques to measure attitude, usually bring to the task an assumption that the items on the scale will provide information from which they can infer the causal beliefs, feelings, and intentions people hold with respect to the attitude object. On the contrary, however, the researcher designs questionnaires containing scale items (e.g., belief statements) which he thinks could perhaps explain the attitude a person might hold about a particular attitude object or behaviour. Clearly then, this procedure relies purely on the researcher's intuition and completely ignores the notion of accessibility in memory (see section 2.4.5). As a consequence, many of the attitude scale items that appear on an attitude questionnaire may never have been considered by the respondents prior to receiving the questionnaire. Therefore, the information that is derived from standard attitude scales will not be able to provide valid information about the causal determinants of an attitude. Furthermore, the item selection criteria inherent in standard attitudinal scaling techniques entail that items are included on the scale only because they are found to be good indicators of the underlying attitude, and not because they provide information about the causal determinants of an attitude. For this reason, standard attitudinal scaling techniques may very well be valid indicators of an attitude under investigation, but it does not offer a good or valid basis for learning about the causal determinants of a particular attitude. Moreover, the item selection criterion inherent in standard attitude scaling methods, place limits on the nature of the items that may be included on the scale. Specifically, belief statement items that represent a well know fact will not meet the standard item selection criterion and will therefore be excluded from the scale. This is because

virtually everybody will either agree or disagree with the belief statements that represent a well known fact. Clearly, if people with different attitudes are equally likely to agree or disagree with a statement, their agreement or disagreement cannot be used to infer their attitudes. For this reason, belief statements that represent a well know fact will fail to correlate with the total attitude score and, as a result, these belief statements will not meet the standard item selection criterion and will thus be incorrectly assumed to be irrelevant items. In a similar manner, belief items are also often eliminated from consideration because they are evaluatively ambiguous. Thus, if for some individuals agreement with an item implies a positive attitude whereas for others it implies a negative attitude, knowing that a given individual agrees with the item does not enable one to infer that person's attitude or any of the determinants of the attitude.

In the above paragraph it was pointed out that while standard attitude scaling techniques may be valid indicators of an underlying attitude, they cannot provide a valid basis for investigating the causal determinants of an attitude. Thus, in conclusion, while standard attitude scaling techniques may be adequate for addressing the first part of the main research question (namely, to assess the public's attitudes towards hunting), it is inadequate for addressing the second part of the main research question (namely, to explore the implications that the causal determinants of the public's attitudes towards hunting hold for improving the social legitimacy of hunting). It was explained that the reason for the latter is, firstly, because the procedure for selecting scale items that are included in standard attitude scales are largely based on

the intuition of the researcher and clearly ignores the notion of accessibility in memory. Secondly, the item selection criteria inherent in standard attitudinal scaling techniques entail that items are included on the scale only because they are found to be good indicators of the underlying attitude, and not because they are able to shed light on the causal determinants of the attitude. Thirdly, it was explained that standard attitude scaling methods cannot provide a valid basis for investigating the causal determinants of an attitude because the item selection criterion inherent in standard attitude scaling methods eliminate factual and ambivalent items which may be important determinants of an attitude. Since standard attitude scales cannot provide a valid basis for investigating and understanding the causal determinants of an attitude, it will consequently be inadequate for addressing the second part of the main research question (namely, to explore the implications that the causal determinants of the public's attitudes towards hunting hold for effectuating a positive change in their attitudes towards hunting).

2.3 SELECTING AN ADEQUATE AND VALID RESEARCH APPROACH FOR ASSESSING, UNDERSTANDING AND CHANGING ATTITUDES TOWARDS HUNTING

In light of the discussion in the previous section, it is clear that standard attitude scaling techniques alone will not be able to provide a suitable and valid research approach that will completely meet the needs of this particular study. This section will therefore focus on selecting an adequate and valid

research approach for the study. It stands to reason that when selecting a valid research approach that would be most adequate for a specific study, the choice must ultimately be guided by the study's main research purpose (see section 1.2 of chapter 1).

According to Daigle, Hrubes and Ajzen (2002, p.2) and Manfredi (2008, pp.89 – 91), attitude studies related to human dimensions of wildlife generally follow two different approaches, namely a descriptive approach or a theoretical approach. Both descriptive and theoretical approaches will now be considered with regard to their adequacy as a research approach to this particular study.

2.3.1 Descriptive approaches versus theoretical approaches

Over the past 25 years, research has furnished a great deal of descriptive information about people's attitudes towards hunting and other wildlife-related activities (Hrubes, Ajzen & Daigle, 2001, p.2). The majority of research concerning human dimensions of wildlife follows descriptive, non-theoretical approaches. Due to the ease of conducting and interpreting these studies, they have become a common approach for studying human dimensions of wildlife or any other natural resources (Manfredi, 2008, pp.89 – 90). Despite the popularity of descriptive approaches, they cannot be generalised and their utility is typically quite restricted, and in some cases, their validity is

questionable (Manfredo, 2008, p.90). Descriptive approaches to studying attitudes generally make use of standard attitudinal scaling techniques because it provides a reliable measure of attitude and produces information that is generally of a descriptive nature (it was established earlier in section 2.2.6 that standard attitude scales will not be adequate for the purpose of this particular study). Aside from producing descriptive information, studies following descriptive approaches typically also explore the association of a particular issue with available descriptive variables (e.g., do results vary by high- versus low-income respondents, rural versus urban respondents, males versus females, etc.). Based on these associations, attempts are then made to infer or explain why attitudes are held (Manfredo, 2008, p.90). Clearly, such explanations of why attitudes are held, and consequently any suggestions on how to effectuate a change in these attitudes, would depend on the researcher's intuition rather than on the basis of a systematic and empirically validated approach (also see section 2.2.6). Hence, descriptive approaches of this nature will not be suitable for this study.

Another popular descriptive approach is to identify broad values related to hunting or other wildlife-related activities (Hrubes *et al.*, 2001, p.2; Manfredo, 2008, p.90). A number of studies have demonstrated that values are capable of influencing behaviours, attitudes and beliefs (i.e., Homer & Kahle, 1988). While these approaches are useful in exploring basic and enduring patterns of thoughts amongst people (i.e., their values), Manfredo (2008, p.90) explains that it inadequately captures the process by which people attend to information or retrieve information in forming an attitude. Consequently,

descriptive approaches of this nature cannot serve as a valid basis for understanding or changing attitudes. Moreover, Manfredo (2008, p.90) also explains that much of the information represented by items on these type of surveys is unlikely to occur to the person without prompting (thus, it ignores the notion of saliency or accessibility in memory – see section 2.4.5) and the instrument itself actually influences the attitude that is reported. Hence, findings from such a survey may not accurately reflect the attitudes of the population of interest. Manfredo (2008, p.90) warns that the latter issue would be of particular concern when studying attitudes on topics with which the population of interest have little information or experience. Manfredo (2008, p.90) points out that this is generally a common situation when conducting research on wildlife-related topics amongst the general public. In light of the shortcomings discussed in this paragraph, it should be clear that descriptive approaches based on value-attitude relationships will also not be suitable for this study.

In sum, due to the apparent shortcomings of descriptive approaches, it is unable to provide a valid approach to understand and potentially change attitudes and its causal determinants. Hence, descriptive approaches would be of little value to this particular study. This, however, is not to discredit studies which have followed descriptive approaches. On the contrary, Fishbein and Ajzen (2010, p.25) recognise the importance of descriptive studies, and explain that such studies have provided a valuable and detailed account of descriptive information (such as demographical, social, and other variables) that are specific to a given attitudinal or behavioural domain.

Although many studies have produced valuable and detailed descriptive information on attitudes, beliefs and values associated with wildlife-related activities such as hunting, the effort to build a cumulative body of knowledge has been hampered by lack of a sound theoretical foundation (Hrubes *et al.*, 2001, p.2). Hrubes *et al.* (2001, p.2) explain that a theoretical foundation is essential to help integrate the diverse research findings and to provide a framework for the prediction and explanation of wildlife-related attitudes and actions. Campbell and Mackay (2003, p.184) and Manfredi (2008, pp.89 – 91) also recognise the need for more theory-based research with regard to human dimensions of wildlife and natural resources. Therefore, in light of the need for more theory-based research and because of the inadequacies of descriptive approaches with regard to this particular study, it is thus necessary to consider the possibility of approaching it from a theoretical point of view.

Despite the obvious need for more theory-based research, Manfredi (2008, p.89) explains that relatively few theoretical approaches have been applied in the domain of human dimensions of wildlife or natural resources. Aside from isolated cases where attitude theories have been applied, the most frequently applied attitude theory in the area of human dimensions of wildlife and natural resources are Fishbein and Ajzen's theory of reasoned action (Manfredi, 2008, p.90). Rossi and Armstrong (1999, p.41) agree and state that the theory of reasoned action is a commonly used basis for methodologies in human dimensions of natural resources research. The theory of reasoned action is frequently used for a number of reasons: it offers a simple explanation of the structure and formation of attitude with practical

implications for changing attitudes or behaviour; its methods are described clearly (Manfredo, 2008, p.92); and it is well supported by empirical evidence across various disciplines (Ajzen, 1991, p.179; Eagly & Chaiken, 1993, p.175; Maio & Haddock, 2009, p.69). Eagly and Chaiken (1993, pp.231, 236 & 239) explain that no other attitude theories provide such a unique and appealing approach to investigating, understanding and changing attitudes and behaviours as the theory of reasoned action. Consistent with the latter, Petty and Cacioppo (1981, p.204) state that the theory of reasoned action provides “the most complete informational analysis of attitudes, and a coherent and highly useful model of the relationship amongst beliefs, attitudes, and behaviours”. Stiff and Mongeau (2003, p.63), as well as Sutton *et al.* (2003, p.234) also agree and explain that the theory of reasoned action has proven to be excellent for predicting, investigating and understanding attitudes and behaviours across a wide variety of situations. According to Perloff (2010, pp.99 – 100), the theory of reasoned action has an excellent reputation in attitudinal and behavioural research. Moreover, according to Armitage and Conner (2001, p.471), as well as Eagly and Chaiken (1993, pp.231 & 236), the theory of reasoned action is arguably the most popular and most widely researched attitude theory. Manfredo (2008, pp.85 & 92), Rossi and Armstrong (1999, p.41), as well as Whittaker, Manfredo, Fix, Sinnott, Miller and Vaske (2001, p.1115) regard the theory of reasoned action as one of the most influential theoretical approaches to understanding and changing attitude and behaviour over the past four decades. Furthermore, Rossi and Armstrong (1999, p.41) suggest that the reasoned action model provides a basis for identifying where and how to target strategies for changing attitudes

and behaviours. According to Manfredo (2008, p.92) the theory of reasoned action predominates in applied fields of attitudinal and behavioural research and, because of its utility and empirical validity, it is likely to subsist.

From the above discussion it is clear that the reasoned action approach is widely recognised amongst contemporary researchers and theorists as a valid and adequate approach for studying attitudes and behaviours. It is also evident that the theory of reasoned action is generally recognised as an approach that provides a popular explanation of the structure and formation of attitudes. Furthermore, it can be seen that the reasoned action perspective of attitude structure and formation contains insight about the underlying causal determinants of people's attitudes and provides a basis for developing strategies to change attitudes. Clearly then, the reasoned action approach would be able to meet all the needs of this study's main research purpose. Therefore, since the theory of reasoned action is widely recognised as a popular approach, and because it is in line with the main research purpose of this study, it stands to reason that the theory of reasoned action may be considered as a possible theoretical approach for this study. In the next section, the empirical validity of the theory of reasoned action, as well as its adequacy as a conceptual framework for conducting research in the area of human dimensions of wildlife and natural resources, will be considered.

2.3.2 Empirical validity of the reasoned action approach and its adequacy as a conceptual framework for research pertaining to human dimensions of wildlife and natural resources

Over the past 30 years the theory of reasoned action stimulated a great deal of empirical research and well over 1000 empirical papers based on the reasoned action approach have appeared in professional scientific journals (Fishbein & Ajzen, 2010, p.xvii). It is an enduring theory that has been tested extensively across a variety of attitudinal and behavioural situations (Rossi & Armstrong, 1999, p.42; Stiff & Mongeau, 2003, p.63; Whittaker *et al.*, 2001, p.1116), and is well supported by empirical evidence across various disciplines ranging from blood donation, strategy choices, church attendance, family planning, eating at fast-food restaurants, smoking marijuana, dental hygiene issues, having an abortion, purchasing various consumer products, sexual behaviour, a variety of health-related issues, political voting choices and many more (Eagly & Chaiken, 1993, p.175). In addition to individual studies, a number of meta-analyses have also provided considerable empirical support for the theory of reasoned action (e.g., Ajzen, 1991; Albarracín, Johnson, Fishbein & Muellerleile, 2001; Armitage & Conner, 2001; Godin & Kok, 1996; Hausenblas, Carron & Mack, 1997; Sheppard, Hartwick & Warshaw, 1988).

A considerable number of studies have also provided strong empirical support for the theory of reasoned action as a conceptual framework in research pertaining to the discipline of human dimensions of wildlife and natural

resources in particular. To demonstrate, the theory of reasoned action has been extensively used in human dimensions research pertaining to the management of wildlife and other natural resources (Rossi & Armstrong, 1999, p.41). For example, Bright, Manfredo, Fishbein and Bath (1993), as well as Manfredo, Fishbein, Haas and Watson (1990) applied the theory of reasoned action to investigate and understand attitudes towards the National Park Service's controlled burning policy; Wittmann and Vaske (as cited in Campbell & Mackay, 2003, p.181) used the theory to predict support for wildlife management actions; Pate, Manfredo, Bright and Tischbein (1996) applied the reasoned action model to investigate and understand residents' attitudes towards wolf reintroduction in Colorado; and Zinn, Manfredo, Vaske and Wittmann (1998) employed the reasoned action approach to determine the acceptability of various wildlife management actions. Furthermore, the theory of reasoned action has also been successfully used to investigate attitudes and behaviours with regard to a variety of outdoor recreation and leisure activities. For example, Daigle *et al.* (2002) employed the theory of reasoned action to compare beliefs, attitudes and values amongst hunters, wildlife viewers, and other outdoor recreationists; Fulton, Manfredo and Lipscomb (1996) employed the theory to identify value orientations and attitudes influencing the decision to hunt or fish in Colorado; Hrubes *et al.* (2001) used the theory as a basis to predict and understand hunting intentions and behaviour; Young and Kent (1985) used the theory of reasoned action to understand outdoor recreational behaviour such as camping participation; and Whittaker *et al.* (2001) employed the theory of reasoned action to understand public attitudes towards a proposed urban moose hunt near Anchorage in

Alaska. All of these studies not only provide further empirical support for the reasoned action approach, but it also demonstrates its effectiveness as a conceptual framework in research pertaining to human dimensions of wildlife and natural resources.

Given the large amount of empirical evidence supporting the theory of reasoned action across various disciplines, and the fact that it has successfully served as a conceptual framework for numerous empirical studies in the human dimensions of wildlife and natural resources discipline, it stands to reason that the reasoned action approach may also serve as an empirical valid and adequate approach for this particular study. The theoretical framework of the reasoned action approach will now be discussed as a conceptual framework for assessing and understanding attitudes towards hunting.

2.4 THE THEORY OF REASONED ACTION AS A CONCEPTUAL FRAMEWORK FOR INVESTIGATING ATTITUDES TOWARDS HUNTING AND ITS CAUSAL DETERMINANTS

The theory of reasoned action is an attitude and behaviour theory in social psychology that was developed by Ajzen and Fishbein (1980). This theory not only allows the assessment of attitudes and behaviours, but also provides information about its causal determinants and holds practical implications for changing attitudes and behaviour. Fishbein and Ajzen have been working on

the reasoned action approach both jointly and individually for more than 45 years, modifying and refining its theoretical constructs and measures (Fishbein & Ajzen, 2010, p.17). Over the years the theory of reasoned action has been improved and a standard set of instructions were developed for implementing the theory in attitudinal and behavioural research across a wide variety of domains (Manfredo, 2008, p.92; Stiff & Mongeau, 2003, p.63). In the subsequent sections, a basic outline of the theory of reasoned action in its most current form will be provided, followed by a detailed discussion of each construct of the theory that is of importance to this particular study.

2.4.1 Basic outline of the theory of reasoned action

Figure 2.1 presents a schematic presentation of the conceptual framework of the theory of reasoned action. In its simplest form, the reasoned action approach assumes that human social behaviour follows reasonably and often spontaneously from the beliefs people possess about performing the behaviour under consideration. The beliefs people hold originate from information people acquire from a variety of sources, and are subject to various social and individual differences. These differences not only influence the experiences people have and the sources of information to which they are exposed, but also the way in which they interpret and remember this information (Fishbein & Ajzen, 2010, p.20). The potential influences of these factors on the beliefs people hold are recognised by the theory of reasoned action as **background factors**. The origins of beliefs and the role of

background factors will be discussed later in this chapter. Once a set of beliefs is formed it provides the cognitive foundation from which a person's attitudes and behaviours ultimately follow in a consistent, spontaneous and often automatic fashion. This does not mean that people are assumed to always be logical or rational. The beliefs they hold need not be veridical; instead it may be inaccurate, biased, or even irrational. Irrespective of their nature, people's beliefs ultimately determine their attitudes and guide their behaviour (Fishbein & Ajzen, 2010, pp.20 & 24). According to the theory of reasoned action, human behaviour is guided by three kinds of beliefs, namely **behavioural beliefs**, **normative beliefs** and **control beliefs** (Ajzen, 1991, p.189; Fishbein & Ajzen, 2010, p.20).

Behavioural beliefs refer to the beliefs a person may have about the likely positive or negative consequences or outcomes if the behaviour of interest were to be performed (Ajzen, 2011a, *online*). These behavioural beliefs or outcome expectancies are assumed to determine people's attitude towards the behaviour – that is, the degree to which performance of the behaviour is positively or negatively valued (Ajzen, 2011b, *online*; Fishbein & Ajzen, 2010, p.20). In general, to the extent that performance of the behaviour is perceived to result in more positive than negative outcomes, the attitude towards the behaviour will be favourable (Fishbein & Ajzen, 2010, p.20). Thus, for example, one is more likely to have a positive attitude towards hunting if one believes that hunting will lead to positive outcomes or prevent negative outcomes.

Normative beliefs refer to a person's perception of social pressure or social expectations to behave in a specific manner. In other words, people form beliefs that important individuals or social groups in their lives would approve or disapprove of the behaviour (injunctive normative beliefs), as well as beliefs that these referents themselves perform or don't perform the behaviour in question (descriptive normative beliefs) (Ajzen, 2011c, *online*; Fishbein & Ajzen, 2010, p.20). In their totality, these injunctive and descriptive normative beliefs produce a perceived norm – that is, the perceived social pressure to engage or not engage in the behaviour (Ajzen, 2011d, *online*; Fishbein & Ajzen, 2010, p.20). In general, if more important others are believed to approve than disapprove of the behaviour, and if the majority of important others perform the behaviour, people are likely to perceive social pressure to also engage in the behaviour (Fishbein & Ajzen, 2010, p.20). Thus, for example, if a person believes that important referents would approve of him going hunting, or that these referents participate in hunting activities themselves, he would be likely to perceive social pressure to approve of hunting and to participate in hunting activities himself.

Control beliefs have to do with the perceived presence of factors that may facilitate or impede performance of the behaviour. It is assumed that these control beliefs result in a sense of high or low control over performance of the behaviour. This sense of high or low control over performance of a given behaviour is called perceived behavioural control, and refers to people's perceptions of their ability to perform the behaviour (Ajzen, 2011e, *online*; Ajzen, 2011f, *online*; Fishbein & Ajzen, 2010, p.21). In general, if a person

believes that there are more facilitating than inhibiting factors with regard to performing the behaviour, his perceived behavioural control should be high (Fishbein & Ajzen, 2010, p.21). Thus, for example, if a person believes that there is nothing preventing him from going on a hunt, he would perceive his control over going on a hunt to be high. Conversely, if a person believes that he lacks the required skills, knowledge, equipment, money, hunting destination, or any other inhibiting factor, he would perceive his control over going on a hunt to be low.

It should now be clear that, in their respective aggregates, behavioural beliefs produce a favourable or unfavourable **attitude towards the behaviour**; normative beliefs result in **perceived norm**; and control beliefs give rise to **perceived behavioural control**. In combination, attitude towards the behaviour, perceived norm, and perception of behavioural control lead to the formation of a **behavioural intention** (Daigle *et al.*, 2002, p.3) and are considered to be conceptually independent determinants of behavioural intention (Ajzen, 1991, p.188). Intention refers to a person's readiness to perform a specific behaviour. In general, the more favourable the attitude and perceived norm with respect to the behaviour, and the greater the perceived behavioural control over performing the behaviour, the stronger should be a person's intention to perform the behaviour under consideration (Ajzen, 1991, p.188; Daigle *et al.*, 2002, p.3). The stronger the intention, the more likely it is that the behaviour will be carried out. Intention is thus assumed to be the immediate antecedent of behaviour (Hrubes *et al.*, 2001, p.167). It is well recognised, however, that lack of required skill and abilities, or the presence

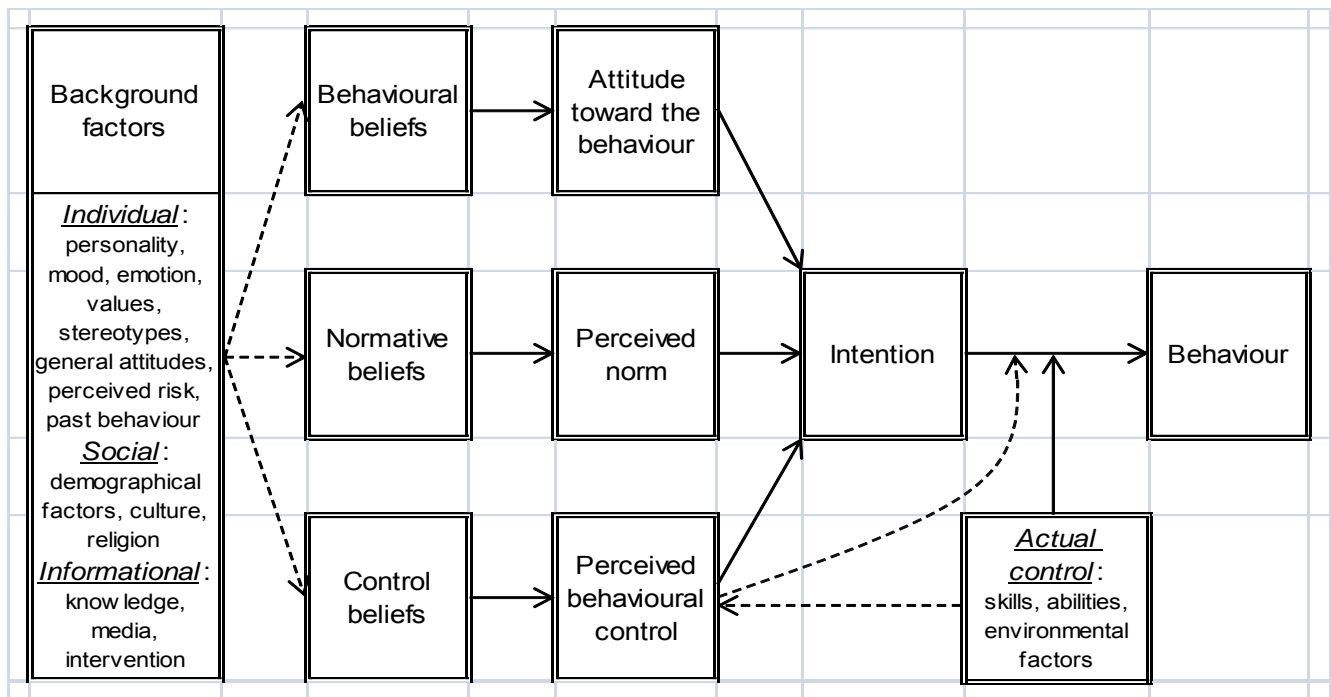
of environmental constraints, may limit volitional control and can thus prevent people from acting on their intentions (Fishbein & Ajzen, 2010, p.21). Thus, successful performance of the behaviour depends not only on a favourable intention but also on a sufficient level of **actual control** over performance of the behaviour (Ajzen, 2011g, *online*).

The theory of reasoned action postulates that attitude towards the behaviour, perceived norm, and perceived behavioural control is conceptually independent determinants of behavioural intention (Ajzen, 1991, p.188). Therefore, each one of these three determinants of intentions can take on different weights – that is, the relative importance of attitudes, perceived norm and perceived behavioural control in the prediction of intention is expected to vary across behaviours and situations. Thus, in some applications it may be found that only the attitude construct has a significant impact on intentions, in others that any two of the constructs are sufficient to account for intentions, and in still others that all three constructs are required to account for intentions (Ajzen, 1991, pp.188 – 189). The relative importance or weight of the different constructs is expected to vary from one population to another, from one person to another, and from one situation or behaviour to another (Fishbein & Ajzen, 2010, pp.22 – 23).

As explained earlier, once a set of beliefs (behavioural, normative, or control beliefs) is formed it provides the cognitive foundation from which attitudes, perceived norms, and perceptions of control – and ultimately intentions and

behaviours – are assumed to follow (Fishbein & Ajzen, 2010, p.24). Therefore, it is at the level of beliefs that most of the concrete information unique to a given attitude or behaviour is obtained. At this level, one is able to learn about the substantive considerations that ultimately guide people's decisions to perform or not to perform the behaviour of interest. This level of analysis offers insight into the ways people think about the behaviour: about its likely positive or negative consequences, the demands placed on them by others, as well as the required resources, possible barriers, and other issues of control. Analysing behaviour or any of its underlying constructs (attitude towards the behaviour, perceived norm and perceived behavioural control) at the level of beliefs, thus provides information that can be used to effectively change behaviour (or any of its underlying constructs). By identifying behavioural, normative, and control beliefs that discriminate between individuals who perform the behaviour of interest and individuals who do not, it is possible to design properly targeted messages or interventions that are aimed at changing their attitude, perceived norm, perceived control, and thus ultimately changing their intention and behaviour (Fishbein & Ajzen, 2010, p.23).

Figure 2.1. SCHEMATIC PRESENTATION OF THE REASONED ACTION MODEL



Source: Fishbein and Ajzen (2010, p.22).

This section served as a basic introduction to the theory of reasoned action, followed by a brief explanation of how the reasoned action approach may serve as a basis for designing attitude or behaviour change interventions. Having formed a basic understanding of the theory of reasoned action, it is now necessary to align the reasoned action approach with the problem statement and goals of this particular study.

2.4.2 Aligning the reasoned action approach with the research purpose of this particular study

So far, the basic concept of the theory of reasoned action has been discussed. Before an in-depth discussion of the empirical and methodological aspects of the theory of reasoned action commence, it is first necessary to clarify which of the various constructs of the theory's framework will be used as a conceptual framework for conducting the research in this study.

From the problem statement in chapter 1 it is clear that this study has two main goals: firstly, to understand attitudes and its causal determinants; and secondly, to explore the implications this has for potentially changing the public's attitudes towards hunting. It should be recalled that the theory of reasoned action provides a conceptual framework which ultimately enables one to predict, investigate, understand, explain, and change behaviours. Since this study is primarily concerned with attitudes towards a behaviour (namely, the behaviour of hunting) and not necessarily with the performance of the behaviour itself, not all of the theory's constructs may be relevant to this study. Instead, only the constructs that are directly related to the attitude elements of human behaviour may be considered to be of relevance to the study. Specifically then, since this study does not set out to predict or explain any behaviour or its behavioural intentions, these two constructs of the reasoned action framework is not of any significance to this study. Furthermore, at a conceptual level none of the control constructs (actual

control, perceived behavioural control and control beliefs) are believed to have any significant influence on the attitudinal constructs (Ajzen, 1991, p.188; Fishbein & Ajzen, 2010, pp.153 – 178). Therefore, none of the control constructs are of any value to the study. The normative constructs are also conceptually independent from the attitudinal construct (Ajzen, 1991, p.188), and are therefore not relevant to this study. Note, however, that there is some evidence which suggests that the normative constructs may have an indirect effect on attitudes to some extent (Fishbein & Ajzen, 2010, p.132). Finally, since the focus of this study is exclusively on attitudes towards hunting, the attitudinal construct and its underlying cognitive structure of behavioural beliefs will be the only conceptual constructs of the reasoned action framework that is of interest to this study.

It should be recalled that the reasoned action approach assumes that beliefs provide the cognitive foundation from which attitudes follow. More specifically, it was said that behavioural beliefs produce an attitude towards the behaviour. Thus, in order to understand the causal determinants of an attitude, it is necessary to analyse the substantive considerations which, together, determine the attitude. These substantive considerations must be analysed at their most basic level, namely at the level of beliefs. It is at the level of beliefs that most of the concrete information unique to a given attitude can be obtained. Analysing attitudes at this level will thus produce information that may have implications for designing appropriate interventions that is aimed at changing attitudes (Fishbein & Ajzen, 2010, pp.20 – 24).

Following the introduction to the basic concept of the reasoned action approach, this section explained which of the constructs of the theory of reasoned action are of relevance to this particular study. In sum, it was pointed out that only the theory's attitudinal construct is of relevance to this study. For this reason, the discussion in this chapter will from this point on focus exclusively on the theory of reasoned action's attitudinal component, because within the conceptual framework of the theory, this component is of greatest relevance for investigating attitudes towards behaviours and its causal determinants.

The subsequent sections of this chapter will briefly explain the procedure for using the reasoned action approach in attitudinal research, followed by a discussion of the relevant empirical and methodological considerations concerning the attitudinal construct of the reasoned action approach and its application in attitudinal research.

2.4.3 Standard procedure for applying the theory of reasoned action

Over the years, Fishbein and Ajzen have developed a standard set of instructions and procedures that should be followed when using their theory as a conceptual framework in attitudinal and behavioural research (Fishbein & Ajzen, 2010; Manfredo, 2008 p.92; Stiff & Mongeau, 2003, p.63). These instructions and procedures must be strictly adhered to because it ensures the

validity and reliability of the research results. A brief overview of these procedures will now follow.

The first step when applying the theory of reasoned action is to clearly **define the behaviour of interest** in terms of its action, target, context, and time elements. The issue of defining the behaviour of interest is addressed in section 2.4.4. The second step is to **specify the research population** under investigation in the study. It should be recalled that this particular study is interested in studying members of the public's attitudes towards hunting. The next step is to conduct **formative research** that is related to the defined behaviour of interest. The formative research largely entails that an elicitation survey be conducted amongst a small sample of the research population. The elicitation survey typically consists of a series of open-ended questions that are designed to elicit and identify those salient beliefs about the behaviour of interest that are commonly held in the research population (those beliefs which are assumed to determine attitudes – see section 2.4.5). A content analysis of participants' open-ended responses to the questions should then be undertaken in order to identify a modal set of salient beliefs which are assumed to represent the research population's salient beliefs. These salient beliefs are then used to construct a questionnaire that is to be administered in the **primary survey** of this study.

The purpose of this section is only to give a broad description of the procedure that should be followed when applying the reasoned action

approach. A detailed discussion of these procedures will follow in the subsequent sections of this chapter.

2.4.4 Defining the behaviour of interest and the principle of compatibility

Fishbein and Ajzen (2010, p.29) explain that the first and in some ways the most crucial step when applying the theory of reasoned action is to clearly define the behaviour of interest. Defining the behaviour of interest is of utmost importance to ensure that the theory's constructs are measured with respect to exactly the same behavior – that is, to ensure that strict compatibility is maintained amongst the different measures (Fishbein & Ajzen, 2010, pp.29 – 32). Although this study's concern is not with understanding behaviour, it is, however, concerned with understanding people's attitudes towards a specific behaviour, namely the behaviour of hunting. For the purpose of this study it is therefore still essential that the behaviour of interest be clearly defined in order to ensure that the attitude construct and its related measures are measured with respect to exactly the same behaviour. In this section, the relevant aspects of defining the behavior of interest will be discussed and a clear definition of hunting (the behaviour of interest in this particular study) will be formulated for the purpose of this study. This section will then discuss the relevant aspects of the principle of compatibility and explain its implications for the study.

Fishbein and Ajzen (2010, p.29) explain that behaviours are observable events that must take place in a certain context, be directed at some target and are usually performed at a given point in time. Therefore, it is useful to think of a behaviour as composed of four elements: the **action** performed, the **target** at which the action is directed, the **context** in which it is performed, and the **time** at which it is performed. A simple example could be: hunting (action element) eland (target) on foot with a skilled bushman tracker in a remote part of Namibia (context) during the next week (time). Fishbein and Ajzen (2010, p.29) explain that sometimes there is more ambiguity in defining a behaviour's elements. Thus, alternatively one may also be able to identify hunting eland as the action element, on foot with a skilled bushman tracker as the context, in a remote part of Namibia as the target, and during the next week as the time element. A third alternative may not specify a target element at all, in which case hunting eland would be the action, on foot with a skilled bushman tracker in a remote part of Namibia would be the context, and the time element would remain the same. Clearly, how the behavior is parsed into action, target, context and time is somewhat arbitrary. It is up to the investigator to define the behavioural criterion as it best fits the research purpose (Fishbein & Ajzen, 2010, pp.29 – 30).

Once the behaviour's elements (action, target, context, time) are specified, the behavior is defined (Fishbein & Ajzen, 2010, p.30). Fishbein and Ajzen (2010, p.30) explain that a change in any one of the elements constitutes a change in the behaviour under consideration. Consider the original example of hunting (action) eland (target) on foot with a skilled bushman tracker in a remote part

of Namibia (context) during the next week (time). It is self-evident that hunting eland is not the same behaviour as viewing or taking pictures of eland (change in action element). It is also obvious that hunting eland and hunting lion (a change in target element) are not the same behaviours. Similarly, hunting eland on foot with a skilled bushman tracker in a remote part of Namibia is a different behaviour from hunting eland from a blind on a small game ranch in South Africa (change in context element). Finally, and perhaps less obvious, a modification of the time element would also alter the behavior in question. In other words, performing a similar behaviour at a different point in time would still constitute a different behaviour.

It is clear that according to Fishbein and Ajzen's definition of behaviour, a change in any one of the behaviour's four elements constitutes a change in the behaviour itself (Fishbein & Ajzen's, 2010, p.30). From the theoretical perspective of the reasoned action framework, it is evident that every behaviour constitutes a different set of explanatory constructs – that is, the attitudinal, normative, and control influences (Fishbein & Ajzen's, 2010, pp.20 – 25). In other words, a change in any one of the four elements of a behaviour would result in a different behaviour, which in turn would result in different attitudinal, normative and control influences. It was already explained that this study is mainly interested in the attitudinal construct of the theory of reasoned action. Thus, for the purpose of this study it can be said that, according to Fishbein and Ajzen (2010, pp.20 – 25), a change in any one of the four elements of a behaviour would result in a different behaviour, which in turn would result in different attitudes and attitudinal influences towards it.

Consistent with Fishbein and Ajzen's approach to defining behaviour in terms of its action, target, context and time elements, a review of literature on attitudes towards hunting also seems to suggest that a change in these four elements of a behaviour will ultimately result in a change in attitudes. More specifically, the available research on attitudes towards hunting seems to suggest that the context elements of a behaviour is particularly important when assessing attitudes towards hunting. From the literature it is apparent that people hold much more favourable attitudes towards hunting if it is performed in an ecological context (for example, using hunting to reduce wildlife populations to benefit wildlife, habitat, or the environment) than when it is performed in the context of recreation or sport (Bossenmaier, 1976, pp.127 – 128; Duda & Jones, 2008, p.5). The literature on attitudes towards hunting also revealed that people hold significantly different attitudes towards traditional native subsistence hunting, hunting for recreation and meat, and hunting for recreation and sport (trophy hunting) (Heberlein & Willebrand, 1998, pp.1076 – 1077). Because traditional native subsistence hunting, hunting for recreation and meat, and hunting for recreation and sport (trophy hunting) have obvious differences in the context in which the action of hunting is performed, they constitute different behaviours, which consequently result in people having different attitudes towards them. Depending on how the elements of this behaviour is parsed, traditional native subsistence hunting, hunting for recreation and meat, and hunting for recreation and sport (trophy hunting) may also be viewed as different action elements of the same behaviour. Furthermore, people also have significantly different attitudes towards legal hunting practices than towards illegal hunting practices such as

poaching (Duda & Jones, 2008, p.2). This difference in attitude is arguably the result of a change in the context in which hunting is performed (legal or illegal context) or by a change in the action element (hunting constitute a different action element than poaching), depending on how the elements of this behaviour is parsed. The literature also reveals that attitudes towards hunting have been observed to vary according to the species being hunted. For example, research shows that the hunting of ungulate species is generally more acceptable than is the hunting of predator species (Duda & Jones, 2008, pp.8 – 9). This change in attitude is brought about by the change in the target element of the behaviour (where hunting is the action element and ungulates or predators the target element). Finally, the literature review on attitudes towards hunting also revealed that a change in the time element of the behaviour of hunting may result in different attitudes towards hunting. For example, one study found that many people who support hunting in general, oppose hunting on Sundays because of religion-based reasons (Duda & Jones, 2008, p.1). Clearly then, a change in any one of the four elements of a behaviour would result in a different behaviour, which in turn would result in different attitudes and attitudinal influences towards it.

Each of a behaviour's four elements – action, target, context, and time – can be defined at various levels of generality or specificity (Fishbein & Ajzen, 2010, p.30). Consider the example of hunting eland (action) on foot with a skilled bushman tracker (context) in a remote part of Namibia (target) during the next week (time). At its most specific level, the behaviour may be defined as a single action (hunting eland), directed at a specific target (in a remote

part of Namibia), performed in a given context (on foot with a skilled bushman tracker) and at a specified point in time (during the next week). By altering the levels of specificity with which the behaviour's elements are defined, it is possible to define the behaviour at various levels of generality (Fishbein & Ajzen, 2010, pp.30 – 31). For example, the action element can be broadened from specifically hunting eland, to hunting any antelope species, to hunting any wild mammalian species and, at its most general level the action element can be defined as a broad category of behaviour, such as hunting wild animals. The target element may also be broadened from a specific remote part of Namibia, to any remote part of Namibia, to Namibia in general, to southern-Africa, or at its most general level the target element may be left completely unspecified. Similar, the context element may be broadened from specifically on foot with a skilled bushman tracker, to just on foot, or at its most general level the context element may also be left completely unspecified. Similarly, the time element could be broadened from a very specific point in time, to any desired point in time or, at its most general level be left completely unspecified. It should be noted that it is possible to generalise or broaden the target, context and time elements of a behaviour to the point where these elements can be left completely unspecified. However, a behaviour cannot be defined without specifying the action element at some level of generality or specificity. In other words, a behavioural criterion always involves an action element (Fishbein & Ajzen, 2010, p.38).

Fishbein and Ajzen (2010, p.31) warn that a behaviour can be defined so narrowly as to be of little theoretical or practical significance. Consider, again,

the example of hunting eland on foot with a skilled bushman tracker in a remote part of Namibia during the next week. No matter how we parse the elements of this behaviour, it is so narrowly defined that understanding peoples' attitudes towards this particular behaviour would be of little value to anybody. Clearly then, "when a behaviour is defined very narrowly, it may limit the utility of the information that is obtained" (Fishbein & Ajzen, 2010, p.31). To move towards a more general and more meaningful behavioural criterion, the action, target, context and time elements may be broadened (Fishbein & Ajzen, 2010, p.32). It is often more meaningful to broaden the elements of a behaviour to such an extent that the definition moves to a broad behavioural category, instead of a single or very particular behaviour. Fishbein and Ajzen (2010, pp.29 – 30) explain that "it is up to the investigator to define the behavioural criterion at a level of generality or specificity that best fits the purpose of the particular research".

In the previous paragraph it was explained that when defining the behaviour of interest, it is sometimes more meaningful to focus on a behavioural category instead of a particular behaviour. However, Fishbein and Ajzen (2010, p.33) warn that it must be realised that people may differ in their understanding of a behavioural category. As an example, Fishbein and Ajzen (2010, p.33) state that "whereas there is general agreement about what it means to attend an aerobics class (a particular behaviour), this may not always be the case with a broad behavioural category, such as exercising". Whereas one person may interpret exercising as jogging, another person may interpret it as lifting weights, and yet another may interpret it as doing aerobics, cycling, or simply

going for a walk. If respondents' understanding of the behavioural category differs, it may pose problems for accurately measuring respondents' attitudes towards the behaviour. Therefore, when assessing attitudes towards a category of behaviour, the investigator should ensure that all participants have the same definition and understanding of the behavioural category, and that their definition matches that of the investigator. This can be achieved by providing respondents beforehand with a clear definition of the behavioural category in question (Fishbein & Ajzen, 2010, p.33). Fishbein and Ajzen (2010, p.33) explain that, for instance, "the investigator might tell respondents that by exercising he means participating in active sports or vigorous physical activities long enough to get sweaty at least twice a week. With this definition in mind, the investigator can then ask respondents about their attitude towards exercising". Alternatively, the definition of the behaviour may also be included in the question, in which case the investigator will ask respondents about their "attitude towards participating in active sports or vigorous physical activities long enough to get sweaty at least twice a week" (Fishbein & Ajzen, 2010, p.33). Another alternative may be to list the specific activities that define the category. Thus, the investigator could make it clear that by exercising he refers to jogging, lifting weights, aerobics, and cycling. The investigator can then measure respondents' attitudes towards engaging in each of the four exercising activities (jogging, lifting weights, aerobics, cycling) and, as a measure of attitude towards the exercising behaviour, simply average the responses (Fishbein & Ajzen, 2010, pp.33 & 47). In sum, it is evident that developing good attitudes measures towards behavioural categories could become a complex task that may be much more difficult than to assess

performance of a single or particular behaviour. The challenge is to ensure that all respondents have the same definition and understanding of the behavioural category, and that their definition matches that of the investigator (Fishbein & Ajzen, 2010, p.33).

Fishbein and Ajzen (2010, p.38) point out that one should carefully distinguish between behaviours and goals when specifying the action element of a behaviour. According to Fishbein and Ajzen (2010, p.38), a goal is something that can be achieved by performing specific behaviours. To illustrate what they mean, Fishbein and Ajzen (2010, p.38) use the two examples of losing weight and getting a high grade on an exam. They explain that “losing weight is not a behaviour but a goal that can perhaps be achieved by performing behaviours associated with dieting or exercising. Similarly, getting a high grade on an exam is a goal students can set for themselves and that they can try to achieve by performing behaviours such as attending classes regularly and reading assigned materials. It may appear that goals differ from behaviours in that they depend on performing one or more preceding actions”. However, most human social behaviour involves a sequence of actions, not a single act. For example, performing a behaviour such as going on a hunting trip, is also preceded by, and dependent upon, other activities that includes finding a place the species of interest can be hunted, purchasing hunting gear, preparing for the hunt, driving to the hunting ranch on time, etc. However, in the case of a behavioural sequence, the ultimate step is in itself an action, whereas in the case of a goal, the final step in the sequence no longer has an action element (Fishbein & Ajzen, 2010, pp.38 – 39).

So far this section has dealt with all the essential criteria and relevant aspects of defining the behaviour of interest, as required by the theory of reasoned action. It is now necessary to clearly define the behaviour involved in this particular study in terms of its action, target, context and time elements as it best fits the research purpose of this study. By now it is obvious that hunting is the behaviour of interest in this study. It should be recalled that any behavioural criterion always involve an action element, whereas all the other elements may be left unspecified. Clearly then, **hunting** must be the action element of the behaviour. Since this study does not set out to investigate attitudes towards any particular kind of hunting (for example, traditional native subsistence hunting, recreational hunting, biltong hunting, trophy hunting, bow hunting, rifle hunting, etc.) the investigator argued that this broadly defined action element (hunting) would be sufficient for the purpose of this study. As far as the context element of the behaviour is concerned, it should be recalled that the literature suggests that the context in which hunting is performed is of particular importance when assessing attitudes towards hunting. Therefore, the investigator argued that it is essential to define the context in which hunting (the action) will be performed at some level of generality or specificity. After thoroughly considering all the possibilities for specifying the context element, the investigator decided that it will best suit the purpose of the study if hunting is put in a **legal** context. Since research found that many people include various forms of illegal hunting (poaching) in their conception of hunting (see Duda & Jones, 2008, p.2), the term legal hunting will ensure that respondents distinguish between hunting and poaching when asked about their attitudes towards hunting. Thus, it is argued that using the term **legal**

hunting will promote a uniform understanding and a similar conception of the behaviour amongst respondents and, consequently, enhance the accuracy with which respondents' attitudes towards hunting can be measured (see paragraph 7 of this section). Furthermore, it was decided to define the target element of the behaviour as **wild animals**. The investigator argued that the research purpose of this study is not aimed at investigating attitudes towards the hunting of a particular animal species or category of animals (such as predators or ungulates). Therefore, a more generalised target element, such as wild animals, will best suit the purpose of this study. Finally, the time element of the behaviour was intentionally left unspecified. The investigator argued that this will best suit the research purpose of this study, because it does not necessarily wish to investigate people's attitudes towards hunting at any particular point in time. In sum then, after considering the research purpose of this particular study in light of the necessary aspects that need to be taken into consideration when defining a behaviour of interest, it was decided that the behaviour of interest will be defined as the **legal hunting of wild animals**, where legal is the context in which hunting takes place, hunting is the action, and wild animals the target.

Now that the behaviour of interest is defined, it is necessary to discuss the role that the behaviour's definition serves in terms of the **principle of compatibility**. The most important prerequisite for understanding attitudes towards a particular behaviour is to ensure that all of the constructs in the reasoned action approach conforms to the principle of compatibility (Fishbein & Ajzen, 2010, p.44). For the purpose of this study, the principle of

compatibility requires that exactly the same definition of behaviour applies when measuring attitudes and when eliciting the causal determinants of the attitude – that is, the measure of attitude should involve the same action, target, context, and time elements as the items that is used to elicit the causal determinants of the attitude. Thus, when trying to understand the public's attitude towards the legal hunting of wild animals, it is essential that this definition (action, target, and context) should apply when eliciting the salient beliefs underlying the attitude during the formative elicitation survey, and when measuring attitudes during the primary survey. The logic behind this requirement is that it will ensure that there is a strong relationship between the measures of an attitude and the causal determinants of that attitude – that is, that the causal determinants can indeed be considered as a valid reflection of the attitude under consideration. In sum, to ensure a strong relationship between an attitude and its causal determinants, it is imperative that the definition of the behaviour that was used to measure attitude must be completely compatible to the definition of the behaviour that was used to elicit the causal determinants of the attitude in terms of the action, target, context, and time elements. The degree of compatibility can greatly impact the accuracy with which attitudes can be understood and explained based on their salient behavioural beliefs.

2.4.5 Salient beliefs as the prevailing determinants of attitude

Up to this point, it was explained that, according to the reasoned action approach, behavioural beliefs form the cognitive foundation on which attitudes are ultimately based. In this section, it will become apparent that not all behavioural beliefs should be seen as causal determinants of a given attitude. Specifically, it will be explained that only salient behavioural beliefs act as the causal determinants of any given attitude. This section explains the concept of salient beliefs, how to elicit and identify salient beliefs in an individual, how to identify a modal set of readily salient beliefs for a population and, finally, this section addresses some important issues related to salient behavioural beliefs as the causal determinants of attitude.

During the basic outline of the theory of reasoned action it was explained that behavioural beliefs (beliefs about the likely consequences of performing the behaviour) represent the informational foundation on which attitudes are based (Fishbein & Ajzen, 2010, p.24). Although people can, of course, form many different beliefs about a behaviour, the theory of reasoned action assumes that only a relatively small number of beliefs determine their attitude at any given moment (Fishbein & Ajzen, 2010, p.98). Research suggests that people are capable of attending to or processing about five to nine items of information at a time (see, Mandler, 1967; Miller, 1956; Woodworth & Schlosberg, as cited in Fishbein & Ajzen, 2010, pp.98 – 99). Clearly then, these limitations on our capacity for processing information suggest that

people are only capable of considering or processing a limited number of beliefs at any given time. Consistent with our capacity for processing information, the theory of reasoned action assumes that a person's attitude towards any behaviour is, at any given moment, primarily determined by no more than five to nine behavioural beliefs (Fishbein & Ajzen, 2010, p.99). Specifically, the theory of reasoned action refers to these prevailing determinants of the attitude as **salient beliefs** (salient behavioural beliefs in the case of attitude towards the behaviour). Note that, in contemporary social psychology the term salience is sometimes also referred to as the notion of accessibility in memory and thus termed **accessible beliefs** (accessible behavioural beliefs in the case of attitude towards the behaviour) (Eagly & Chaiken, 1993, pp.151 – 152; Fishbein & Ajzen, 2010, p.98). Manfredo (2008, p.93) describes the **notion of belief accessibility** or saliency as “the prominence of certain beliefs that comprise a person's attitudes and the extent to which these beliefs routinely occur to an individual in a given situation”. Fishbein and Ajzen (2010, p.98) explain that “salient or accessible beliefs are those beliefs that are activated spontaneously without much cognitive effort in the actual or symbolic presence of the attitude object or behaviour. This activation may occur below conscious awareness, but salient beliefs come readily to mind when a person has reason to retrieve them” (for example, when they are confronted with a given attitude object or behaviour). Of course, given sufficient time and motivation, people can actively retrieve additional beliefs from memory, and these additional beliefs may then also influence the attitude at that point in time. However, the theory of reasoned action merely suggests that under most circumstances a relatively small

number of salient beliefs serve as the determinants of a person's attitude at any given point in time (Fishbein & Ajzen, 2010, p.99). More specifically, only salient behavioural beliefs are assumed to determine attitude towards behaviour. It therefore stands to reason that salient behavioural beliefs are better predictors of attitude than non-salient or less accessible beliefs. Available empirical evidence does indeed show that salient beliefs tend to correlate more highly with an independent measure of attitude than do non-salient beliefs (see Petkova, Ajzen & Driver, 1995; van den Putte, as cited in Fishbein & Ajzen, 2010, p.104; van der Pligt & Eiser, as cited in Eagly & Chaiken, 1993, p.111). Clearly then, the notion that attitudes are predominantly determined by salient beliefs are supported by empirical research.

The importance of belief accessibility in attitude research is widely recognised in contemporary social psychology (Fazio, 1995; Fazio, Chen, McDonel & Sherman, 1982; Fishbein & Ajzen, 2010, pp.98 – 101; Maio & Haddock, 2009, p.28; Manfredo, 2008, pp.93 – 94; Manfredo, Yuan & McGuire, 1992; Perloff, 2010, pp.73 & 76). Manfredo (2008, pp.93 – 94) emphasises the importance of recognising the notion of accessibility in memory (salience) in attitude research and explains that it affects the methodological validity of attitude studies. He explains that in many attitudinal studies, researchers include on a questionnaire a list of belief statements which they assume would represent the beliefs respondents might hold about a particular attitude object or behaviour. Respondents are then typically asked about their level of agreement or disagreement with the statements. This approach has a major

methodological flaw. Because the statements have been selected through the researcher's intuition, many of the belief statements that appear on an attitude scale may never have been considered by the respondents prior to receiving the questionnaire and, therefore may not represent the beliefs that determine respondents' attitudes (also see section 2.2.6). Consistent with the latter, research conducted by Barro, Manfredo and Wells (1994) also found that salient beliefs will predict attitudes better than items that were identified by the researcher.

As already noted, beliefs represent the information people have about the behaviour and this serves as the cognitive foundation for their attitude (Fishbein & Ajzen, 2010, p.98). This is because beliefs carry evaluative meaning which becomes automatically activated when the beliefs are recalled (see section 2.4.6.1). "Just as the denotative meaning of any concept with which a person is familiar is immediately available and need not be constructed, so too is its evaluative meaning or attitude" (Osgood *et al.*, as cited in Fishbein and Ajzen, 2010, p.99). Thus, for example, when people are asked to indicate their attitudes regarding an issue (i.e., the legal hunting of wild animals), they need not review their beliefs about it before they can express a position or attitude. Because of the salient beliefs people hold about the legal hunting of wild animals, this concept carries meaning for them – including evaluative meaning – which is automatically available (Fishbein & Ajzen, 2010, pp.99 – 100; Perloff, 2010, p.51).

By now it should be clear that, in order to understand why a person holds a certain attitude towards the behaviour at a given point in time, it is necessary to assess the person's readily salient behavioural beliefs about the behaviour (Fishbein & Ajzen, 2010, p.100). However, before this can be done it is, of course, necessary to first identify the person's salient behavioural beliefs about the behaviour of interest. It will now be explained how salient beliefs can be elicited and identified by conducting a formative elicitation study. It was explained earlier that salient beliefs are those beliefs that come readily to mind – without much cognitive effort – when a person has reason to retrieve them (Fishbein & Ajzen, 2010, p.99; Manfredo, 2008, pp.86 – 87). Fishbein and Ajzen (2010, p.100), as well as Sutton *et al.* (2003, p.235) explain that salient beliefs are those beliefs that first come to mind when a person is asked open-ended questions with regard to the behaviour of interest. For example, a person may be asked to list the advantages or disadvantages of them performing the behaviour in question, or to list the characteristics, qualities, and attributes they associate with the behaviour of interest (Sutton *et al.*, 2003, p.235; Zajonc, as cited in Fishbein & Ajzen, 2010, p.100). In line with the earlier discussion, it can be suggested that the first five to nine beliefs emitted are readily accessible in memory or salient and are therefore likely to serve as the primary determinants of the person's attitude towards the behaviour under investigation. It is possible, however, that only the first two or three beliefs emitted are readily salient for the individual and that additional beliefs emitted beyond this point are retrieved from memory with more effort. In other words, while listing beliefs about an object or behaviour, a person may recall some forgotten information or make new inferences on the basis of

existing information. In this manner, beliefs that were previously not readily accessible may become part of the salient set of beliefs and, if so, they may become important determinants of the currently prevailing attitude (Fishbein & Ajzen, 2010, pp.100 – 101). Nevertheless, once a person's salient beliefs are identified, it is then possible to assess those salient beliefs as the casual determinants of the person's attitude by measuring belief strength and outcome evaluation in the manner described in the next section (section 2.4.6).

According to the theory of reasoned action, when eliciting salient beliefs it is essential to ensure complete compatibility with respect to the action, target, context, and time elements of the behaviour under investigation (Fishbein & Ajzen, 2010, p.101). For example, if we are interested in the determinants of a person's attitude towards the legal hunting of wild animals, it is essential to elicit salient beliefs about this particular behaviour. Thus, one could ask participants to list the advantages and the disadvantages, or the positive and negative aspects and consequences of the legal hunting of wild animals. Questions such as these observe the principle of compatibility in that they refer to the behaviour of interest in terms of the same action, target, context, and time elements. Furthermore, Fishbein and Ajzen (2010, p.101) point out that it must also be carefully considered whether respondents should be asked about them personally performing the behaviour, or about performance of the behaviour in general. This is because the consequences people expect as a result of their own performing of the behaviour may differ from the consequences they associate with performance of the behaviour by others

(Fishbein & Ajzen, 2010, p.101). For example, a person may associate mostly favourable consequences with the hunting of wild animals in general (perhaps that it contributes to the conservation of wildlife, or that hunting is an important wildlife management instrument), but may believe that this behaviour would produce mostly negative consequences for him personally if he is to perform the behaviour himself (perhaps having feelings of regret after killing an animal, or having to see a dead animal). This consideration would clearly depend on the purpose of the study. Thus, when the objective of the study is to ultimately understand why people engage in a specific behaviour or not, respondents should be asked about them personally performing the behaviour – for example, they could be asked to list the advantages and disadvantages of them performing the behaviour in question. However, when the objective of the study is to understand people's attitude towards the behaviour in general, it would be suitable to simply ask respondents to list the advantages and disadvantages of the behaviour in question. In the case of this particular study, the purpose is to assess and understand people's attitude towards the legal hunting of wild animals in general, and not necessarily towards the act of legally hunting wild animals themselves. Accordingly then, respondents' salient beliefs should be elicited by asking respondents open-ended questions which refers to the performance of the behaviour in general.

Consistent with most contemporary psychological understandings of attitudes, the theory of reasoned action recognises that it is necessary to distinguish between two interrelated aspects of attitude, namely the instrumental and

experiential aspects of attitude (see section 2.2.3) (Fishbein & Ajzen, 2010, p.82). Instrumental aspects of attitude involve such dimensions as harmful–beneficial, useless–useful, and wise–foolish, whereas experiential aspects are reflected in such dimensions as pleasant–unpleasant, boring–interesting, dislike–like, and enjoy–hate (Fishbein & Ajzen, 2010, p.82; Sutton *et al.*, 2003, pp.234 – 237). Clearly, the instrumental aspects of attitude reflect the beliefs people hold about the positive or negative consequences associated with the performance of the behaviour, whereas the experiential aspects reflect the beliefs people hold about the positive or negative experiences or emotions associated with the performance of the behaviour (Fishbein & Ajzen, 2010, p.84). Fishbein and Ajzen (2010, p.85) as well as Sutton *et al.* (2003) regard it necessary to take into consideration both the instrumental and experiential aspects of attitudes when eliciting salient beliefs, since both aspects may have an influence on the overall attitude (see section 2.2.3). Manstead and Parker (1995) found that the wording of the open-ended questions – as was recommended in the original formulation of the reasoned action approach (which only referred to advantages and disadvantages) – are likely to elicit instrumental beliefs rather than experiential beliefs, thus yielding a biased set of salient beliefs. In their study, which attempted to elicit both kinds of beliefs with respect to committing various driving violations, Manstead and Parker (1995) reported that responses to questions designed to elicit salient instrumental beliefs did not overlap at all with responses to questions designed to elicit salient experiential beliefs: “When asked about the advantages and disadvantages of speeding (instrumental), respondents indicated that speeding reduces journey times, can cause an accident, may

result in being stopped by the traffic police, and so on. When asked what they liked or disliked about speeding (experiential), respondents indicated that speeding made them feel exhilarated, or nervous, or powerful, or frightened, and so on" (Manstead & Parker, 1995, p.90). Clearly then, the salient beliefs that were elicited by questions designed to prompt instrumental outcomes are completely different from those that were elicited by questions designed to prompt experiential outcomes. The findings of Manstead and Parker (1995) are also confirmed by those of Ajzen and Driver (1991), who investigated the salient beliefs about participating in recreational activities such as mountain climbing, as well as by Sutton *et al.* (2003) who conducted an analysis of salient beliefs about being more physically active. Thus, in conclusion, in order to obtain an unbiased set of salient beliefs, both instrumental and experiential adjective pairs should be used to identify salient beliefs (Fishbein & Ajzen, 2010, p.85; Sutton *et al.*, 2003, p.246). It is important to realise, however, that an unbiased set of salient beliefs need not always include both instrumental and experiential beliefs. For attitudes towards some kinds of behaviour, it may be found that attitudes are primarily based on instrumental beliefs, whereas for other attitudes, the underlying beliefs are primarily experiential in nature. In the most instances, however, an unbiased set of salient beliefs will be composed of both types of items. In sum then, it is necessary to include both instrumental and experiential adjective pairs in the formative research that is aimed at eliciting salient beliefs (Fishbein & Ajzen, 2010, p.85).

In the above paragraphs it was explained that an individual's salient beliefs may be elicited through open-ended questions which requires the individual to retrieve the readily available salient beliefs that form the basis of his attitude. Although this approach provides valuable insight into the basis for an individual's attitude, it may prove to be somewhat problematic when used for investigating the attitudes of a population. This is because when it is applied to a population consisting of many different individuals, the elicitation procedure will usually produce sets of beliefs that differ from respondent to respondent in terms of its content and number. This makes it difficult to describe or summarise the salient beliefs held in a population and, therefore, to compare the beliefs of different populations or to submit their responses to quantitative analysis. For this reason, it is more practical to identify the set of beliefs that are salient in a given population – that is, the **modal set of salient beliefs** (Ajzen & Fishbein, 1980, p.68; Fishbein & Ajzen, 2010, p.102). These modal salient beliefs of a population can be identified in formative research by asking a sample of individuals from the population of interest a series of open-ended questions with regard to performing the behaviour under investigation. A typical example of such open-ended questions would be to ask respondents to list the advantages and disadvantages (instrumental aspects), as well as their likes and dislikes (experiential aspects) of the behaviour under investigation (Fishbein & Ajzen, 2010, p.102; Sutton *et al.*, 2003, p.235).

Once individual respondents from a sample of the research population have listed their individual salient beliefs, it must be decided which of those salient beliefs to include in the modal set. This is done by conducting a content

analysis of the various beliefs emitted by different individuals (Fishbein & Ajzen, 2010, p.102; Sutton *et al.*, 2003, p.235). It involves organising the responses by grouping together beliefs that refer to similar outcomes and counting the frequency with which each outcome was listed (Ajzen & Fishbein, 1980, p.68). Fishbein and Ajzen (2010, p.102) explain that “only when the differences between the outcomes listed by individuals are clearly semantic, they should be considered equivalent and grouped together”. To demonstrate, they use an example of eliciting beliefs about drinking alcohol. They explain that while some respondents may list vomiting as a possible outcome, others may list throwing up. These terms clearly refer to the same outcome. Also listed may be the belief that drinking alcohol makes one feel nauseous. Here the investigator must decide whether this refers to vomiting or to a different outcome. With regard to a decision of this kind, Fishbein and Ajzen (2010, p.102) state that “a useful guideline is to ask whether the two outcomes in question (i.e., vomiting and being nauseous) could reasonably be emitted by the same person”. Furthermore, if many respondents listed both outcomes, then the outcomes should be treated as separate beliefs. However, if only a few respondents listed both outcomes, one could decide that different individuals use different labels to refer to the same outcome. Fishbein and Ajzen (2010, p.102) continue and explain that the researcher may also want to combine outcomes that are listed with a low frequency, but have something in common. For example, different respondents may mention weight gain, headaches, and stomach aches as outcomes of drinking alcohol. Although these are not identical outcomes, all three refer to relatively minor side effects. Despite the fact that each outcome might have been mentioned

by only a few respondents, when taken together they suggest a readily salient belief in the population concerning minor side effects of drinking alcohol. To capture this belief, a statement such as '*my drinking alcohol leads to minor side effects*' could be included in the modal set (Fishbein & Ajzen, 2010, p.102). Ajzen and Fishbein (1980, p.69) explain that it is up to the researcher to use his common sense during the content analysis, since there are no clear rules that must be followed.

The final decision to be made is how many of the identified salient beliefs within the population to include in the modal set (Fishbein & Ajzen, 2010, p.103). Before this decision can be made, it is first necessary to consider some related issues. When an individual's salient behavioural beliefs are elicited, it is reasonable to assume that those beliefs emitted by the individual are indeed the causal determinants of that individual's attitude. However, salient beliefs that are elicited from a sample of a population can be assumed to contain information about the causal determinants of the attitude held by that specific population, but it is not to say that every salient belief emitted by the elicitation sample is necessarily a salient belief for every individual in the sample. Instead, as stated earlier, eliciting the salient beliefs of a population will usually produce sets of beliefs that differ from respondent to respondent in terms of content and number (Fishbein & Ajzen, 2010, p.102; Sutton *et al.*, 2003, pp.234 – 250). Based on the latter issue, Sutton *et al.* (2003, p.249) foresaw that this procedure of identifying a modal set of salient beliefs for a population will most likely produce two errors. Firstly, it may fail to include one or more of an individual's salient beliefs in the modal set and, secondly, one or

more of the beliefs that are included in the modal set may not be a salient belief of some individuals. Terry, Hogg and White (2000, pp.67 – 93) also recognise this particular methodological problem in the theory of reasoned action's use of sets of modal salient beliefs. These problems are, however, to some degree unavoidable due to the previously discussed practical considerations (see paragraph 9 of this section). To the knowledge of the researcher, the literature does not provide any better alternative approach to identify a modal set of salient beliefs for a population that can be used to investigate the underlying determinants (salient beliefs) of a population's attitude. Consequently, the researcher is of the opinion that, despite these two recognised shortcomings of this approach, it is arguably the only practical approach for identifying a modal set of salient beliefs for a population. Nevertheless, despite these two shortcomings, the theory of reasoned action has proven its adequacy in attitudinal research and enjoys strong empirical support (see section 2.3.2). With the latter in mind, it may be argued that this shortcoming may have little effect on the empirical validity of studies which is based on modal sets of salient beliefs.

Returning to the above issue of deciding how many of the identified salient beliefs within the population should be included in the modal set. Fishbein and Ajzen (2010, p.103) suggest three possible decision rules that may be used to guide a researcher's decision as to how many salient beliefs to include in the modal set. The first approach is to simply include the 10 or 12 most frequently mentioned outcomes. They explain that this procedure results in a modal set that is likely to include at least some of the readily

available salient beliefs listed by each respondent in the sample. The second possibility is to use those beliefs that exceed a certain frequency. For example, the researcher may decide to include in the modal set those beliefs that were mentioned by at least 10% or 20% of the sample. The third alternative is to choose beliefs by their frequency of emission until a certain percentage of all beliefs listed, perhaps 75%, are accounted for. For example, if the total number of beliefs emitted by all participants in the elicitation sample was 500, a 75% decision rule would require that the researcher includes in the modal set as many of the most frequently mentioned outcomes as needed to account for 375 emitted beliefs. Fishbein and Ajzen (2010, p.103) recommend that the latter decision rule be used and explain that it is the least arbitrary and most reasonable decision rule, though they do not explain why. Sutton *et al.* (2003, p.250) criticise the three decision rules suggested by Fishbein and Ajzen and argue that “none of them has an explicit rationale”.

This section explained that not all beliefs could be seen as causal determinants of attitude, but instead, only salient beliefs act as the underlying causal determinants of attitude. Moreover, the concept of salient beliefs was explained, as well as how a modal set of salient beliefs for a population could be elicited in order to identify the underlying causal determinants of a population's attitude. Once a population's modal salient beliefs are identified, it is then possible to assess these salient beliefs as the casual determinants of the population's attitude in the manner described in the next section (section 2.4.6).

2.4.6 Attitudes and its determinants

The attitudinal construct of the theory of reasoned action is of particular importance to this study, because it provides a conceptual framework and valid approach to fully solve the study's main research question. This section is focused on providing a detailed discussion of the theory's attitudinal construct. More specifically, this section will commence with a discussion on how attitudes are defined in terms of the theory, followed by a discussion of the formation of attitudes and its cognitive structures. This section then explains how attitudes can be assessed and understood based on an investigation of its underlying cognitive structure.

2.4.6.1 Salient beliefs as a basis of attitudes and the expectancy-value model

In accordance with most contemporary views (see section 2.2.1), Fishbein and Ajzen (2010, pp.76 & 125) define attitude as “a latent disposition or tendency to respond with some degree of favourableness or unfavourableness to a psychological object”. Their theory of reasoned action's belief-based approach to the formation of attitudes is based on one of the most popular models of attitude formation and structure, namely the expectancy-value model (Fishbein & Ajzen, 2010, pp.97 & 126). Eagly and Chaiken (1993, pp.106, 109 & 231), as well as Kruglanski and Stroebe (2005, p.328) also recognises the popularity of the expectancy-value model and state

that it is the most popular model for describing how beliefs are combined to form and change attitudes. Eagly and Chaiken (1993, pp.231 & 236) explain that the expectancy-value model is quite appealing as a way of thinking about attitude formation and change. Perloff (2010, pp.50 – 51) emphasises that the expectancy-value model is a prevailing attitude theory that is supported by an abundance of empirical evidence. The expectancy-value model of attitude is embodied in the theory of reasoned action and forms an integral part of the reasoned action approach (Ajzen, 1991, p.192; Fishbein & Ajzen, 2010, p.98). One of the most complete statements of the expectancy-value model can be found in Fishbein's (1963; 1967) summation theory of attitude, although somewhat narrower versions were proposed earlier by Carlson (1956), Peak (1955), and Rosenberg (1956).

Consistent with the expectancy-value model, the theory of reasoned action postulates that attitudes develop reasonably and spontaneously from the salient beliefs people hold about the attitude object (Ajzen, 1991, p.191). According to Eagly and Chaiken (1993, p.103) and Manfredo (2008, p.78) this point of view is not unique to the expectancy-value model, but is widely shared amongst most contemporary researchers and theorists. Generally speaking, beliefs about an object are formed by associating the object with various characteristics, qualities, and attributes (Fishbein & Ajzen, 2010, p.96). Fishbein and Ajzen (2010, p.96) explain that beliefs may be defined as “the subjective probability that an object has a certain attribute”. Each belief links an object to an attribute. In the case of behaviour, however, each belief links the behaviour in question to a certain outcome or expectation of the likely

consequences (Fishbein & Ajzen, 2010, p.126). Since people have a pre-existing positive or negative evaluation of the likely outcomes of the behaviour, they automatically and simultaneously acquire an attitude towards the behaviour (Ajzen, 1991, p.191). For example, a person may believe that the legal hunting of wild animals (the behaviour) leads to the endangerment of wildlife (the outcome). Clearly, this belief links the behaviour to an outcome that is likely to have a pre-existing negative evaluation. In this fashion, people form unfavourable attitudes towards behaviours they believe have largely undesirable outcomes and favourable attitudes towards behaviours they associate with mostly desirable outcomes (Ajzen, 1991, p.191; Albarracín *et al.*, 2001, p.143; Fishbein & Ajzen, 2010, p.97). Consistent with the latter conceptualisation of attitude, the expectancy-value model postulates that **attitude towards behaviour** is a function of the strength of a person's accessible beliefs that the behaviour will result in specific outcomes (**belief strength**), together with the person's positive or negative evaluations of those perceived outcomes (**outcome evaluation**) (Albarracín *et al.*, 2001, p.143; Fishbein & Ajzen, 2010, p.104).

The expectancy-value model's approach to the formation of attitudes is shown algebraically in Equation 3.2:

$$A_B \propto \sum_{i=1}^n b_i e_i$$

(Equation 3.2)

where A is the attitude towards performing behaviour B , b_i is the strength of the belief that performing behaviour B leads to outcome i , e_i is the evaluation of outcome i , and n is the number of salient or accessible outcomes. Fishbein and Ajzen (2010, p.104) explain that, from a theoretical perspective, the expectancy-value model's belief index ($\sum b_i e_i$) is best considered a composite measure of beliefs that are assumed to determine the attitude. As indicated in Equation 3.2, the expectancy-value model suggests that a person's attitude towards a behaviour (A_B) is directly proportional (\propto) to this summative belief index ($\sum b_i e_i$) (Fishbein & Ajzen, 2010, p.97). This suggests that an attitude towards a behaviour is computed by multiplying the strength of each salient belief (b_i) with its respective outcome evaluation (e_i), and aggregating the products in a process of summation to produce the overall attitude towards the behaviour (Ajzen, 2011b, *online*). In other words, the strength of each salient belief (b_i) is weighted by the evaluation of each belief's respective outcome (e_i), and the products are aggregated in a process of summation to produce the overall attitude towards the behaviour (A_B) (Ajzen, 2011b, *online*). By implication, the more strongly a belief is held, and the more positive or negative the outcome evaluation, the greater is its expected contribution to the overall attitude (Fishbein & Ajzen, 2010, p.100).

Fishbein and Ajzen (2010, pp.99 – 100) explain that the equation used to compute an attitude estimate on the basis of beliefs (Equation 3.2) may seem to imply that people go through a complex calculus, involving multiplication of belief strength by attribute evaluation and summation of the resulting product

terms. They explain that this is, however, not the case. The expectancy-value model merely proposes that attitude formation may be modelled mathematically in this fashion. In actuality, however, the expectancy-value model does not assume deliberate and conscious attitude construction. Instead, as noted already, attitudes are assumed to emerge automatically and spontaneously as beliefs are formed about the attitude object or behaviour.

The idea that attitudes are based on relevant information that is accessible in memory (salient) imbues them with a degree of reasonableness. This is not to say that people form attitudes in a rational manner by conducting an unbiased review of all the relevant information and integrating it according to formal rules of logic. To the contrary, the expectancy-value model recognises that beliefs – although often quite accurate – may be biased by a variety of cognitive and motivational processes and that they may be based on invalid or selective information, be self-serving, or otherwise fail to correspond to reality (Fishbein & Ajzen, 2010, p.99). However, once a set of beliefs is formed and is accessible in memory (salient), it provides the cognitive foundation from which attitudes are assumed to follow automatically in a reasonable and consistent fashion (Fishbein & Ajzen, 2010, p.99).

2.4.6.2 Assessing attitudes, belief strength and outcome evaluation

So far, it should be evident that the expectancy-value model proposes that the causal determinants of an attitude towards any behaviour can be understood by investigating the underlying salient beliefs pertaining to the specific behaviour. This, of course, firstly involves that the behaviour of interest be clearly defined (as was explained in section 2.4.4), and secondly that the population's modal salient behavioural beliefs related to the behaviour be identified during a formative elicitation survey (as was explained in section 2.4.5). Once a modal set of salient beliefs has been identified, the individual beliefs may then be assessed by means of the expectancy-value model's summative belief index ($A_B \propto \sum b_i e_i$). This entails that every individual salient belief in the modal set be measured in terms of belief strength (b_i) and outcome evaluation (e_i). It is now necessary to address the issue of obtaining measurements of the various components of the expectancy-value model's summative belief index ($A_B \propto \sum b_i e_i$) – that is, measures of the attitude towards the behaviour (A_B), belief strength measures (b_i), and outcome evaluation measures (e_i).

Within the reasoned action approach, attitude towards behaviour (A_B) is assessed by a standard questionnaire based on the semantic differential. The semantic differential is an attitude scaling method that was developed by Osgood *et al.* (1957), and it is widely considered to be the most preferred and most successful way of measuring attitudes in contemporary research (Eagly

& Chaiken, 1993, pp.55 & 57; Fishbein & Ajzen, 2010, p.79; Maio & Haddock, 2009, p.27; Perloff, 2010, p.111). Typically, the semantic differential consists of a series of seven–point evaluative bipolar scales which measure a single construct (Fishbein & Ajzen, 2010, p.79). These scale ratings are usually scored from –3 on the negative side of the scale (e.g. disagree, harmful, bad, unfavourable) to +3 on the positive side (e.g. agree, beneficial, good, favourable). Respondents are presented with specific behaviours and then asked to rate it by checking a category on each of the bipolar evaluative scales. The sum or mean score across all scales is taken as a direct measure of the respondent's attitude. The higher the score is, the more favourable the respondent's attitude is towards the behaviour (Ajzen, 2011h, *online*; Eagly & Chaiken, 1993, pp.55 & 56; Fishbein & Ajzen, 2010, pp.79 – 80 & 461). Cronbach's coefficient alpha, which can range from a low of 0 to a high of 1, is usually used to measure the degree to which the related sets of items on the scale are internally consistent. A coefficient of 0.70 or higher is generally taken as evidence of satisfactory internal consistency (Fishbein & Ajzen, 2010, p.80; Litwin, 2003, p.25).

It should be recalled that attitudes are formed by two interrelated processes, one instrumental and the other experiential in nature (see section 2.2.3). It was explained that attitude can be formed primarily on the basis of any one of these two types of processes, or by any combination of these two aspects. This seems to imply that a valid attitude measure must make provision to capture both the instrumental and experiential aspects of attitudes in order for a true evaluative tendency to emerge from it. Eagly and Chaiken (1993,

p.16), as well as Fishbein and Ajzen (2010, p.85) explain that for attitudes towards some kinds of behaviours, one may find that valid measures consist primarily of instrumental items, whereas for attitudes towards other behaviours, valid items are primarily experiential in nature. For this reason, a valid measure of attitude need not always include both instrumental and experiential items. They also explain, however, that for most behaviours, valid attitude measures will be composed of both types of items. This raises the question of how an investigator should then decide whether to include instrumental items or experiential items in an attitude measure, or perhaps both. Fishbein and Ajzen (2010, pp.82 – 85) address this issue and explain that, in order to construct a valid semantic differential measure of attitude, it is necessary to identify adjective pairs that serve as good indicators of the underlying evaluative dimension. As a starting point, it is a good idea to include both instrumental and experiential adjective pairs in prior research, but there is no assurance that both types of items will meet the criterion for inclusion on the final scale (the criterion of internal consistency). The criterion requires that only adjective pairs that contribute to an internally consistent index should be selected, regardless of whether it is of an instrumental nature, experiential nature, or a combination of the two. Maio and Haddock (2009, p.27), on the other hand, provide a somewhat different approach to the former issue. They propose that broad evaluative semantic adjective dimensions (e.g., approve–disapprove) be used to measure the overall attitude, instead of the more specific adjective dimensions which makes clear distinctions between the instrumental and experiential aspects of attitude (e.g., beneficial–harmful and happy–sad).

Belief strength (b_i) and outcome evaluation (e_i) are each typically assessed with a single, seven–point bipolar adjective scale (Fishbein & Ajzen, 2010, p.81). Similar to the semantic differential, these scales are usually scored –3 on the negative side of the scale (e.g. dislike, bad, unlikely, unfavourable) to +3 on the positive side (e.g. like, good, likely, favourable). Respondents are presented with specific belief statements and asked to rate it by checking a category on each of the bipolar adjective scales. These belief statements are, of course, formulated based on the modal set of salient beliefs that was identified in the population of interest during the formative elicitation study. Every belief statement is assessed in terms of belief strength (b_i) and outcome evaluation (e_i), each with a single bipolar adjective scale (Fishbein & Ajzen, 2010, pp.85 – 98 & 435 – 456). Thereafter, the strength of each belief (b_i) is multiplied by the evaluation of the outcome (e_i), and the products are aggregated in a process of summation to produce the overall attitude towards the behaviour (Ajzen, 2011b, *online*). If the belief strength (b_i) and outcome evaluation (e_i) scores ranged from +3 to –3, the $b \times e$ products would then range from +9 to –9. A positive value results when an outcome is considered either likely and good (+ +), or bad but unlikely (– –). In either case, a positive $b \times e$ product for a particular salient belief suggests that the belief contributes to a positive attitude. In contrast, a negative $b \times e$ product results when an outcome is considered likely but bad (+ –), or unlikely but good (– +), either of which contributes to a negative attitude.

As already noted, direct measures of attitude towards a given behaviour (A_B) is typically obtained by asking respondents to rate the behaviour under investigation on semantic differential scales. It is, however, essential that the items on the questionnaire which are designed to obtain a direct measure of attitude, strictly conforms to the principle of compatibility (see section 2.4.4). Thus, the direct measures of attitude must be formulated to obtain measures of attitude towards the particular behaviour under investigation in this study, namely the legal hunting of wild animals. Related to the latter, is the issue of assessing belief strength (b_i) and outcome evaluation (e_i), which too must conform to the principle of compatibility. To achieve this, it is necessary to ensure that the modal salient beliefs – on which the belief statements are then based – are identified with respect to the particular behaviour under investigation (the legal hunting of wild animals). The belief statements must then be formulated exactly as the modal salient beliefs were identified by the formative elicitation survey. This is necessary to ensure that belief strength and outcome evaluation is indeed assessed with respect to the particular modal salient beliefs that were identified by the formative elicitation study (Fishbein & Ajzen, 2010, pp.105 – 106). Fishbein and Ajzen (2010, p.110) address a related issue, namely whether belief statements should be presented in a positive or negative format. Thus, instead of asking respondents whether they believe that performing some behaviour will lead to a certain outcome, we could ask how likely it is that performance of the behaviour will not lead to the outcome in question. For example, one could assess the strength of the belief that the legal hunting of wild animals does not endanger wildlife. Fishbein and Ajzen (2010, p.110) explain that belief

statements of this kind will generally not be obtained in an elicitation of readily accessible beliefs because, when asked to list what they perceived to be the outcomes of a behaviour, people are unlikely to mention outcomes they do not expect to occur. Clearly, when belief statements are rephrased to be presented in a negative format, the principle of compatibility is not adhered to. Consistent with this argument, Trafimow and Finlay (2002) also found that rephrasing belief statements in a negative format reduces the predictive validity of the expectancy-value formulation.

It was stated earlier that belief strength (b_i) and outcome evaluation (e_i) are each assessed with single adjective scales that is scored in a bipolar fashion (e.g., from -3 to $+3$ on a seven-point scale). Although it is generally agreed that these scales should be scored in a bipolar fashion, questions have sometimes been raised with respect to the appropriate scoring in certain instances (Eagly & Chaiken, 1993, p.234). Whereas most investigators would agree that outcome evaluations (e_i) be assessed with bipolar evaluative scales (e.g., from -3 to $+3$ on a seven-point scale), it sometimes seem reasonable to assess belief strength (b_i) with unipolar likelihood scales (e.g., from $+1$ to $+3$ on a three-point scale, or from $+1$ to $+7$ on a seven-point scale). This consideration depends to a large extent on whether the investigator is dealing with an individual or with a population consisting of many different individuals. In the case of an individual's salient beliefs, outcome evaluations (e_i) can be reasonably assessed by means of a bipolar evaluative scale, such as good to bad, while belief strength (b_i) can be measured on a unipolar

likelihood scale, such as a scale ranging from slightly likely to extremely likely. This is because the belief statements in the case of an individual person deal with outcomes that were listed by the individual himself, and therefore it can reasonably be assumed that the respondent in fact expects the behaviour to produce the outcome in question. Thus, all that remains is to assess the strength of the individual's beliefs. In such an instance, a unipolar likelihood scale, ranging, for example, from +1 (slightly likely) to +3 (extremely likely) can thus be used to assess belief strength. We do not need to be concerned with the possibility that a person will rate the outcome as unlikely. The outcome evaluation, however, is still assessed on a bipolar scale (e.g. from -3 to +3), such as a good – bad scale, because the individual may still rate each outcome as negative or positive to a certain degree. Nevertheless, when dealing with a population's modal set of salient beliefs, it is possible that some individual within the population may not believe that performing the behaviour in question will lead to one or more of the outcomes included in the modal set (see section 2.4.5). Because of the possibility that some of these modal salient beliefs may not be held by every individual within the population, it is important to allow them to deny the beliefs by ascribing low probabilities to them. Consequently, it is preferable to adopt bipolar scales to make provision for the possibility that a person will rate the outcome as unlikely (Eagly & Chaiken, 1993, pp.234 – 236; Fishbein & Ajzen, 2010, pp.101 & 105 – 110).

Although theoretical arguments can be made in favour of bipolar or unipolar scoring of belief strength measures (b_i) and outcome evaluation measures (e_i), Ajzen (1991, p.193) argues that "from a measurement perspective,

however, either type of scoring could be applied with equal justification". Rating scales of the kind used in research based on the expectancy-value model can at best be assumed to meet the requirements of equal-interval measures. As such, it is permissible to apply any linear transformation to the respondents' ratings without altering the measure's scale properties. Going from a bipolar to a unipolar scale, or vice versa, is of course a simple linear transformation in which a constant is added or subtracted from the obtained values (Ajzen, 1991, p.193).

According to Fishbein and Ajzen (2010, p.109 & 126), evidence available to date indicates that bipolar scoring is generally superior to unipolar scoring in that it usually leads to better prediction of attitude than does unipolar scoring. Nevertheless, exceptions to this rule are sometimes observed. Particularly when respondents disagree that a behaviour will lead to a negative outcome, care must be taken to ensure that bipolar scaling is appropriate. Fishbein and Ajzen (2010, p.109) therefore suggest that investigators should be mindful of this issue of bipolar and unipolar scaling in their own work with the expectancy-value model.

2.4.6.3 Verifying salient behavioural beliefs as the determinants of an attitude

In section 2.4.6.1 it was explained that the expectancy-value index of beliefs ($\sum b_i e_i$) is considered to be a composite measure of salient behavioural beliefs

that are assumed to determine the attitude towards the behaviour (A_B). It is thus essential to verify the expectation that the behavioural beliefs which were identified (during the formative survey) and assessed (during the primary survey) do indeed sufficiently capture the determinants of the attitude under consideration. According to Fishbein and Ajzen (2010, p.185), the validity of the identified behavioural beliefs may be confirmed by showing that they are predictive of a standard, validated measure of attitude. This is generally done by correlating the summated products of the identified behavioural beliefs times outcome evaluations ($\sum b_i e_i$) with the direct measure of the attitude (A_B) (Fishbein & Ajzen, 2010, p.329). If it is then found that the belief-based indices of attitude ($\sum b_i e_i$) correlates significantly with the previously validated direct attitude measure (A_B), it confirms that the identified salient beliefs accurately capture the determinants of the attitude under consideration. Consequently, high correlations would thus verify that modification of the identified salient beliefs will have a significant impact on the attitude one wishes to change (Fishbein & Ajzen, 2010, p.330). Conversely, low correlations would be a warning sign, indicating that the identified salient beliefs do not relate to the attitude under consideration and can, therefore, not be considered to be causal determinants of the attitude. Consequently, changes in these beliefs will have relatively little impact on the attitude one is trying to change (Fishbein & Ajzen, 2010, p.330). Evidently, verifying the expectation that the identified salient beliefs do indeed capture the causal determinants of the attitude under consideration clearly provides very important information in terms of understanding the attitude's underlying determinants and its implications for changing attitudes.

Correlating the summative belief index ($\sum b_i e_i$) of the expectancy-value model with a direct measure of the attitude (A_B) does not only confirm that the identified salient beliefs are the causal determinants of the particular attitude, but it is also a way of verifying the validity of the expectancy-value model. The next section briefly explains this and explores the empirical support that exists for the expectancy-value model.

2.4.6.4 Empirical support for the expectancy-value model

The expectancy-value model postulates that a person's attitude (A_B) is directly proportional (\propto) to the summative belief index ($\sum b_i e_i$) of the expectancy-value model (Fishbein & Ajzen, 2010, p.97). Thus, it stands to reason that in order for the $\sum b_i e_i$ index to be valid, it should correlate with a standard, direct measure of attitude (A_B) (Fishbein & Ajzen, 2010, pp.103 – 104).

A great number of studies have, over the years, tested the validity of the expectancy-value model of attitudes by correlating a direct measure of attitude (A_B) with an estimate of the same attitude based on the expectancy-value model's belief index ($\sum b_i e_i$) (Ajzen, 1991, pp.191 – 192; Eagly & Chaiken, 1993, p.232). The empirical results of such studies have generally supported the expectancy-value model's hypothesised relation between salient beliefs and attitude, and obtained moderately high correlations (e.g., Ajzen, 1974; Cronen & Conville, 1975a, 1975b; Daigle *et al.*, 2002; Fishbein, 1963, 1965;

Fishbein & Coombs, 1974; Hrubes *et al.*, 2001; Inosko, Blake, Cialdini & Mulaik, 1970; Jaccard & Davidson, 1972; Rosenberg, 1956; Smith & Clark, 1973). Several meta-analyses of the empirical literature have also provided correlational evidence in support of the expectancy-value model as applied to attitudes towards a variety of behaviours. Armitage and Conner (2001, p.481) conducted a meta-analysis (which consisted of 185 independent studies) across a broad range of behaviours, and reported a mean correlation of 0.50 between the expectancy-value index of beliefs ($\sum b_i e_i$) and a direct attitude measure (A_B). In another meta-analysis that was conducted across a broad range of behaviours, a mean correlation of 0.53 between the expectancy-value index ($\sum b_i e_i$) and a direct attitude measure (A_B) was obtained (van den Putte, as cited in Fishbein & Ajzen, 2010, p.103). In Albarracín *et al.* (2001, p.142 & 157), a meta-analysis (which consisted of 96 different data sets) of research on condom use, revealed a mean correlation of 0.56 between the expectancy-value index ($\sum b_i e_i$) and direct measures of attitudes towards this behaviour (A_B).

In addition to the vast body of correlational evidence in support of the expectancy-value model, experiments presenting subjects with persuasive communications that were designed on the basis of the expectancy-value model provide even more convincing support for the model (Eagly & Chaiken, 1993, p.237). In fact, persuasive communications based on the expectancy-value model have shown to change message recipients' salient beliefs about the attitude object or behaviour they address and to have corresponding

effects on recipients' overall attitudes (e.g., Bamberg, 2006; Brubaker & Fowler, 1990; Carlson, 1956; Fishbein, Ajzen & McArdle, 1980; Murphy & Brubaker, 1990; Sanderson & Jemmott, 1996).

It is clear that there is strong empirical support for the expectancy-value model. This indicates that the expectancy-value index of beliefs ($\sum b_i e_i$) provides a valid approach for assessing and understanding attitudes towards behaviours, as well as to investigate the implications that the causal determinants of the attitude may have for changing attitudes.

2.4.7 The expectancy-value model and attitudinal ambivalence

It should be recalled that attitudinal ambivalence refers to the coexistence of positive and negative reactions to an attitude object or behaviour (Fishbein & Ajzen, 2010, p.118; Kruglanski & Stroebe, 2005, p.331). It is a state of conflict that exists within an individual's mind when he simultaneously possesses positive and negative evaluations of an attitude object or behaviour (Eagly & Chaiken, 1993, p.123; Fabrigar *et al.*, 2005, p.84; Kruglanski & Stroebe, 2005, p.332; Maio & Haddock, 2009, pp.36 – 37). It should also be recalled that the amount of conflict between peoples' positive and negative evaluations of an attitude object or behaviour (attitudinal ambivalence) can be estimated through Thompson *et al.* (1995) mathematical formula (see Equation 3.1) that was introduced in section 2.2.4. According to the model of Thompson *et al.*

(1995), attitudinal ambivalence is estimated by adding the positive (P) and negative (N) ratings of the object or behaviour, dividing the sum by two, and subtracting the absolute value of the difference between P and N .

Fishbein and Ajzen (2010, p.119) explain that in the context of the expectancy-value model, information about the origins of ambivalence is provided by the salient beliefs that serve as the attitude's determinants. In other words, it is possible to examine an individual's personal salient beliefs, or responses to a modal salient set of beliefs, for evaluative inconsistency or ambivalence. Specifically, Fishbein and Ajzen (2010, p.119) explain that one could compute for each outcome the product of belief strength times outcome evaluation and then separately compute the sum of the products that have positive values (P) and the absolute sum of products that have negative values (N). Using Equation 3.1, these measures of positive and negative valence can be used to compute an index of ambivalence. Fishbein and Ajzen (2010, p.119) continue to explain that close examination of the salient beliefs that enter into the positive and negative scores provides substantive information about the specific considerations that are in conflict with each other and hence offers a better understanding of the origins or basis for observed ambivalence.

2.4.8 Origins of beliefs and the role of background factors

The aim of this section is to examine the origins of beliefs in an effort to obtain a deeper understanding of how beliefs and ultimately attitudes are formed. This section commences by providing an overview of the most important psychological processes whereby beliefs are formed and then turns to exploring the influence of personal, social, and environmental factors on people's behavioural beliefs regarding hunting.

2.4.8.1 Belief formation

Three different processes underlie belief formation. Firstly, beliefs can be established on the basis of direct observation (**observational beliefs**). Secondly, they can be established by accepting information that is provided by an outside source (**informational beliefs**). Finally, beliefs can be formed through a process of inference that relies on other beliefs relevant to the behaviour under consideration (**inferential beliefs**) (Fishbein & Ajzen, 2010, pp.221 – 223). These three processes underlying belief formation will now be discussed.

Observational beliefs are those beliefs that are established on the basis of direct observation. In the case of behavioural beliefs, people may notice that

when they perform a given behaviour, certain outcomes are likely to follow (Fishbein & Ajzen, 2010, p.222). To take a concrete example, a person may experience that drinking alcohol makes him feel nauseous (behavioural belief). These direct experiences associated with performance of a behaviour result in the formation of observational beliefs about the behaviour of interest, which in turn influences a person's attitude towards that particular behaviour.

Informational beliefs are those beliefs that are formed not on the basis of direct observation, but rather by accepting information provided by an outside source. Such sources include television, radio, the Internet, newspapers, books, magazines, lecturers, friends, relatives, co-workers, etc. (Fishbein & Ajzen, 2010, p.222). For example, a person may see an advertisement that Quit-Smoking nicotine patches alleviate the urge to smoke cigarettes. Based on this information, he may form the corresponding behavioural belief that using Quit-Smoking nicotine patches will alleviate this urge to smoke cigarettes, which in turn may have a corresponding effect on their attitudes towards using Quit-Smoking nicotine patches.

Inferential beliefs are those beliefs that go beyond direct observation or information from outside sources by means of various inference processes. Thus, these beliefs are formed through a process of inference that relies on other beliefs relevant to the behaviour under consideration (Fishbein & Ajzen, 2010, p.222). If a person observes the outcomes produced by other people's behaviour, then the person may infer that the same outcome would occur if he

performs the behaviour himself. Similarly, if a person observes that his own behaviour produces a certain outcome, then he may infer that other related outcomes are also likely to occur (Fishbein & Ajzen, 2010, p.222). To demonstrate, Fishbein and Ajzen (2010, pp.222 – 223) explain that if, for example, a person discovers that regular exercise has lowered his blood pressure, he may infer that regular exercise will increase his life expectancy.

Whether based on direct observation, outside information, or inference processes, the theory of reasoned action assumes that once beliefs related to a particular behaviour have been formed, they provide the cognitive basis for attitudes. It is important to note that, within the reasoned action framework, it is not assumed that people are rational, but only that their actions follow in a reasonable manner from the beliefs they hold. Given the fact that beliefs are often based on limited observations, information provided by others, or on fallible inference processes, behavioural beliefs may often be veridical. They may be inaccurate, biased to conform with preconceptions or motives, or they may represent rationalisations, wishful thinking, or other irrational processes. Moreover, people's cognitive processes, predispositions, and desires can bias their interpretation of available information, leading to the formation of inaccurate beliefs, and because the validity of one's own senses is rarely questioned they naively assume that their beliefs are valid. Nevertheless, the beliefs people hold constitute the information they have about a behaviour, and it provides the basis for their attitude towards that behaviour (Fishbein & Ajzen, 2010, p.223). Fishbein and Ajzen (2010, p.333) explain that, as a general rule, beliefs based on personal experience (observational beliefs) are

often much more difficult to change than beliefs based on second-hand information (informational beliefs) or beliefs inferred from other available information (inferential beliefs).

2.4.8.2 Differences in beliefs and the role of background factors

In the previous section, three different processes that underlie belief formation were explained. These processes do not address the origin of the beliefs people hold. This section will explain how beliefs are assumed to originate according to the reasoned action approach.

The reasoned action approach postulates that the beliefs people hold originate from information people acquire from a variety of sources, and are subject to various social and individual differences, which may influence not only the experiences people have and the sources of information to which they are exposed, but also the way in which they interpret and remember this information (Fishbein & Ajzen, 2010, p.20). Differences in beliefs are thus assumed to be the result of differential learning experiences. The kinds of experiences people have are likely to vary as a function of personal characteristics (e.g., personality, temperament, intelligence, values, mood, emotion), social and cultural factors (e.g., age, gender, ethnicity, socio-economic status, education, nationality, religious affiliation, social ties), and exposure to media and other sources of information (e.g., past experiences,

exposure to information) (see Figure 2.1). Clearly, a multitude of variables could potentially influence the beliefs people hold. It should be recalled that, within the reasoned action approach, the potential influences of these variables on the beliefs people hold are recognised as background factors (see section 2.4.1). Specifically, the theory of reasoned action postulate that background factors influence the behavioural beliefs a person forms, which in turn results in a corresponding attitude (Fishbein & Ajzen, 2010, p.18). Thus, background factors are assumed to have an indirect influence on attitudes by influencing behavioural beliefs.

Fishbein and Ajzen (2010, p.224) suggest that, when investigators conduct their research within the reasoned action framework, they may want to consider specific background factors if there is reason to believe that people who vary in terms of those factors may have been exposed to different experiences and thus may have formed different behavioural beliefs and, as a result, different attitudes towards a behaviour. By including background factors in the context of the theory of reasoned action, it is possible to trace the extent to which they influence beliefs with respect to the particular attitude under investigation (Fishbein & Ajzen, 2010, p.252). By examining the effects of a background factor on beliefs, it is possible to explain why the factor in question does or does not influence a particular attitude in a given population. Moreover, studying the effects of background factors on beliefs about a behaviour of interest enables the researcher to gain insight into the possible origins of the beliefs that serve as the cognitive foundation for the attitude (Fishbein & Ajzen, 2010, p.253). Evidently, including relevant background

factors in the context of the theory of reasoned action deepens one's understanding of the origin of beliefs and attitudes. For this reason, the researcher deemed it necessary to identify the relevant background factors that should be considered with regard to this study. In the following section, the background factors that may be of relevance to the study will be identified, followed by a brief discussion of the likely effects that these background factors may have on attitudes.

2.4.8.3 Identifying background factors that affect attitudes towards hunting

In light of the vast number of potential background factors that may be of relevance to this study, a literature review of existing research concerning people's attitudes towards hunting was conducted. The purpose of the literature review was to identify background factors that may be of particular interest to this study. A large number of research studies have focused on identifying demographic characteristics, social variables, and personal attributes that influence people's attitudes towards hunting. The findings of those studies served as a guideline for selecting the kinds of background factors that may be of relevance to this study and that should therefore be included in the empirical component of the study. This section sets out to provide a brief discussion of the relevant background factors that was identified during a review of the existing literature.

The first scientific research on attitudes towards hunting was conducted by Shaw & Gilbert (1974), as well as by Kellert between 1973 and 1978 (as cited in Heberlein & Willebrand, 1998, p.1071). To date, a large number of studies have investigated attitudes towards hunting in the United States and identified a variety of background factors that seem to influence people's attitudes towards hunting. Although the large majority of these studies were conducted in the United States (Heberlein & Willebrand, 1998, p.1073), their findings on general tendencies are, in broad terms, consistent with that of a South African study which investigated attitudes towards hunting amongst the economically active public in Port Elizabeth (Coetzer, 2010). A brief discussion of the relevant background factors that were identified during a review of the existing literature will now follow.

Gender seems to have a considerable effect on attitudes towards hunting, with males being more likely than females to approve of hunting. While in the United States 84% of males approve of hunting, only 72% of females approve of it, and, conversely, only 13% of males disapprove of hunting, while 20% of females disapprove (Responsive Management, as cited in Duda & Jones, 2008, p.11). Consistent with this tendency, Coetzer's (2010, p.110) study – that was conducted amongst the economically active public in Port Elizabeth – found that, while 68% of male respondents supported hunting, only 35% of female respondents supported it, and, conversely, only 14% of male respondents opposed hunting, while 40% of female respondents opposed it. The results revealed a statistical significant difference between male respondents and female respondents with regard to their attitudes towards

hunting ($\chi^2 = 46.26$; $df = 4$; $p < 0.01$; Cramer's $V = 0.35 \sim$ moderate effect size). Adams and Thomas (as cited in Duda & Jones, 2008, p.11) found in a study in Texas that the majority of state residents who were members of or who expressed a desire to become members of an anti-hunting organisation were females. Duda (2003) found that gender also effect attitudes towards hunting amongst the youth in the United States, and boys were more than twice as likely to strongly support hunting than were girls. The latter finding seems to suggest that gender related differences in attitudes towards hunting begin at an early age.

The likelihood of approving of hunting generally increases as age increase. A national study, conducted by Responsive Management, found that 83% of Americans of 65 years old and older approved of hunting, while only 55% of Americans of 18 to 24 years old approved of it (Duda & Jones, 2008, p.12). In support of the latter, Adams and Thomas (as cited in Duda & Jones, 2008, p.11) found in a study in Texas that the majority of state residents who were members of, or who expressed a desire to become members of an anti-hunting organisation, were between 18 and 34 years old. A similar trend was detected amongst the youth in the United States, and one study found that as children get older they become more supportive of hunting. Whereas 40% of children in grades one to four supported hunting, 64% of youth in the ninth to twelfth grades supported hunting (Responsive Management, as cited in Duda, 2003). Duda and Jones (2008, pp.12 – 13) speculate that this age related difference in attitudes towards hunting amongst youth may be related to cognitive and emotional development, and possibly a lack of exposure to

hunting at a very young age (Duda, 2003). Clearly, research in the United States seem to generally support the notion that age related differences exist in the public's attitudes towards hunting. However, Coetzer's (2010, p.116) study in the South African setting found insufficient evidence to conclude that there are age related differences in the attitudes of the economically active public in Port Elizabeth ($\chi^2 = 20.22$; $df = 16$; $p < 0.21$).

There is some evidence that ethnicity is linked to variations in attitudes towards hunting. In a national study, white Americans were found to have a higher approval rate (83%) than do non-whites (61%). A study in Connecticut supports this finding, where only 18% of white respondents disapproved of hunting, but 30% of non-white respondents disapproved of it (Duda & Jones, 2008, p.13). Furthermore, Coetzer (2010, p.113) found that, amongst the economically active public in Port Elizabeth, coloured respondents' attitudes towards hunting were slightly different from that of black respondents ($\chi^2 = 9.78$; $df = 4$; $p = 0.04$; Cramer's $V = 0.20 \sim$ small effect size) and also from that of white respondents ($\chi^2 = 14.23$; $df = 4$; $p < 0.01$; Cramer's $V = 0.26 \sim$ small effect size).

Research suggests that higher levels of education are negatively correlated with approval of hunting. Responsive Management (as cited in Duda & Jones, 2008, p.12) found that in the United States 51% of those with no degree strongly approve of hunting, while only 43% of those with Bachelor's degree and 40% of those with a post-graduate degree strongly approve of

hunting. Other similar research studies at state level verified that this finding holds true. In the state of Pennsylvania, it was found that the higher the level of education rises, the more the percentage who approve of hunting declines. Furthermore, a study amongst landowners in the state of Texas found that those who prohibited hunting on their land were more educated than were those who allowed it (Wright, Keiser & Fletcher, 1988, p.154). In the South African setting, however, Coetzer (2010, p.116) found no evidence that differences exist between various levels of education and their attitudes towards hunting ($\chi^2 = 20.17$; $df = 16$; $p < 0.21$).

The likelihood of approving of hunting increases as the population density decreases. Responsive Management (as cited in Duda & Jones, 2008, p.11) found that in the United States, 70% of urban residents, 72% of suburban residents, 80% of residents in small cities or towns, and 89% of rural residents approved of hunting. Other studies conducted by Heberlein and Willebrand (1998), Miller (as cited in Duda & Jones, 2008, p.11), as well as by Responsive Management (1995; 1996) also found conclusively that rural societies hold more positive attitudes towards hunting than urbanised societies. Similarly, the aforementioned study of Adams and Thomas (as cited in Duda & Jones, 2008, p.11) found that the majority of state residents who were members of, or who expressed a desire to become members of an anti-hunting organisation, were urban residents. Decker and Mattfield (as cited in Heberlein & Willebrand, 1998, p.1074) explain that the reason for this tendency is possibly because rural residence and rural ties are key factors leading to exposure to hunting and pro-hunting attitudes.

Consistent with the above overview of the various demographical factors which were found to influence attitudes towards hunting, Kellert and Shaw (as cited in Duda and Jones, 2008, p.13) are also in agreement that anti-hunters are generally well-educated, female, and urban living. In addition to the demographical factors that were identified, the literature review also revealed that exposure to hunting, as well as social ties significantly influence peoples' attitudes towards hunting.

As could be expected, the literature review revealed that hunters generally show the strongest support for hunting (Duda, 2002, p.46). Related to the latter is the findings of Coetzer (2010, pp.136 – 138), who's research provided strong evidence of an significant difference between people who have been directly exposed to hunting and those who have never been directly exposed to it with regard to their attitudes towards hunting ($\chi^2 = 78.20$; $df = 4$; $p < 0.01$; Cramer's $V = 0.45 \sim$ moderate effect size). In Coetzer's (2010) study, direct exposure to hunting was found to be the single variable that had the most profound influence on attitudes towards hunting. His study found that respondents who have never been directly exposed to hunting were five times more likely to oppose hunting than respondents who have been directly exposed to hunting. The study concluded that the more a person has been exposed to hunting, and the greater a person's knowledge is about hunting, the greater his ability would be to attain an accurate perception of what hunting entails (Coetzer, 2010, pp.137 – 138).

Having social ties with hunters were found to have a considerable effect on attitudes towards hunting. According to research conducted by Responsive Management for Ducks Unlimited in the United States, having a family member or close friend who hunts have a large influence on attitudes towards hunting (Duda, 2002, p.46). Consistent with the latter, Coetzer (2010, pp.143 – 146) also found that people who have family members or friends who hunt had significantly different attitudes towards hunting than those without any family members or friends who hunt ($\chi^2 = 36.61$; $df = 4$; $p < 0.01$; Cramer's $V = 0.31 \sim$ moderate effect size). In addition to the latter, the literature review revealed that having social ties with farmers or people in rural areas have a significant influence on their attitudes towards hunting. Coetzer (2010, p.140) found that people who have social ties with farmers or people in rural areas had significantly different attitudes towards hunting than those who do not have any social ties with farmers or people in rural areas ($\chi^2 = 48.50$; $df = 4$; $p < 0.01$; Cramer's $V = 0.36 \sim$ moderate effect size).

In sum, this section provided a brief discussion of the background factors that were identified to be of relevance to this study. These background factors were taken into consideration by the researcher while designing the empirical component of this study.

2.5 INTRODUCING THE THEORY OF REASONED ACTION AS A CONCEPTUAL FRAMEWORK FOR CHANGING ATTITUDES

Most contemporary social psychologists take a cognitive or information processing approach to attitude formation and structure. This approach is exemplified by the expectancy-value model of attitudes (Ajzen, 1991, p.191). The expectancy-value approach to attitude formation and structure contains insight about the underlying dynamics of people's attitudes and is of particular interest to investigators who hope to change attitudes (Eagly & Chaiken, 1993, p.109; Perloff, 2010, p.54). This approach is quite appealing as a way of thinking about attitude change and in fact has been quite popular in applied contexts (Eagly & Chaiken, 1993, p.236; Manfredo, 1992, p.21). In this section, the theory of reasoned action – which is based on the expectancy-value model – is introduced as a conceptual framework for changing attitudes; its approach to changing attitudes is briefly explained; a number of issues related to the theory's approach to attitude change are considered; and finally, some literature sources regarding the theory's validity and adequacy as an approach to changing attitudes are explored.

2.5.1 Basic principle of the theory of reasoned action's approach to changing attitudes: salient beliefs as the informational foundation of attitudes

By now it should be clear that the central idea of the expectancy-value model (and, thus in effect, the theory of reasoned action) is that people's attitudes are a function of their salient beliefs, when these beliefs are represented as the sum of the expected values ($\sum b_i e_i$) of the attributes ascribed to the attitude object or behaviour (Eagly & Chaiken, 1993, p.106). In other words, people's salient beliefs about a particular behaviour reflect the information they have relevant to the behaviour (Fishbein & Ajzen, 2010, p.316). Irrespective of whether the information people have about a particular behaviour is accurate or not, it forms the cognitive structure for their attitudes towards that behaviour. It thus follows that if a person is exposed to new information, and this new information is accepted, the person's existing beliefs will change or new beliefs will be formed. Thus, the expectancy-value model postulates that exposure to new information about the possible consequences of a given behaviour may be expected to produce changes in attitudes towards the behaviour, and that these changes will be consistent with the nature of the new information (Fishbein & Ajzen, 2010, p.316).

Eagly and Chaiken (1993, p.236) explain that the expectancy-value model (and consequently, the theory of reasoned action) may be seen as adopting an educational approach to changing attitudes in the sense that it implies that in order to induce a change in people's attitudes, they need only be exposed

to relevant messages, information, or experiences that would cause them to change their underlying behavioural beliefs in a desired manner. Fishbein and Ajzen (2010, p.338) explain that exposing the target population to persuasive messages is the most widespread strategy to communicate such relevant information to a target population. Persuasive communications typically consist of arguments in favour of (or against) a certain position on an issue, arguments usually bolstered by supportive evidence (Fishbein & Ajzen, 2010, p.316).

Manfredo (1992, p.12) argues that one of the main reasons persuasive communications (or any other forms of attitude or behaviour change interventions for that matter) fail to produce the desired change in a targeted attitude, is because often they do not address appropriate beliefs. However, the theory of reasoned action directly addresses this issue by providing a simple and appealing model to explain the determinants of any attitude and to understand the relationship between beliefs and attitudes. In fact, the reasoned action approach provides guidance concerning the content of a persuasive message in that it specifies the particular primary beliefs that must be addressed by a persuasive message in order for the message to be successful at changing an attitude (Fishbein & Ajzen, 2010, p.346). Rossi and Armstrong (1999, p.41) agree and explain that the reasoned action model provides a basis for identifying where and how to target strategies for changing attitudes and behaviours. In the next section, it will be explained how the reasoned action approach provides guidance with regard to the

fundamental beliefs that should be targeted by interventions that aim to change people's attitudes towards a behaviour.

2.5.2 The theory of reasoned action's routes to attitude change

By now it should be clear that, according to the theory of reasoned action, if one wants to change a person's attitude towards the legal hunting of wild animals, for example, one must change that person's salient beliefs with respect to the legal hunting of wild animals. Consistent with the expectancy-value approach, the theory of reasoned action postulates that any desired change in a particular attitude could be brought about by either **changing some of the existing salient beliefs** on which the targeted attitude is based or by **introducing new salient beliefs** into the underlying belief system (Eagly & Chaiken, 1993, p.236). Each one of these two possible ways through which an attitude can be changed will now be discussed briefly.

2.5.2.1 Producing attitude change through modification of existing salient beliefs

As already stated, an attitude can be changed by modifying the existing salient beliefs on which the targeted attitude is based. This modification of beliefs may take place either in the strength of a belief (b_i) or the evaluation of its outcome (e_i). In terms of modifying belief strength (b_i), it is possible to

make people's attitudes towards the behaviour of interest more favourable by raising their perceived likelihood that the behaviour will indeed produce desirable outcomes, or by reducing their perceived likelihood that the behaviour in question will produce undesirable outcomes. Consider, for example, a positive salient belief that the legal hunting of wild animals will lead to the conservation of wildlife. Under the assumption that people are in favour of conserving wildlife, it is thus possible to try to make attitudes more favourable by providing people with information that would raise the perceived likelihood that the legal hunting of wild animals will indeed produce this desirable outcome. Similarly, with regards to a negative salient belief (for example, that the legal hunting of wild animals is a dangerous activity to participate in), it is possible to make attitudes more favourable by reducing the perceived likelihood that the legal hunting of wild animals is a dangerous activity. In terms of modifying outcome evaluations (e_i), it is possible to make people's attitudes towards the behaviour of interest more favourable by raising their positive evaluations of desirable outcomes associated with the behaviour, or by reducing their negative evaluations of undesirable outcomes linked to the behaviour. For example, a salient belief may link the legal hunting of wild animals to a desirable outcome of connecting with nature or experiencing the outdoors. If a significant proportion of the population believe that hunting will indeed produce this outcome, their attitudes could be made more favourable by raising people's positive evaluations of connecting with nature or experiencing the outdoors. Similarly, in the case where a salient belief links the legal hunting of wild animals with an undesirable outcome (for example, that it results in wild animals being exploited for financial benefit), it

is possible to make attitudes more favourable by reducing people's negative evaluations of using wild animals to gain financial benefits – perhaps by providing them with appropriate information which points out that the legal hunting of wild animals produces financial incentives for private landowners to conserve habitats and wildlife on their land.

So far in this discussion, it is apparent that one way of changing an attitude towards a behaviour is by influencing those salient beliefs on which the attitude is based. It should be realised, however, that it will not be an effective approach to changing an attitude by simply trying to target all of the salient beliefs that were identified in the elicitation survey. Instead, it would be more effective to establish which particular salient beliefs should be changed in order to effectuate the desired change in attitude – and whether this change should occur in the particular belief's strength (b_i), its outcome evaluation (e_i), or perhaps in both aspects in order to produce the desired results. The theory of reasoned action provides guidance in this regard and enables one to choose the most effective route to achieve the desired change in attitude. In the remainder of this sub-section it will be briefly explained how the theory of reasoned action is used for the abovementioned purpose.

To produce attitude change through a modification of existing salient beliefs would, of course, require that the salient beliefs underlying the attitude of interest first be identified by means of an elicitation survey. According to the theory of reasoned action, once the salient beliefs have been identified, each

of the salient beliefs must then be assessed in terms of the expectancy-value model's summative belief-index ($\sum b_i e_i$). Having established that the direct attitude measure can be predicted from the relevant belief indices ($\sum b_i e_i$) (see section 2.4.6.3), the information produced by the expectancy-value model's summative belief-index ($\sum b_i e_i$) may then be analysed with the aim of identifying the specific salient beliefs that ought to be targeted in order to effectively change an attitude in a desired direction.

By using the expectancy-value model to assess and examine the salient beliefs underlying an attitude, it is possible to observe how beliefs discriminate between people with different attitudes. Specifically, the means and standard deviations of each belief's strength (b_i), of each belief's outcome evaluation (e_i), and of each belief's $b \times e$ products are particularly important indicators that may be used to discriminate between people with different attitudes towards a behaviour. In order to observe how beliefs can be used to explain differences in attitudes, the sample must, for example, be divided into participants who hold favourable attitudes and those who hold unfavourable attitudes towards the legal hunting of wild animals (Fishbein & Ajzen, 2010, p.206). The mean values and standard deviations of each belief's strength (b_i), outcome evaluation (e_i), and $b \times e$ product of the two sub-samples can then be compared and the differences identified. In parallel fashion, it is also possible to compare differences in beliefs structure between various demographical sub-groups and other background variables. For example, to understand why males are more inclined to have favourable attitudes towards

the legal hunting of wild animals than females, one must compare the mean beliefs and standard deviations underlying the attitudes of these two sub-groups. Based on such an analysis, the particular salient beliefs that discriminate between people with different attitudes can be identified (Fishbein & Ajzen, 2010, p.206). Interventions that attempt to effectuate a desired change in a specific attitude should target those particular salient beliefs that discriminate between individuals with favourable attitudes and those with unfavourable attitudes.

Assessing salient beliefs in terms of the expectancy-value model also provides particularly important information regarding a given salient belief's contribution to the overall attitude, and its ability to account for variation in the attitude. Note that not all salient beliefs carry equal weight in determining an attitude. Instead, the relative importance of each salient belief underlying an attitude will vary as a function of the behaviour under consideration and the population of interest (Fishbein & Ajzen, 2010, p.332). When designing interventions to change an attitude towards a specific behaviour, it is thus wise to identify those underlying salient beliefs that, if changed, are likely to have the most significant impact on the targeted attitude (Manfredo, 1992, p.40). Before such beliefs can be identified, it must first be verified that the direct attitude measure can be predicted from the relevant belief indices ($\sum b_i e_i$) – as was explained earlier in section 2.4.6.3. Thereafter, the specific beliefs that should be targeted could be identified by considering the explanatory power of each belief with regard to the attitude under consideration. A given belief's contribution to the overall attitude, and its

ability to account for variation in the attitude, can be discerned in two ways: firstly by examining the mean values of each belief's $b \times e$ product; and secondly by examining the correlation between each belief's $b \times e$ product and the overall direct attitude measure (A_B) (Fishbein & Ajzen, 2010, pp.123 – 124). In the case of the first approach, each belief's contribution to the overall attitude can be detected by examining which of the beliefs' mean $b \times e$ products make the largest positive and largest negative contributions towards the attitude. The more a particular belief is found to contribute towards the attitude, the greater the likelihood that changing that particular belief will result in corresponding changes in the attitude. As far as the second approach is concerned, correlations are calculated between individual beliefs' $b \times e$ products and the direct measures of attitude (A_B). The stronger the correlation between an individual belief's $b \times e$ product and the direct attitude measure (A_B), the more the particular belief in question discriminates between those with different attitudes towards the behaviour in question, the greater the belief's relative contribution to the overall attitude, and the more it accounts for variation in attitudes (Fishbein & Ajzen, 2010, pp.123 – 124 & 206). Thus, the stronger the correlation, the more likely it is that changing that particular belief will result in changes in the targeted attitude.

2.5.2.2 Producing attitude change by establishing new beliefs

As noted earlier, attitudes can be influenced not only by changing existing salient beliefs but also by making new beliefs salient (Eagly & Chaiken, 1993,

p.237; Fishbein & Ajzen, 2010, p.334). In other words, attitude change interventions can be designed to provide people with new information which they have not considered before. If this new information is accepted, it will lead them to form new beliefs in support of the desired attitude. Of course, it may be expected that these new beliefs are consistent with the nature of the new information. Fishbein and Ajzen (2010, p.334) are of the opinion that attitudes may sometimes be more easily influenced by making new beliefs salient rather than trying to change existing beliefs.

Once the salient beliefs underlying a particular attitude has been identified and assessed in terms of the expectancy-value model's approach, the researcher will have sufficient information on the existing salient beliefs within the population. In addition to revealing how existing salient beliefs may be targeted, this information also provides a good basis for discerning the absence of potentially influential beliefs amongst a significant proportion of the research population. If it is found that a significant proportion of the population is unaware of a specific positive or negative consequence of the behaviour of interest, it suggests a potential opportunity to introduce a new belief to their belief system.

2.5.3 General considerations influencing the effectiveness of attitude change interventions based on the theory of reasoned action

Up to this point, the discussions under section 2.5 mainly revolved around how the theory of reasoned action provides guidance with regard to effectively changing attitude. When using the theory of reasoned action to determine the most effective route to achieve the desired change in salient beliefs and attitudes, a number of issues need to be considered. While most of these issues are particularly relevant when trying to change existing beliefs, there are also some considerations that are of importance when trying to change either existing beliefs or establishing new beliefs. A discussion of the various aspects that needs to be considered will now follow.

When trying to change attitudes by modifying existing beliefs, a number of issues should be considered when selecting the particular beliefs that should be changed. First, if most people already strongly agree with a particular belief, there is little one can do to strengthen it further, and if most people strongly disagree, one cannot weaken it further (Fishbein & Ajzen, 2010, p.332). Thus, when selecting beliefs to be targeted by an intervention, one should ensure that the chosen beliefs have enough room for change to occur. This principle, of course, applies when attempting to change either the strength with which a particular belief is held (b_i) or the degree to which its outcome is positively or negatively evaluated (e_i).

A second consideration when exploring the possibilities to change attitudes through modifying existing beliefs is whether it will, in fact, be possible to change a particular belief under consideration. To change a specific belief on an issue, a persuasive communication has to address some of the fundamental information on which the belief is based. Manfredo (1992, p.22) explains that “the information introduced by a persuasive communication must be information from which the belief in question can be probabilistically inferred”. It should be noted, however, that beliefs based on personal experience (observational beliefs) are often much more difficult to change than beliefs that are based on second-hand information (informational beliefs) or beliefs inferred from other available information (inferential beliefs) (Fishbein & Ajzen, 2010, p.333). Fishbein and Ajzen (2010, p.334) explain that “if a belief is based on sufficient personal experience, it would be extremely difficult if not impossible to change it by means of persuasive communication”.

A third consideration that should be kept in mind when trying to change existing beliefs is that it is generally more difficult to change the outcome evaluations (e_i) of a belief than it is to change the strength with which a belief is held (b_i). Fishbein and Ajzen (2010, p.333) explain that this is possibly because outcome evaluations (e_i) are in essence themselves attitudes based on many different beliefs. Consistent with the latter, Eagly and Chaiken (1993, p.237) also note that attempts to change attitudes through outcome evaluations generally prove less effective. Interventions that have been designed explicitly to change outcome evaluations have generally had

relatively little effect on these evaluations and thus little corresponding effect on overall attitudes. Eagly and Chaiken (1993, p.237) speculate that the reason why this route is sometimes less effective, is because evaluations of outcomes are often well anchored in extensive prior learning or personal experience. This view is consistent with Fishbein and Ajzen's (2010, pp.333 – 334) perspective that observational beliefs are often much more difficult to change than informational and inferential beliefs.

Eagly and Chaiken (1993, p.236), as well as Fishbein and Ajzen (2010, p.334) explain that whether existing beliefs are changed or new beliefs are made salient, it is important to realise that changing or adding one or two beliefs may not be sufficient to produce a change in attitude. Only when there is a substantial shift in the summative indices of beliefs ($\sum b_i e_i$) can a change in attitude be expected. This implies that, whenever possible, attitude change interventions should be designed to change multiple beliefs rather than only one or two beliefs.

A final important issue to consider when either targeting existing salient beliefs or making new beliefs salient has to do with the possible unintended effects that goes beyond the information contained in a message. Manfredo (1992, p.18) explains that any changes in a person's primary beliefs can extend far beyond the information directly contained in a persuasive message. Thus, a persuasive message may also influence primary beliefs that were not directly targeted. Such unintended changes that are brought about in a person's belief system are termed **impact effects** (Fishbein & Ajzen, 2010, p.347).

Suppose that participants accept the major arguments about supporting the legal hunting of wild animals contained in a persuasive message, and that acceptance of the arguments causes a change in the targeted salient beliefs. At the same time they may form new beliefs or change existing beliefs that were not directly targeted by the message. To illustrate, suppose that participants accept one of the major arguments about supporting the legal hunting of wild animals contained in a persuasive message, perhaps that as a direct result of hunting there has been a substantial increase in wildlife numbers and the conservation of habitats on private land. While this argument is meant to target participants' existing beliefs or to form new beliefs regarding the essential role hunting plays in conservation, some of them may at the same time draw inferences that may work in favour of or against the aims of the communicator. For example, some participants may unexpectedly form the belief that, since hunting leads to an increase in the total land area under wildlife utilisation, it poses a threat to conventional agricultural industries such as mohair production or cattle farming; or that, since hunting leads to an increase in wildlife, there would be an increase in problem animals, parasites, or pests. These impact effects may very well influence attitudes in an undesired direction, thus undermining the effectiveness of the intervention. In a similar manner, participants may also unexpectedly draw inferences that could enhance the effectiveness of the intervention. Although it is not always possible to anticipate in advance how impact effects may influence a targeted attitude, it is, however, important to be aware of its presence and influence when designing attitude change interventions.

2.5.4 Validity and adequacy of the expectancy-value model's approach to changing attitudes

Since the theory of reasoned action is exemplified by the expectancy-value model, it is necessary to consider the validity of the expectancy-value model. In exploring the validity and adequacy of the expectancy-value model as a model for changing attitudes, it is first necessary to consider the validity of the model's assumption that exposure to persuasive messages or new information can bring about changes in beliefs and corresponding changes in attitudes. Over the past 60 years, a vast body of research on the effects of persuasive communication has validated this expectation (Fishbein & Ajzen, 2010, p.316). Eagly and Chaiken (1993, p.237) agree and explain that numerous experiments revealed that compared to a no-message control group, participants who receive a properly designed persuasive message was found to usually change their attitudes in the advocated direction. They explain that those experiments provide strong evidence for the model's assumption that persuasive communications are indeed capable of changing message recipients' beliefs and to have corresponding effects on their overall attitude. Fishbein and Ajzen (2010, pp.316 – 317) state that although questions remain regarding the factors that make a persuasive message more or less effective, there can be no doubt that exposure to a properly designed message often produces changes in beliefs and corresponding changes in attitudes.

Fishbein and Ajzen (2010, pp.369 – 396) reviewed a number of studies which set out to evaluate the effectiveness of attitude and behaviour change interventions (persuasive messages) that were designed on the basis of the reasoned action approach. As was mentioned throughout this chapter, an essential requirement in any application of the theory of reasoned action is to maintain strict compatibility amongst all measures. Unfortunately, Fishbein and Ajzen found that some of the studies in their review were compromised by a lack of compatibility in their measures, in which case interventions based on the reasoned action approach generally seemed to have had only small effects on changing attitudes and behaviours. However, those studies where the principle of compatibility was carefully observed revealed that the interventions based on the reasoned action approach had strong effects on the targeted theoretical components (of which attitudes are one) and on actual behaviour (see for example, Brubaker & Fowler, 1990; Jemmott, Jemmott & Fong, as cited in Fishbein and Ajzen, 2010, p.371; Murphy & Brubaker, 1990; Sanderson & Jemmott, 1996). Fishbein and Ajzen (2010, p.371) concluded in their review that these findings firstly stress the importance of adhering to the principle of compatibility, since this has a considerable influence on the validity and effectiveness of attitude and behaviour change interventions based on the reasoned action approach. Secondly, they concluded that these findings provide strong evidence that attitude and behaviour change interventions can be quite effective when they are designed carefully in accordance with the principles of the reasoned action approach.

2.6 SUMMARY

This chapter was divided into five major sections. The introduction to this chapter formed the first major section. The chapter sets out to identify and discuss a suitable research approach to understand attitudes towards hunting and its underlying causal determinants, as well as to explore the implications this has for potentially broadening the base of public support for hunting.

The second major section of this chapter commenced with a review of the existing literature with the view to identify a suitable definition for the term attitude. Thereafter, it was explained that, in contemporary social psychology, beliefs are considered to be the primary building blocks or causal determinants of attitudes. A popular model for investigating how beliefs are combined to ultimately form the cognitive structure on which attitudes are based – namely the expectancy-value model – was introduced. It was pointed out that the expectancy-value model's conceptualisation of attitudes is of particular interest to investigators who hope to understand and change attitudes. Thereafter, the discussions turned to the introduction of some general concepts in contemporary social psychology that are of relevance to this study. In short, the instrumental and experiential components that capture different aspects of a given attitude were explained in detail, as well as how discrepancies or conflict that may exist between the various instrumental and experiential beliefs may result in attitudinal ambivalence. The concept of attitudinal ambivalence was described and its relevance to this

study was explained. Furthermore, it was pointed out that hunting is a topic that often arouses strong emotions and attitudes amongst those who care about wildlife. Consequently, the psychology of strong attitudes was discussed in detail and its relevance to this study was pointed out. In addition, it was noted that cognitive dissonance is yet another important phenomenon that needs to be considered when engaging in attitude studies. The notion of cognitive dissonance was discussed in detail. It was noted that in some situations it might be possible to employ cognitive dissonance to effectuate a desired change in a given attitude, while in other situations the notion of cognitive dissonance may make it very difficult to effectuate a desired change in beliefs and attitudes. Finally, four well-known standard techniques of attitude measurement were then introduced, namely Thurstone's equal-appearing interval scaling method, Likert's method of summated ratings, Guttman's cumulative scaling method, and Osgood, Suci and Tannenbaum's semantic differential scale. It was explained that although these techniques may provide reliable indicators of an attitude, they do not provide a valid basis for investigating the underlying belief structure that form the cognitive foundation on which an attitude are based.

In light of the recognised shortcoming of the standard attitude scaling techniques, the third major section in this chapter set out to select an adequate and methodologically valid research approach for this particular study. The selection process was guided by the main research purpose of the study. It was noted that attitude studies related to human dimensions of wildlife and natural resources generally follow one of two possible

approaches, namely a descriptive approach or a theoretical approach. After carefully considering the adequacy of both these approaches, it was concluded that a theoretical approach would be the most suitable and methodologically valid research approach for the study. More specifically, Fishbein and Ajzen's theory of reasoned action (which is exemplified by the expectancy-value model) was identified as the most suitable theoretical modal and conceptual framework for the purposes of this study.

In the fourth major section of this chapter, a basic outline of the entire theory of reasoned action was provided. The theory of reasoned action was then aligned with the research purpose of the study and it was pointed out that only the attitudinal construct of the reasoned action model is of relevance to this study. After carefully considering relevant literature, it was decided that the behaviour of interest in this particular study would be best defined as the '*legal hunting of wild animals*'. This was followed by comprehensive discussions of the procedures and various methodological considerations concerning the application of the attitudinal construct of the reasoned action approach in attitudinal research. The logic of the reasoned action approach for investigating the beliefs that form the cognitive foundation on which an attitude is based, was explained in detail. The psychological processes whereby beliefs are attained were then reviewed. In short, it was said that beliefs are formed as a result of the experiences people have, the sources of information to which they are exposed, as well as the way in which they interpret and remember information. It was noted that these processes are subject to a multitude of social and individual differences. These differences are

recognised within the theory of reasoned action as background factors. It was pointed out that including background factors in the context of the reasoned action approach enables the researcher to gain insight into the possible origins of the beliefs that serve as the cognitive foundation of an attitude. Thereafter, a number of background factors that may be of importance to this study were identified from the existing literature, namely gender, age, ethnicity, education, exposure to hunting, social ties, as well as rural or urban living.

In the fifth and final major section of this chapter, the reasoned action model was introduced as a conceptual framework for investigating the implications for changing attitudes. It was explained that the central idea of the expectancy-value model is that people's salient beliefs provide the informational foundation for their attitudes. If people are exposed to new information – and this new information is accepted – then existing beliefs will change or new beliefs will be formed, resulting in corresponding changes in attitude. A vast body of research provides strong evidence that persuasive communications based on the reasoned action approach are indeed capable of changing message recipients' beliefs and to have corresponding effects on their overall attitudes. Thus, the theory of reasoned action was found to provide a valid basis for identifying where and how to target strategies to change a targeted attitude.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter, the broad research design and specific methodologies used will be outlined. It should be noted that the research design and methodology of this particular study is largely based on the conceptual framework and prescribed standard procedures of the theory of reasoned action (as described throughout chapter 2). Studies that are based on the reasoned action approach typically adopt a two phased research design. In the case of this study, a formative research phase and a primary research phase can be distinguished.

This chapter commences with a broad outline of the study's research design. Thereafter, a discussion of the methodological design of the study's formative research phase as well as the study's primary research phase will follow. This chapter will then be concluded by a brief summary of the research design and methodologies discussed throughout this chapter.

3.2 BROAD OUTLINE OF THE RESEARCH DESIGN

A research design is a plan, structure, and procedural strategy of how a research study is to be conducted in order to address its main research purpose (Kumar, 2011, pp.93 – 94). It should be recalled that this study is focused on understanding attitudes towards hunting and its underlying causal determinants and to explore the implications it holds for potentially improving the social acceptability of hunting.

In this section, a broad outline of the study's research design will be provided. In particular, the nature of the data that is required in order to address the study's main research purpose will be carefully considered. This is then followed by an explanation of how the required data will be obtained through two separate components of the study's design, namely its literature component and its empirical component. The focus of this section then turns towards introducing the broad methodological design of the study's empirical component.

3.2.1 Nature of the data and data gathering

As with any research study, data is required in order to address the sub-questions, and hence, the main research question of the study. When

planning a research design, it is extremely important to consider the nature of the data that an investigation of the research problem will require, because “data and methodology are inextricably interdependent” (Leedy & Ormrod, 2005, pp.87 & 93). Thus, to some extent, the required data dictate the appropriate research method (Leedy & Ormrod, 2005, p.94). Kumar (2011, p.138), as well as Leedy and Ormrod (2005, p.89) distinguish between two categories of data, namely primary data and secondary data. Kumar (2011, p.139) explains that primary data refers to original data that is collected “first-hand” by the researcher. Secondary data, on the other hand, refers to any data that was collected in the past or by parties other than the researcher in question – in other words, “second-hand” data. Secondary data typically includes literature sources, such as books, journals, articles, records, census data, and any other sources of published material or research findings (Kumar, 2011, p.139). The nature of the data that is required in this study will now be investigated with a view to selecting the most suitable research methodology for the specific circumstances of this study.

After carefully examining the nature of the data that is required to address the research problem of this study, it was found that **data of both a primary nature and a secondary nature is needed**. The primary data is collected as part of the study’s **empirical component**, while the secondary data is gathered through its **literature component**. Each of these two components makes a specific contribution to this study and jointly they address the study’s main research question. Both of these components will now be discussed with regard to what they entail, as well as their contributions to solving the

study's main research problem. Note, however, that the literature component plays an essential determining role with regard to the exact nature of the primary data and it also offers useful perspectives on how to handle methodological issues related to the empirical component of the study. For this reason, the literature component of the study will be addressed first, followed by a discussion of its empirical component.

3.2.1.1 Literature component of the study

The literature component of the study is crucial because it focuses on collecting the secondary information that is required to address the main research question, sub-questions, and goals of this study. The literature component of this study largely entails a review of existing literature on the psychology of attitudes, attitude formation, and attitude change (see chapter 2). Leedy and Ormrod (2005, p.64) explain that a literature review generally describes theoretical perspectives, various approaches, and previous research findings regarding a problem at hand. A large number of literature sources – dealing with a broad range of information on topics that are related to this study – formed part of the literature review and was used to compile the literature component of this study. These literature sources primarily consisted of books of academic and scientific nature, scientific journal articles and other published research findings relevant to the study.

Kumar (2011, p.31) notes that the literature review is an integral part of the research process and makes a valuable contribution to almost every operational step of a research study. Specifically, the literature component of this study serves three main purposes, which will be discussed in the paragraphs that follow below.

Firstly the literature component of this study establishes a sound cognitive foundation for conducting the study. It provides a broad overview of some general concepts in contemporary social psychology pertaining to attitudes and attitude changes. Not only does this ensure a clear and uniform understanding of these concepts, but it also enables one to contextualise the research findings in relation to the existing body of knowledge. Perhaps more importantly, however, the cognitive foundation provides a sound knowledge base for assessing and understanding attitudes; for analysing research findings; as well as for interpreting the implications these findings may hold for improving the social legitimacy of hunting.

The second purpose of the literature component is to establish a conceptual framework that serves as the very basis on which the empirical component of this study is designed. Dane (1990, p.63) and Kumar (2011, p.40) explain that a conceptual framework of a study usually stems from the literature review and is closely related to the study's specific research problem. The purpose of the conceptual framework is to ensure that the research follows a suitable and systematic research approach or course of action to ultimately

address the empirical component of the research problem. Kumar (2011, p.94) emphasises that the conceptual framework ensures that the chosen research approach is adequate to obtain valid, objective and accurate answers to the research questions of a study. Consistent with this view, it should be recalled that the theory of reasoned action was identified through the literature review as the most suitable conceptual framework for the purposes of this study (see chapter 2). From the literature review, it is evident that the theory of reasoned action relates directly to the specific research problem of the study and thus provides a suitable approach that directly addresses the research questions of the study. Kumar (2011, p.94) further explains that it is essential to rationalise, justify, and validate the chosen cognitive framework by supporting one's choice critically from existing literature. It should be recalled that the literature review in chapter 2 explicitly rationalises and justifies the researcher's decision to employ the theory of reasoned action as a conceptual framework for this study. Moreover, the literature review also shows that the reasoned action approach is thoroughly tested, well supported by empirical evidence across various disciplines, and widely acknowledged for its ability to provide valid, objective, and accurate answers.

Thirdly and finally, the literature component also clarifies the nature of the primary data that is required in order to address the study's research problem; makes the researcher more familiar with the approaches and methodologies that are suitable for obtaining the required primary data; and offers useful perspectives on how to handle methodological issues related to the empirical

component of the study. Consequently, the literature component ensures that the study is methodologically sound.

3.2.1.2 Empirical component of the study

The literature component of this study is followed by its empirical component. The empirical component forms a crucial part of the study, because it provides the primary data that is required to assess and understand attitudes towards hunting and its causal determinants, as well as to investigate the implications it holds for changing attitudes and improving the social legitimacy of hunting. The results that were derived from the primary data are discussed throughout chapter 4 of this study.

In sum then, while the literature component of this study provides the necessary secondary information that is needed to establish a cognitive foundation and conceptual framework for the study, the empirical component provides the primary information that is required in order to fully address the research purpose of the study. However, the research methodologies that were used to collect the primary data are yet to be properly discussed. Therefore, from this point on, the remainder of this chapter is devoted to discussing the methodological design of this study's empirical component and the research methodology that was employed to collect the required primary data.

3.2.2 Research design of the study's empirical component

Leedy and Ormrod (2005, pp.93 – 95), as well as Schutt (2004, p.14) explain that in order to decide whether a study should follow a qualitative or quantitative research design, the exact nature of the required data must first be considered. It was already pointed out that the purpose of the empirical component is to provide the primary information that is required in order to answer the main research problem and remaining sub-problems of this study. This, however, requires that the primary data be obtained directly from the research population in question. It should be recalled that the theory of reasoned action was already identified as the most suitable research approach for the purposes of this study. The theory of reasoned action prescribes, to a large extent, the research design and methodology of studies which are based on its approach. Consequently, the research design and methodology of this study's empirical component is largely based on the conceptual framework and prescribed procedures of the theory of reasoned action (as described throughout chapter 2). According to Fishbein and Ajzen (2010, pp.326 – 330), studies that are based on the reasoned action approach typically contain qualitative as well as quantitative components in its empirical design. Thus, after considering the exact nature of the required primary data in conjunction with the theory of reasoned action's postulations and prescribed procedures for collecting the required primary data, it is clear that this study calls for a **mixed-method research design**. Leedy and Ormrod (2005, p.97) explain that a mixed-method research design combine elements of both qualitative and quantitative approaches.

Once the nature of the required data have been considered and a decision has been taken as to whether the research should follow quantitative or qualitative approaches, the research methods need to be pinned down more precisely (Leedy & Ormrod, 2005, p.107). Since the theory of reasoned action forms an integral part of the research design of this study, it also dictates the appropriate research methods that should be employed in order to gather the primary data for this study. The reasoned action approach relies primarily on **survey research**. Survey research obtains information directly from the research population (Dane, 1990, p.120) and is the most common method of obtaining primary data on people's attitudes, beliefs, values, and experiences (Mitchell & Jolley, 1992, p.451). Fink (2003, p.142) also states that survey research is a way of collecting information in order to describe, compare, or explain people's knowledge, attitudes, and behaviours. Aaker and Day (1990, p.187) agree that surveys are the preferred choice of researchers for the collection of primary data of this particular nature.

The empirical component of studies that are based on the reasoned action approach typically consists of two consecutive surveys which are methodologically interrelated (Fishbein & Ajzen, 2010, pp.326 – 330). Consistent with this approach, the empirical design of this particular study necessitates that **two separate surveys** be conducted, namely the **formative survey** and the **primary survey**. Jointly, these two surveys address the main research problem and sub-problems of this study. Nevertheless, each of the two surveys serves its own purpose in the study's empirical component and has its own methodological design. For this reason, it is necessary to discuss

the purpose and methodology of each of the two surveys separately. The methodological design of the formative survey is discussed under section 3.3 of this chapter, while the methodological design of the primary survey is discussed under section 3.4. Jointly then, these two sections represent the entire methodological design of the empirical component of this study.

3.3 METHODOLOGICAL DESIGN OF THE FORMATIVE SURVEY

The first phase of the empirical research entails that a **formative survey** be conducted amongst a small sample of the research population. According to Fishbein and Ajzen (2010, p.327), the formative survey may contain **qualitative** as well as **quantitative** components – each with their own specific purpose. In order to fully comprehend how the formative survey fits into the research design of this study's empirical component, it is necessary to consider the purpose of the formative survey. McBurney and White (2010, p.246) recommend that before designing a survey, it is extremely important that the objectives and purpose of the particular survey be considered. For this reason, a broad outline of the purpose of the formative survey's qualitative and quantitative components will now follow.

3.3.1 Purpose of the formative survey

The main purpose of the **qualitative component** of the formative survey was to determine which readily available salient behavioural beliefs about hunting are commonly present (prominent) amongst members of the public. By incorporating content analysis in the qualitative component, it is possible to compile a set of modal salient behavioural beliefs about hunting that are commonly present within the research population. This modal set of salient behavioural beliefs about hunting will then be used to construct items that will later be included in the survey instrument of the subsequent primary survey. Clearly then, the formative survey and the primary survey of this study are methodologically interrelated in the sense that the modal set of salient beliefs that were identified during the formative research phase formed the very basis on which the questionnaire of the primary survey was developed. The formative survey is an essential methodological step in the empirical design of this study, because it ensures that the notion of belief accessibility is taken into consideration (refer to section 2.4.5 of chapter 2). Manfredi (2008, pp.93 – 94) emphasises the importance of recognising the notion of belief accessibility in attitude research and explains that it significantly improves the methodological validity of attitude studies.

The **quantitative component** of the formative research, on the other hand, served as a pilot study and it provided information about several important theoretical issues (Fishbein & Ajzen, 2010, p.328). Firstly, the formative

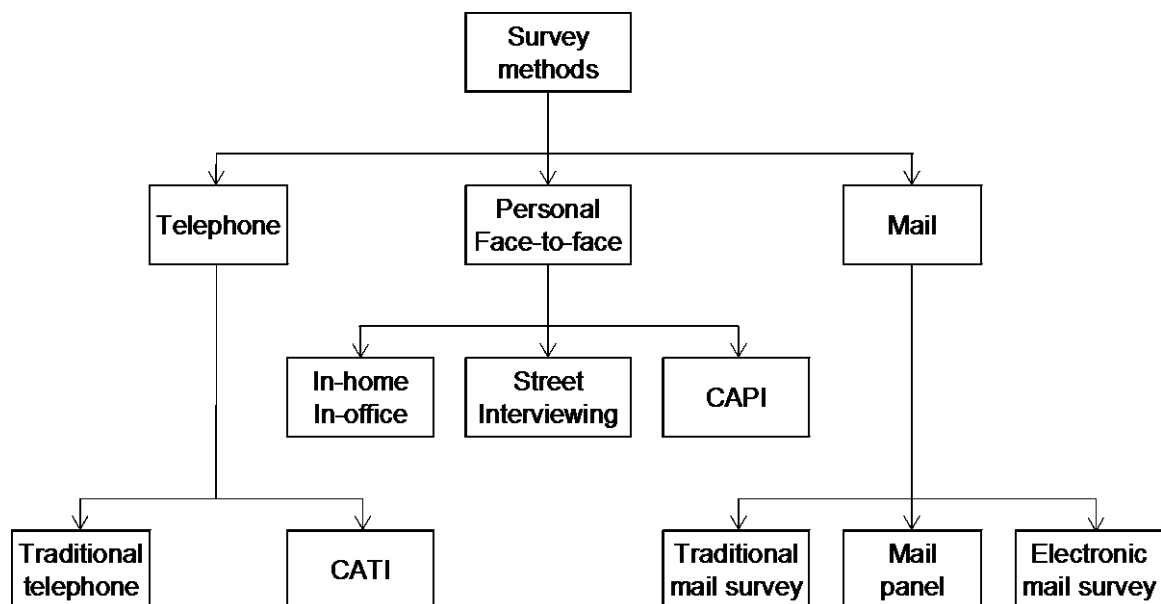
survey allowed the researcher the opportunity to develop a valid direct attitude measure and to formally test its reliability before including it in the survey instrument of the subsequent primary survey (Fishbein & Ajzen, 2010, p.328). Thus, by including multiple attitude measures (instrumental, experiential, and broad direct attitude measures) in the formative survey, the researcher can take advantage of the pilot data to formally test the validity and reliability of the direct attitude measure (Fishbein & Ajzen, 2010, p.328). This is essential in order to ensure that a reliable and valid direct measure of attitude is obtained during the primary survey of the study. Secondly, the pilot work of the formative survey provides an opportunity to identify problems in the format and wording of attitude measurement scales before it is incorporated into the survey instrument of the primary survey (Fishbein & Ajzen, 2010, p.328). Thirdly, the formative survey can be used to obtain an initial test of the relevance of some background factors (e.g., demographical variables, social variables, etc.) by checking whether or not they have a significant influence on the direct attitude measure (Fishbein & Ajzen, 2010, p.328).

In sum, the formative survey serves an **exploratory purpose** in the sense that it, firstly, sets out to explore which readily salient behavioural beliefs about hunting are present within the research population (through its qualitative component); and secondly, to test and verify methodological procedures, as well as to identify potential problems of later research (through its quantitative component). Clearly then, the objectives of this particular formative survey is not to make generalisations to a larger population.

3.3.2 Selection of a suitable survey research method

Chambliss and Schutt (2010, p.163) describe survey research as the process of collecting information from a sample of individuals through their responses to a set of standardised questions. Malhotra and Birks (1999, p.209) explain that survey research involves obtaining information directly from participants by posing questions to them. According to Malhotra and Birks (1999, p.225), survey research methods may be classified by mode of administration as shown in Figure 3.1.

Figure 3.1. CLASIFICATION OF SURVEY METHODS



CAPI = Computer Assisted Personal Interview

CATI = Computer Assisted Telephone Interview

Source: Malhotra and Birks (1999, p.225).

In selecting the most appropriate survey methods for data collection, a number of factors had to be considered. First and foremost, since the formative survey will contain qualitative as well as quantitative elements, it is imperative that the survey method is able to accommodate both of these elements. Secondly, the survey method and instrument must allow participants to express their own opinions, beliefs, and thoughts in order to elicit the salient beliefs they hold about hunting. Thus, the survey method and instrument needs to be somewhat flexible in the sense that it should allow participants to respond in a free-response format. Thirdly, it is important that the elicitation study be conducted at the level of individuals and not in a group setting. This is because elicitation procedures that rely on focus groups or group discussions to identify a set of modal salient beliefs are not a valid elicitation procedure (Fishbein & Ajzen, 2010, p.103). Fishbein and Ajzen (2010, p.103) explain that in a group setting, dominant individuals tend to influence the direction of the discussion and therefore it may appear that a rarely held belief is readily salient in the population, or that a readily held belief is rarely salient in the population. Furthermore, in a group setting individuals of the group may influence each other's beliefs that come readily to mind. For example, individuals may make inferences and form new beliefs on the basis of beliefs that are emitted by other individuals. Thus, beliefs that were previously not salient may now become part of the salient set of beliefs and, if so, they may become important determinants of the currently prevailing attitude. Therefore, in selecting a suitable and valid survey method, this potential methodological flaw must be kept in mind. Fourthly, the survey needs to be administered amongst as diverse a population as possible. The

formative survey must thus elicit salient beliefs across a diverse spectrum of background factors (such as demographical and social differences). Most importantly, however, the formative survey must extend across the entire spectrum of different attitudes towards hunting (ranging from those in favour of and strongly in favour of hunting; those with neutral attitudes towards hunting; and through to those who are opposed to and strongly opposed to hunting). Fifthly, the formative survey serves an exploratory purpose only and, consequently, there is no need for the formative survey to produce results that accurately represent a larger population. Sixthly, the budget for the formative survey was relatively restricted, and means had to be found to involve not only a suitable number of respondents, but also to include a sufficiently diverse range of respondents across the necessary background and attitudinal spectrums. Finally, some practical constraints of conducting the formative survey had to be kept in mind. The formative survey had to be conducted in a reasonable period of time and with very limited personnel and infrastructure at the researcher's disposal. The selection of a suitable survey method for the formative survey took into account all of the above mentioned circumstances and limitations.

Dane (1990, pp.128 – 135) and Malhotra and Birks (1999, p.225) are in agreement that survey research methods may be classified by mode of administration into telephone interview, personal interview and mail surveys (see Figure 3.1). After comparing all three of these survey methods, it was decided that – given the abovementioned circumstances – a **mail survey** method was the most suitable for the purpose of the formative survey.

Malhotra and Birks (1999, p.225) distinguish between three types of mail surveys, namely traditional mail surveys, mail panels, and electronic mail surveys. After considering all the available options with reference to the criteria discussed in the previous paragraph, it was decided that an **electronic mail survey** would be the most suitable survey method. An electronic mail survey is a survey method where a questionnaire is distributed by means of a computer, and responses are received either through e-mail or on the World Wide Web (Chambliss & Schutt, 2010, p.179). Dillman (2000, pp.352 – 354) and Fowler (2009, p.61) distinguish between two types of electronic surveys, namely e-mail surveys and Web-surveys. With e-mail surveys, questions are sent and answered through e-mail. With Web-surveys, on the other hand, respondents are asked to visit a website (often by just clicking an e-mailed link) and simply respond to the questionnaire on the website. After careful consideration of the advantages and disadvantages of these two electronic survey methods, it was decided to make use of **Web-surveys**.

Chambliss and Schutt (2010, pp.179 – 182) as well as Malhotra and Birks (1999, pp.232 – 233) recognise a number of advantages and disadvantages of Web-surveys. Some of the most important advantages of Web-surveys are that it is inexpensive to design and administer; the questionnaire design is very flexible and can be tailored to seem shorter, more interesting, and more attractive; it enables one to remove interviewer bias, thereby ensuring the consistency of measurements; data entry errors are virtually eliminated because answers are often recorded directly in an electronic database; and in areas where open-ended responses are required, the respondent types in

answers ready for analysis – thus, saving the researcher time and resources to prepare the qualitative data for content analysis (e.g., by compiling transcripts of open-ended responses). On the other hand, however, possibly the most important drawback of any electronic survey approach is the large number of people that do not have access to a computer or the Internet. Since there is a non-probability of obtaining responses of people who do not have computer or internet access, this may place serious constraints on obtaining a sample that is representative of a target population. The researcher cannot ascertain whether those people who were able and willing to take part in an electronic survey are really representative of a target population. Clearly, under conditions where it is imperative to obtain representative samples of a target population, electronic surveys may often pose methodological problems.

3.3.3 Selection of a suitable research sample

Daniel (2012, p.69) and Henry (1990, p.17) distinguish between two broad sampling designs, namely a probability sample design or a non-probability sample design. Probability samples have a greater likelihood than non-probability samples to be representative of the population from which they were drawn. Henry (1990, p.17) explains that this is largely because the selection method for non-probability sampling are often based on the subjective judgements of the researcher to achieve particular objectives of the research at hand and, consequently, not every member of the target

population has a possibility of being included in the sample. In contrast, probability samples are generally selected by a randomised mechanism with well-defined procedures for selecting the sample – this assures selection independent of subjective judgements and ensures that every individual in the research population has a possibility of being included in the sample (Henry, 1990, p.17).

The choice of a sampling design must be based on the particular objectives of the survey (Daniel, 2012, p.71; Leedy & Ormrod, 2005, p.145), the nature of the target population (e.g., population heterogeneity or homogeneity, size, spatial distribution, accessibility, etc.), the study's research design (methodology and data collection design), and the availability of resources (Daniel, 2012, pp.10 – 12 & 71). All these factors largely influenced the selection of the most appropriate sampling design for the formative survey and will now be discussed briefly. Firstly, it should be recalled that the formative survey serves an exploratory purpose (see section 3.3.1 of this chapter). Daniel (2012, pp.69 & 71) and Henry (1990, pp.23 – 25) both agree that non-probability samples are very often the preferred and most reasonable sampling design for research of such an exploratory nature. Furthermore, consistent with the objectives of this particular formative survey, Daniel (2012, p.71) explains that the intention of exploratory research is not to use the sample data to extrapolate study findings to a larger population or to make conclusive generalisations about a larger population. Instead, the purpose of exploratory research is, amongst other, to determine if a particular salient belief is present in the research population; to test or verify methodological

procedures; and to identify potential problems of later research (Daniel, 2012, p.71). Clearly then, from a purely methodological perspective, a non-probability sampling design would be a valid sampling approach for the formative survey. Secondly, the nature of the research population was also an important consideration in selecting between a probability sampling design and a non-probability sampling design. This is because obtaining a sample from members of the general public of South Africa that is 18 years of age and older presents some challenges in terms of the practicability of the various sampling designs. The research population of this study clearly consists of an extremely large and heterogeneous population. To complicate matters further, the research population is distributed across an extremely large geographical area – which, on its own, presents problems in terms of the accessibility of the research population to the researcher. Seen in light of the size, heterogeneity, and spatial distribution of the research population, it is apparent that a probability sampling design would be extremely expensive, time consuming, impractical, and nearly an impossible task without the availability of the necessary infrastructure and human resources. Henry (1990, pp.24 – 25) argues that, under appropriate circumstances, limited resources could justify the use of a non-probability sample. Thirdly, a probability sampling design for such a large and heterogeneous population would necessitate that a very large sample size be obtained. This could pose serious problems in terms of analysing the qualitative data (open-ended responses) that would be collected by the formative survey. Gillham (2007, pp.66 & 70) and Oppenheim (1992, p.113) both warn that analysing the content of open-ended responses are intellectually demanding, a lot of work,

and often extremely time consuming. The analysis of even a small number of open-ended responses involves a great deal more work than responses to closed questions (Gillham, 2007, p.70). Therefore, the practicability of processing and analysing large numbers of open-ended responses had to be considered in selecting an adequate sampling design. Furthermore, according to Daniel (2012, pp.69 & 77), non-probability samples are generally suitable for conducting research of a qualitative nature. Fourthly, Mitchell and Jolly (2010, p.288) explain that before a representative sample of a target population can be selected, one usually needs to acquire an accurate and complete list of the target population. A representative sample may then be selected from such a list by using probability sampling techniques. Since an accurate list of a large, general population – such as is the case in this study – is seldom available, it complicates the task of developing a reasonable sampling frame from which a probability sample could be obtained. Henry (1990, p.85) agrees and states that “as a general rule, researchers find locating an available list of the general population difficult, if not impossible. On the national level, no list is available of the general population”. Neuendorf (2002, p.88) point out that non-probability sampling is typically used in cases when there is insurmountable difficulty in creating a reasonable sampling frame.

A number of credible literature sources also support the use of non-probability samples for identifying modal salient beliefs in very large heterogeneous populations (see for example, Ajzen & Driver, 1991; Campbell & Mackay, 2003; Petkova, Ajzen & Driver, 1995; Whittaker, Manfredo, Fix, Sinnott, Miller,

& Vaske, 2001). Thus, there is sufficient evidence in the literature that non-probability sampling designs will be able to fully meet the particular objectives of the formative survey.

After considering the adequacy of non-probability sampling compared to probability sampling for the formative survey, it was decided that a **non-probability sampling design** would be the best choice. Daniel (2012, p.81) indicates that once a choice is made to use a non-probability sampling design, it is necessary to select the specific type of non-probability sampling method that will best serve the purpose of the survey. Daniel (2012, p.81), Neuendorf (2002, pp.87 – 88), and Schutt (2009, pp.169 – 175) recognise four major types of non-probability sample designs: availability sampling (also known as convenience sampling), where participants are selected simply because they are readily available and convenient for the researcher to survey; purposive sampling, where participants are selected from the target population on the basis of their fit with the purpose of the study; quota sampling, where participants are selected to ensure that the sample represents certain characteristics in proportion to their prevalence in the population; and snowball sampling (also known as respondent-assisted sampling), where participants are selected as they are identified by successive informants or interviewees. After carefully considering all the weaknesses and strengths of the various non-probability sampling methods against the particular circumstances pertaining to the formative survey, the researcher decided to make use of a combination of **availability sampling** and **purposive sampling**. This entailed that the sampling procedure be executed in two

consecutive phases: first, the availability sampling phase and, second, the purposive sampling phase. The details of these two sampling phases are discussed below.

In absence of a reasonable sampling frame for the research population of this study, the researcher was faced with the challenge of identifying a suitable and convenient target population to obtain both an availability sample and purposive sample from. In order for the target population to be adequate for this purpose, it had to meet four important criteria. In the first place, the chosen target population had to form part of the research population of this study – in other words, members of the general public of South Africa that is 18 years of age and older. Secondly, it was essential that the target population consisted of individuals from across the entire attitudinal spectrum (namely individuals who approve and strongly approve of hunting; individuals who neither approve nor disapprove of hunting; and individuals who disapprove and strongly disapprove of hunting). This is because people with different attitudes towards hunting could reasonably be expected to hold substantially different salient beliefs about hunting (this expectation is supported by the literature review in chapter 2). In the third place, the chosen target population had to be a sufficiently diverse and heterogeneous population (similar to that of the research population in this study) and had to include individuals from a wide variety of demographical and social backgrounds (e.g., ages, ethnicity, social ties, genders, etc.). This is because the literature review in chapter 2 suggested that people's attitudes towards hunting (and, consequently, also the salient beliefs they hold about hunting)

might differ across some demographical and social variables. Finally, since the budget for the formative survey was very limited, the chosen target population had to be easily accessible to the researcher and data collection had to be relatively convenient and inexpensive.

After due consideration was given to the abovementioned criteria, the **students and staff members of the Nelson Mandela Metropolitan University** (NMMU) were identified as a suitable target population for the formative survey's sampling procedure. In terms of the first requirement mentioned in the paragraph above, the students and staff members of NMMU do, in fact, all form part of the research population of this study – namely they are members of the general public of South Africa who are 18 years of age and older. To ensure that no participants from countries other than South Africa were included in the sample (such as foreign students), question 5 the formative survey's Web-questionnaire required that all participants indicate whether or not they are a South African citizen (see Annexure A). All participants who indicated that they were not South African citizens were removed from the sample. As far as the second requirement is concerned, the researcher felt that it could be reasonably assumed that the entire spectrum of attitudes towards hunting would be present amongst the students and staff members of NMMU. In terms of the third requirement, the researcher argues that the students and staff members of NMMU are a sufficiently diverse and heterogeneous population that includes individuals from a wide variety of demographical and social backgrounds. Note, however, that the researcher acknowledges that, compared to the research

population (general public of South Africa that is 18 years of age and older), the target population (students and staff members of NMMU) are likely to over-represent the higher socio-economic classes.

After choosing an appropriate target population for the formative survey, it was then possible to proceed with the first phase of the formative survey's sampling procedure, namely the **availability sampling**. The availability sample was obtained through the voluntary participation of students and staff members of NMMU. All the students and staff members of NMMU were invited to participate in the formative survey via the so-called **NMMU Communique service** – which is an internal organisational e-mail service that is used to communicate with the students and staff of NMMU. Participants who were willing to take part in the survey simply had to click on the electronic link that was included in the e-mail invitation. The availability sample that was obtained was considered to be sufficiently diverse in terms of its demographical composition, social variables, and attitudes towards hunting. This was established by analysing participants' responses to all the questions in section A and section B of the formative survey's Web-questionnaire (see Annexure A). Details regarding the size and composition of the availability sample can be found under section 3.3.4 of this chapter. The availability sample of the formative survey basically served two purposes: firstly, it provided a large amount of data that would satisfy the quantitative component of the formative survey; and secondly, it provided a platform for selecting a purposive sample that would satisfy the qualitative component of the formative survey.

After the availability sample was obtained, it was then possible to proceed with the second phase of the formative survey's sampling procedure, namely the **purposive sampling**. As mentioned above, the purposive sample provided the information needed to satisfy the qualitative component of the formative survey – that is, to identify the salient behavioural beliefs that are commonly held in the research population. The purposive sample was drawn from those very participants that formed part of the availability sample. When making use of purposive sampling, the researcher intentionally included those individuals in the purposive sample who possess the particular characteristics of interest that will best serve the purpose of the survey (Daniel, 2012, p.88; Neuendorf, 2002, pp.87 – 88; Schutt, 2009, pp.169 – 175). Daniel (2012, p.88) explains that this selection procedure requires that the researcher specifies the specific inclusion or exclusion criteria that were used to compile a purposive sample. The researcher's aim was to select a purposive sample comprising of individuals whose attitudes towards hunting extend across the entire attitudinal spectrum. According to Daniel (2012, p.90), inclusion criteria of this particular nature are clearly focused on maximising the variability of the purposive sample in terms of its diversity and heterogeneity. Daniel (2012, p.90) explains that this can generally be done by selecting a wide variety of the elements of interest so as to identify important common patterns that cut across the variation. In selecting a purposive sample for the formative survey, the aim of the researcher was thus to select individuals with a wide variety of attitudes towards hunting so as to identify those salient behavioural beliefs that cut across the attitudinal variation. Chambliss and Schutt (2010, p.237) also supports this sampling approach and explain that, in qualitative sampling,

researchers should try to select participants who represent a range of different perspectives. Henry (1990, p.22) cautions that selection bias is likely to occur when non-probability samples are selected on the basis of the researcher's discretion and subjective judgements. Daniel (2012, p.74) points out that random sampling minimises selection bias by eliminating the subjective biases of the researcher from the selection process. For this reason, the researcher decided to select individuals that comprised the purposive sample on the basis of a random selection procedure. This was done by dividing all the individuals which formed part of the already obtained availability sample into five different attitudinal categories based on their responses to the direct attitude measure in the formative survey's Web-questionnaire (question 19 of Annexure A). The five attitudinal categories were comprised of individuals who approved and strongly approved of hunting; individuals who neither approved nor disapproved of hunting; and those individuals who disapproved and strongly disapprove of hunting. Individuals from each of these five attitudinal categories were then randomly selected for inclusion in the purposive sample by making use of the software package Microsoft Office Excel 2007. This sample selection procedure, firstly, ensured that the purposive sample included individuals across the entire attitudinal spectrum and, secondly, that selection bias was minimised by eliminating the subjective biases of the researcher from the selection process. Details regarding the size and composition of the purposive sample can be found under section 3.3.4 of this chapter.

In light of Sutton *et al*'s (2003, p.249) perspective (as was discussed earlier in section 2.4.5 of chapter 2), the researcher acknowledges that compiling a set of modal salient beliefs from a non-representative sample – such as implicated in this study – may possibly increase the likelihood of producing two errors: firstly, it may fail to include one or more of an individual's salient beliefs in the modal set and, secondly, one or more of the beliefs that are included in the modal set may not be a salient belief of some individuals in the research population. From the perspective of the researcher, these two recognised shortcomings of using a non-representative sample to compile a set of modal salient beliefs are to some degree unavoidable due to those practical considerations of selecting a suitable sampling design that were discussed earlier in this section. Nevertheless, in light of the importance of taking the notion of belief accessibility (saliency) into consideration in attitude research (see Manfredo, 2008, pp.93 – 94), the researcher argues that this approach does still take heed to the notion of belief accessibility and may therefore be considered to be more methodologically sound than if the modal set of salient beliefs were to be based purely on the researcher's intuition.

3.3.4 Sample size and composition

In deciding on a suitable sample size for the formative survey, the researcher was, firstly, guided by the objectives of the survey. Recall that the formative survey serves an exploratory purpose (see section 3.3.1 of this chapter). Daniel (2012, p.237) states that “when conducting a study with an exploratory

objective, the researcher is not attempting to make conclusive analysis, and a small sample size may thus suffice". Clearly then, a relatively small sample size will be able to meet the objectives of the formative survey. Secondly, in deciding on a sample size for the formative survey the researcher had to select a sample size that would not exceed the resources that are available for doing the survey. Daniel (2012, pp.240 – 241) explains that "there must be a balance between available resources and sample size. The more limited one's resources (e.g., financial, time, personnel, infrastructure), the more consideration should be given to choosing a smaller sample size". Thirdly, in selecting a sample size for the formative survey, the researcher was guided by a number of considerations pertaining to the particular survey's research design. Daniel (2012, p.69) explains that research studies that make use of non-probability samples (such as in the case of the formative survey) generally target small sample sizes. Furthermore, Daniel (2012, p.243) explains that "when a researcher uses non-probability sampling, statistical theories and calculations are not applicable in determining sample size. Instead, one may consider using various conventions, rules of thumb, and *ad hoc*, non-statistical methods". Daniel (2012, p.243) provides guidelines for this approach and suggest that surveys with an exploratory research design (such as in the case of the formative survey) are typically conducted with sample sizes of between 30 to 150 participants, depending on the particular objectives and details of the survey. Moreover, recall that the formative survey consists of both a quantitative and a qualitative component (see section 3.3.1 of this chapter). Daniel (2012, p.241) explains that quantitative research designs generally require larger sample sizes than qualitative

research designs. This seems to suggest that a sample of a different size may be needed to meet the objectives of the formative survey's quantitative component than would be needed to meet the objectives of its qualitative component. Thus, the remainder of this section will focus on discussing the selection of a suitable sample size for the quantitative component and the qualitative component of the formative survey.

As far as the **quantitative component** of the formative survey is concerned, the availability sample size needed to be large enough to obtain a sufficient amount of pilot data to formally test and validate the direct attitude measure, as well as to identify potential problems for later research. To do this, however, entails that quantitative data analysis be conducted. Since larger sample sizes are often preferred in instances where quantitative data analysis is required (Daniel, 2012, p.241), it was decided to use as large a sample size as possible for the purposes of testing and validating the direct measures of attitude. For this reason, it was decided to use the total sample size that was obtained during the availability sampling procedure, which amounted to exactly **250 responses** in total. The availability sample consisted of participants across the entire attitudinal spectrum and included individuals who strongly approve ($n = 48$) and approve ($n = 76$) of hunting; individuals who neither approve nor disapprove of hunting ($n = 20$); and individuals who disapprove ($n = 34$) and strongly disapprove ($n = 72$) of hunting. Although these attitudinal sub-groups do not produce an accurate proportional representation of the research population, it is sufficient for the particular purpose of formally testing and validating the direct measure of attitude. The

size and composition of the availability sample was discussed with a statistician, who also agreed that the availability sample is sufficiently diverse and large enough for the particular purpose it was meant for.

In choosing an adequate purposive sample size for the **qualitative component** of the formative survey, a number of issues came into consideration. Firstly, as was already mentioned, the formative survey is expected to produce a number of open-ended responses that must be prepared and subjected to content analysis. Because of the immense practical implications and time consuming implications of processing and analysing open-ended responses, it is often impractical to obtain large samples which will produce many open-ended responses. Gillham (2007, pp.66 & 70) warns that analysing the content of open-ended responses are intellectually demanding, a lot of work, and often very time consuming. Thus, the practicability of processing and analysing large numbers of open-ended responses were a major consideration in selecting an adequate sample size. Secondly, although a representative sample was not required for the formative survey, the purposive sample size nevertheless needed to be large enough to identify a set of modal salient behavioural beliefs about hunting that are commonly present within the research population. With these two considerations in mind, a discussion will now follow on how a suitable purposive sample size was chosen for the qualitative component of the formative survey.

To identify a set of modal salient behavioural beliefs that are commonly held within a population would require research of a qualitative nature, which generally involves a relatively small sample size. Daniel (2012, p.69) agrees that small sample sizes are generally targeted in research studies with a qualitative design. Recall that, in terms of this study, three distinct segments are expected to hold significantly different salient beliefs and attitudes regarding hunting, namely, those who are in favour of hunting, those with neutral attitudes towards hunting, and those who oppose hunting. Fishbein and Ajzen (2010, p.327) recommend that, for the purposes of a formative survey, a total sample of about 30 individuals will usually be sufficient for a highly homogenous population, but for a more heterogeneous population, a larger sample is usually required. For a heterogeneous population, Fishbein and Ajzen (2010, p.327) suggest that 15 – 20 participants from each major segment or sub-group in the population would generally be sufficient. These suggested sample sizes seem to be widely accepted in the literature as a reasonable norm for identifying modal salient beliefs in large heterogeneous populations. To take some examples from the literature, Ajzen and Driver (1991) used a non-probability sample of just 34 participants to compile a list of modal salient beliefs pertaining to five leisure activities performed by undergraduate students at the University of Massachusetts in the United States; Campbell and Mackay (2003) successfully used a small non-probability sample of only 30 respondents to generate a set of modal salient beliefs of non-supporters and supporters of hunting from the general public in the entire Manitoba in Canada; and Whittaker *et al.* (2001) successfully used a sample of a mere 27 participants to identify a set of modal salient beliefs

about a controlled moose hunt amongst Anchorage residents (a general population of 260 000 individuals) in Alaska.

Chambliss and Schutt (2010, p.237) as well as Daniel (2012, p.247) explain that a sequential sampling approach is often the best way to determine a sufficient sample size in qualitative research. Daniel (2012, p.247) explains that when using a sequential sampling approach, a fixed sample size is not set in advance of data collection. Instead of setting a fixed sample size, the researcher sets a decision rule to govern when sampling will stop. The researcher will then continue to include new participants in the sample until the decision rule is fully satisfied. Daniel (2012, pp.237 & 247) explains that the point of data saturation (also referred to as information redundancy) is a decision rule that is typically used in qualitative research of an exploratory nature. Chambliss and Schutt (2010, p.237) explain that this decision rule requires that the researcher continues to add participants to the sample until a **data saturation point** is reached – that is, the point when the responses of new participants seem to yield little additional information. Clearly, such a sequential sampling approach would have an explicit rationale for determining a suitable purposive sample size for the formative survey's qualitative component. Thus, the researcher employed a **sequential sampling approach** to determine a suitable purposive sample size for identifying a set of modal salient behavioural beliefs about hunting for the research population. To do this, the researcher simply continued to add participants to the purposive sample until it was evident that no new behavioural beliefs were identified when additional participants were included in the purposive sample.

Participants were included in the purposive sample through randomly selecting individuals from each one of the five attitudinal categories. The final purposive sample consisted of 20 participants from each one of the three major attitudinal sub-groups, namely individuals who approve ($n = 13$) and strongly approve ($n = 7$) of hunting; individuals who neither approve nor disapprove of hunting ($n = 20$); and individuals who disapprove ($n = 13$) and strongly disapprove ($n = 7$) of hunting. Thus, a total purposive sample size of **60 participants** was used to identify a modal set of salient behavioural beliefs about hunting amongst the research population. The researcher found that this purposive sample was more than sufficient to reach a definite data saturation point, which in turn ensured that the sample was adequate for identifying a valid set of modal salient behavioural beliefs about hunting.

3.3.5 Design of the formative survey's research instrument

It was already established earlier in this chapter that the formative survey was administered as a Web-survey, during which respondents were asked to visit a website by clicking on an e-mailed link and simply respond to the electronic questionnaire that appears. Punch (2003, p.30) explains that the electronic questionnaire is a data collection tool (survey instrument), and its design must be guided by the goals of the survey.

Schnetler, Stoker, Dixon, Herbst & Geldenhuys (1989, p.44) emphasise the importance of a well-designed questionnaire and state that it will increase the reliability and validity of the survey results. Conversely, a poorly designed questionnaire can invalidate the survey results. The theory of reasoned action prescribes some important guidelines regarding the design of a questionnaire for research studies that make use of the reasoned action framework. These prescribed guidelines ensure the validity and reliability of the survey results and should therefore not be ignored. Consequently, the prescribed guidelines of the theory of reasoned action played a major role in the design of the formative survey's questionnaire. Chambliss and Schutt (2010, p.169) support this approach and explain that when previously validated approaches to questionnaire design are available – and when these designs are appropriate to the specific circumstances and research concerns of one's own research – then it may be advantageous to make use of such a design. They also explain that the design of one's own survey instrument can be improved by building on existing approaches and questionnaire designs that are known to provide reliable and valid results.

The questionnaire of the formative survey appears in **Annexure A**, and the subsequent sub-sections focus specifically on discussing all the relevant aspects of its design. The questionnaire design will firstly be discussed with specific reference to question contents, question types, and wording of the questions. Thereafter, the design of the formative survey's questionnaire will be discussed with specific reference to the question order, length of the questionnaire, as well as the format and layout of the questionnaire.

3.3.5.1 Question contents

Chambliss and Schutt (2010, p.164) claim that the selection of good questions is the single most important concern for survey researchers. Oishi (2003, p.22) explains that the primary aim of the survey questions should be to meet the purpose of the survey. Thus, each question included in the formative survey's questionnaire was designed with the specific purpose of the survey in mind.

Chambliss and Schutt (2010, p.164) state that question writing for a survey may begin with a review of similar studies which were previously conducted. They also explain that surveys may contain questions that were previously used in similar studies. In designing the question content of the questionnaire for this survey, the researcher studied a large number of literature sources pertaining to the public's attitudes towards hunting, wildlife management issues and natural resources. From these literature sources the researcher was able to establish what questions would be of importance and what the content of these questions should be. Furthermore, the question content was designed in a manner which complies with the theory of reasoned action's prescribed guidelines.

Emory and Cooper (1991, pp.356 – 361) are of the opinion that question content should be tested, firstly, by ascertaining whether the specific question

will produce any meaningful information for the study. In the second place, the scope of each question should be narrow enough for a single question to produce a meaningful answer. Thirdly, the researcher should determine whether respondents have the necessary information to answer all the questions, and, lastly, whether the respondents would be willing to answer all the questions. All the questions were checked for relevance in terms of the survey's main purpose and the information sought, namely to elicit and identify respondents' salient behavioural beliefs regarding hunting (questions 9 to 12 of Annexure A), to obtain pilot data regarding the instrumental, experiential, and direct measures of their attitudes towards hunting which are needed to test and validate the direct attitude measure (questions 13, 15, 17; questions 14, 16, 18; and question 19 of Annexure A, respectively) and, finally, to obtain pilot data regarding the relevance of certain background variables in this study (questions 1 to 8 of Annexure A). Since the survey questions simply require of participants to express their personal beliefs, opinions and attitudes towards hunting, it may be reasonably argued that people are indeed in possession of the information that is required to answer the questions. Furthermore, the question contents do not require of respondents to share any personal or sensitive information and, thus, there is also no obvious reason for concern regarding respondents' willingness to answer the questions.

3.3.5.2 Question types and wording of the questions

The types of questions used in a questionnaire are extremely important as they have an effect on the type and quality of information obtained from a respondent (Gillham, 2007, p.28; Kumar, 2011, p.151). Two basic question types can be distinguished in survey research, namely open-ended questions and closed-ended questions (Kumar, 2011, p.151). Open-ended questions – also known as unstructured questions – require respondents to express their responses using their own words and ideas. Open-ended questions are used for complex questions that cannot be answered in a few simple categories but require more detail and discussion. Closed-ended questions – also known as structured questions – give respondents a set of standardised answers to select from. Closed-ended questions should be used when the answer categories are discreet and relatively few in number (Nardi, 2006, pp.73 – 74).

The theory of reasoned action requires that the formative survey questionnaire consists of **open-ended** as well as **closed-ended questions**. The open-ended questions and closed-ended questions that were included in the questionnaire will now be discussed with specific reference to the purpose they served in the formative survey. The open-ended questions were specifically designed to elicit and identify respondents' salient behavioural beliefs regarding hunting. Fishbein and Ajzen (2010, p.100), as well as Sutton *et al.* (2003, p.235) explain that salient beliefs are those beliefs that first come to mind when a person is asked open-ended questions with regard to the

behaviour of interest. It should be recalled that Fishbein and Ajzen (2010, p.85) as well as Sutton *et al.* (2003, p.246) regard it as necessary to take into consideration both the instrumental and experiential aspects of attitudes when eliciting salient behavioural beliefs, since both aspects may have an influence on the overall attitude (see section 2.4.5 of chapter 2). Thus, in order to ensure that the elicitation procedure produced an unbiased set of salient behavioural beliefs, the open-ended questions were worded in such a way that they prompt instrumental and experiential outcomes. In total, four open-ended questions were included in the questionnaire to elicit salient behavioural beliefs about hunting (questions 9 to 12 of Annexure A). The first two of these questions were aimed at identifying experiential behavioural beliefs by asking participants what they 'like' and 'dislike' about hunting. The last two of these questions were aimed at identifying instrumental behavioural beliefs by asking participants what they think the 'positive' and 'negative' consequences (or the 'advantages' and 'disadvantages') are of hunting. During all four of these open-ended questions, participants were allowed to express their thoughts in a free-response format.

Two types of closed-ended questions were included in the questionnaire. Firstly, factual questions were employed to collect data on a number of background variables that may be of interest to this study (questions 1 to 8 of Annexure A). The purpose of including questions regarding background variables in the formative survey is mainly to obtain an initial test of their relevance and to identify potential problems in question formats, question wording, and so forth. This allows the researcher to test and refine the

questions regarding the background variables prior to the primary survey. In addition the background variables also enabled the researcher to verify that the sample was sufficiently diverse in terms of the relevant background factors, as well as to ensure that the sample consisted only of South African citizens from 18 years of age and older.

The second type of closed-ended questions used in the questionnaire was scale-type questions. More specifically, semantic differential evaluative scales were used to obtain different measures of attitudes towards hunting (A_B). The semantic differential is an attitude scaling method that was developed by Osgood *et al.* (1957) and typically consists of a series of seven-point bipolar adjective scales which all measure a single construct (Fishbein & Ajzen, 2010, p.79). Although it often consists of a series of seven-point bipolar adjective scales, Ajzen (2011h, *online*) states that “there is nothing sacred about seven-point scales and it is at the investigator’s discretion to use fewer or more scale points”. A reputable international survey research company who has vast experience in survey research in South Africa, namely Ipsos, advised the researcher that from a statistical point of view it has been proven that South Africans tend to provide more accurate ratings on five-point scales (Fleetwood, 2013, *pers. comm.*). Furthermore, Gillham (2007, p.32) warns that a seven point-scale is usually redundant, and people often don’t use the whole scale. For these reasons the researcher decided to make use of five-point bipolar scales. It should be recalled that a valid attitude measure should make provision to capture both the instrumental and experiential aspects of attitude (see section 2.4.6.2 of chapter 2). For this reason, the

questionnaire contains a series of six five-point evaluative bipolar scales, which jointly captures the instrumental and the experiential components of respondents' attitudes towards hunting. Bipolar adjective pairs such as *good–bad*, *beneficial–harmful* and *positive–negative* were used to capture the instrumental component of respondents' attitudes towards hunting (questions 13, 15, and 17 of Annexure A, respectively), while bipolar adjective pairs such as *happy–sad*, *like–dislike* and *pleasant–disturbing* were used to capture the experiential component of respondents' attitudes towards hunting (questions 14, 16, and 18 of Annexure A, respectively). In a similar fashion, a single semantic differential evaluative scale consisting of bipolar adjective pairs such as *strongly approve* to *strongly disapprove* were used to obtain a broad, overall measure of respondents' attitudes towards hunting (question 19 of Annexure A).

According to Fishbein and Ajzen (2010, p.101), when eliciting salient beliefs, the researcher must carefully consider whether respondents should be asked about them personally performing the behaviour, or about performance of the behaviour in general. This is because the consequences people expect as a result of them performing the behaviour may differ from the consequences they associate with performance of the behaviour in general by others. It should be noted, however, that the purpose of this study is to assess and understand people's attitude towards the legal hunting of wild animals in general and not necessarily towards them participating in the legal hunting of wild animals themselves (see section 2.4.5 of chapter 2). Consequently, care

was taken to word all the questions of the formative survey in such a way that it refers to the performance of the behaviour in general.

Schnetler *et al.*, (1989, p.56) warns that the manner in which questions are worded can influence the response that the researcher receives and lead to misrepresentation of results. Guidelines provided by Kumar (1999, pp.119 – 121), Nardi (2006, pp.78 – 80), Oishi (2003, pp.25 – 28), Oppenheim (1992, pp.119 – 147) and Schnetler *et al.* (1989, pp.56 – 64) were used to select the wording of the questions in the formative survey questionnaire. In sum, ambiguous and vague questions were avoided at all cost, because it would lead to incorrect or obscure answers. Care was also taken not to ask double-negative or double-barrelled questions that may lead to confusion or uncertainty in participants. Extra care was taken to avoid leading and loaded questions, since they are generally not neutral and lead to biased responses (leading questions direct respondents' attention to a specific type of response, while loaded questions are worded in such a way that they unconsciously lead respondents towards a specific response). Moreover, questions were also worded carefully to avoid presumptions as far as possible. Finally, in wording questions it was necessary to take into account the language proficiency and educational level of the respondents. The research population of this study is very diverse and includes people from various educational levels. For this reason, extra care was taken to simplify the wording of questions as well as the instructions for completing the questionnaire. Questions were worded in such a way that they were short, simple and specific, so that all respondents could comprehend what was asked. The use of technical terms was avoided

as far as possible and words that are easy to understand were used. The researcher does, however, acknowledge that since the formative survey questionnaire is in English, this limits potential respondents to those who are sufficiently proficient in the English language. Nevertheless, the researcher argues that since the formative survey will only be conducted amongst the students and staff members of the Nelson Mandela Metropolitan University (and since proficiency in the English language is essential to study or work at Nelson Mandela Metropolitan University) it may reasonably be assumed that virtually everybody in the research population has the required language proficiency to participate in the formative survey.

3.3.5.3 Question order

Once the design of the questions in the questionnaire is complete, the order of the questions must be planned. The order in which questions appear is important because it may influence how respondents react to the questionnaire as a whole and how some questions are answered, consequently affecting the quality of the responses obtained (Schutt, 2004, p.244). Oishi (2003, p.49) explains that the researcher must consider the possibility of question-order effects, where respondents' exposure to one question may influence how subsequent questions are answered. The guidelines of Bailey (1987, pp.131-135), Oishi (2003, pp.39-49), Schnetler *et al.* (1989, pp.82-84) and Schutt (2004, pp.244-245) were taken into account in this regard and are briefly discussed below.

The questionnaire begins with easy, non-threatening questions which will put the respondent at ease. General demographical questions were asked first, followed by general questions regarding respondents' direct exposure to hunting and social ties with hunters. The more specific questions regarding respondents' beliefs and attitudes towards hunting were asked later in the questionnaire. This approach has the advantage of the respondents becoming relaxed and acquainted with the process of answering the Web-based questionnaire. It may also give information regarding background variables influencing refusals, should the respondent decide not to fully complete the questionnaire for some reason.

Questions were arranged thematically and logically in a chronological order. This enabled respondents to understand the relationship between the questions. The questions pertaining to each theme were addressed under separate sections in the questionnaire (see section 3.3.5.4 of this chapter for details). Introductory remarks and instructions were provided to respondents in writing at the beginning of every section of the questionnaire. Furthermore, questions that require similar responses were grouped together. However, at the same time care was taken to ensure that questions and response choices did not become monotonous and tiring.

A final consideration pertaining to question order was that of the order in which the four open-ended questions in the questionnaire should be asked (questions 9 to 12 of Annexure A). Sutton *et al.* (2003, p.239) found a

significant order effect when using open-ended questions to elicit and identify salient beliefs. They found that when the experiential open-ended questions were placed before the instrumental open-ended questions, significantly more salient beliefs were elicited in response to the experiential questions than when the order was reversed. Clearly then, by placing experiential open-ended questions before instrumental open-ended questions, the elicitation of salient beliefs may be improved. This in turn may, of course, enable the researcher to form a more complete understanding of the causal determinants underlying a particular attitude. Based on the findings of Sutton *et al.* (2003, p.239), it was thus decided to place the experiential open-ended questions (questions 9 and 10 of Annexure A) before the instrumental open-ended questions (questions 11 and 12 of Annexure A) in the formative survey questionnaire.

3.3.5.4 Format and layout of the questionnaire

Schnetler *et al.* (1989, p.86) provides guidelines for creating a questionnaire with an effective format and layout. They recommend that the questionnaire should be attractive, the instructions must be clear and not lead to any confusion, the questionnaire format must be designed to be as respondent friendly as possible, and the layout must be logical and consistent to avoid confusion.

Chambliss and Schutt (2010, p.179) point out that the design of electronic questionnaires for Web-surveys are flexible and can feature appealing graphic and topographic elements. The formative survey questionnaire was made as neat and attractive as possible. The questionnaire commences with a brief explanation of the term hunting. It is explained that the term '*hunting*' refers to the '*legal hunting of wild animals*' and that it does not refer to any illegal practice such as poaching (see page 2 of Annexure A). This is essential in order to ensure that all respondents have an uniform understanding of the term hunting – as is required by the theory of reasoned action (see section 2.4.4 of chapter 2). Some measures were taken to ensure that respondents notice this definition of hunting before commencing with the completion of the survey questions. Firstly, the definition of the term hunting was provided on the very first page of the Web-questionnaire. No instructions or any information regarding the survey were provided on the first page other than the definition of the term hunting. Secondly, before respondents were allowed to proceed to the next page of the questionnaire, they were required to acknowledge that they have read the definition of hunting by clicking on a box which appeared directly below the definition of hunting. This was done in order to ensure that all respondents were forced to notice the definition. Thirdly, large bold lettering was used in order to immediately attract respondents' attention to the definition.

As mentioned previously, the questionnaire is divided into four sections, each comprised of questions that addresses a different theme (see Annexure A): section A of the questionnaire asks questions about the demographical

background of respondents, section B of the questionnaire is focused on collecting other background information that is expected to be of relevance to this study, section C of the questionnaire contains open-ended questions where respondents can express their experiential and instrumental behavioural beliefs about hunting and section D of the questionnaire is focused on obtaining measures of respondents' attitudes towards hunting. Each section appears on its own page with short and clear instructions for answering the questions that follow. The Web-questionnaire requires that respondents provide an answer to every question on the page before it is possible to proceed to the next page of the questionnaire. This not only ensures that all questions are noted and answered by respondents, but it also ensures that all the respondents answer the questions in an identical order and that the flow of the questions is controlled throughout the survey.

3.3.5.5 Length of the questionnaire

Schnetler *et al.* (1989, p.85) explain that the length of the questionnaire is determined by what the researcher needs to know, the number of questions required, the type of survey and the type of respondent. Gillham (2007, pp.39 – 41) emphasises that the overall length of a questionnaire is critical and therefore the researcher needs to ensure that there are not too many questions on the questionnaire and that every question deserves inclusion. It is generally suggested that a questionnaire should be as short and as simple as possible. Similarly, Schnetler *et al.* (1989, p.86) suggest that the

questionnaire should consist of a realistic number of items. Oppenheim (1992, p.122) warns that open-ended questions, which require thinking and writing on the part of the respondent, should be kept to a minimum.

The formative survey questionnaire consisted of 19 questions in total. In order to keep the questionnaire as short and simple as possible, closed-ended questions were asked whenever it was possible. However, for the purposes of eliciting respondents' salient behavioural beliefs regarding hunting, it was necessary that a total of four open-ended questions be asked. Furthermore, since the formative survey was administered as a Web-survey, it had the advantage that the questionnaire design was very flexible and could be tailored to seem shorter, more interesting, and more attractive (Chambliss & Schutt, 2010, pp.179 – 182; Malhotra & Birks, 1999, pp.232 – 233).

The Web-survey automatically recorded how long it took every participant to complete the survey. On average, it took respondents 8 minutes and 19 seconds to complete the Web-questionnaire of the formative survey. Thus, it may be argued that the questionnaire was not too long.

3.3.6 Pre-testing

Bailey (1987, p.141) regards pre-testing as the final stage in the questionnaire design. Litwin (2003, p.66) emphasises the importance of pre-testing in the development of a survey instrument and explains that pre-testing is a critical step in assessing the practical application of the survey instrument. Nardi (2006, pp.95 – 96) explains that pre-testing is the best way of assessing whether the questionnaire has any flaws, the instructions are adequate, the wording of the questions and format are clear, the questionnaire takes a reasonable time to complete, and to ensure that the questionnaire produces the required information.

According to Schnetler *et al.* (1989, p.87) pre-testing may be done in two steps. Firstly, the questionnaire may be informally tested by subjecting it to the criticism, comments and inputs of people who are familiar with the study and people who are familiar with the principles of question construction. Secondly, the questionnaire may be tested formally by asking a small sample of persons who represent the study population, to complete the questionnaire.

The questionnaire was informally tested firstly by presenting it to the promoter of this study for comments. Secondly, the statistician who was involved in this study was also asked to comment on the questionnaire. Thirdly, the final questionnaire was presented to the Nelson Mandela Metropolitan University's Research Ethics Committee for human subjects (NMMU REC-H) for comment. The committee consists of a panel of experts who not only

comment on the questionnaire, but also on the research design of the study. Based on a few comments and recommendations from the promoter, the statistician, and the NMMU REC–H, a number of changes were made as part of the final refinements before testing the questionnaire formally.

The questionnaire was formally tested by e-mailing the electronic link to the Web-survey to a small number of selected people who agreed beforehand to respond to the Web-questionnaire. Their responses were not included in the data set and were purely used for the purposes of formally testing the practical application of the formative Web-questionnaire. The formal testing confirmed that the Web-questionnaire was able to satisfy all the necessary requirements and produced the required information.

3.3.7 Administering the formative survey and the response

As discussed earlier, the formative survey was conducted as a Web-survey. This entailed that the electronic link to the Web-questionnaire had to be e-mailed to every individual in the research population. The electronic link to the Web-questionnaire was distributed along with a preamble letter via the **NMMU Communique internal e-mail service** amongst all students and staff members of NMMU. This preamble letter explained the purpose of the study and all the necessary information with regards to the participation in the study. The preamble letter also provided potential participants with the electronic link to the Web-survey and with the contact details of the researcher. In addition, the preamble letter also obtained the necessary consent from participants and

ensured participants of their anonymity and the confidentiality of their participation.

Once participants clicked on the electronic link which appears in the preamble letter, they were directed to a website where they were required to complete the electronic Web-questionnaire. Written instructions were provided on the electronic questionnaire to guide participants through the response process. The Web-questionnaire was, of course, self-administered, meaning that it was completed by the respondents themselves without the assistance of the researcher or an interviewer. Nardi (2006, p.67) claims that self-administered questionnaires are best designed for investigating attitudes, beliefs, and opinions that are not usually observable. Oppenheim (1992, p.103) explains that self-administered questionnaires ensures accurate sampling, since the presence of the researcher may influence participants' responses.

The formative survey took place over a relatively short period of time and commenced on 10 April 2013 and continued to 14 April 2013. Within this period of five days, a total of 411 participants responded to the formative survey's Web-questionnaire, of which exactly 250 participants fully completed the questionnaire. Since this number of responses was more than adequate for the purpose of the formative survey, it was decided to close the Web-survey.

It is necessary to take note of the reasons why some participants did not complete the questionnaire, since this will indicate to what extent their unwillingness to co-operate may have influenced the research results (McBurney & White, 2007, p.247). The 161 uncompleted questionnaires were analysed to obtain some clues as to why those participants chose to abort the survey after they initially started to answer the questions. It was found that 160 out of the 161 uncompleted questionnaires were aborted when respondents were presented with the open-ended questions of the questionnaire (question 9 to 12 of Annexure A). Since the open-ended questions are not of a personal or sensitive nature, the only reasonable explanation may be that participants were simply discouraged by the fact that open-ended questions require more thought and effort to respond to. This argument is consistent with the opinion of Oppenheim (1992, p.122), who explains that open-ended questions – which require thought and writing on the part of the respondent – generally reduces the willingness of respondents to co-operate. Clearly, the reason for the participants' unwillingness to fully complete the questionnaire had little to do with the subject under investigation. Therefore, the researcher reasonably argues that it had very little effect – if any – on the survey results.

3.3.8 Capturing and processing of the formative survey's data

By now it should be clear that the formative survey produced data of both a qualitative and a quantitative nature. This section sets out to firstly report how

the **qualitative data** was captured, processed and analysed to meet the main purposes of the formative survey. Thereafter, the focus of this section shifts to report on how the formative survey's **quantitative data** was captured, processed and analysed.

There was no need to compile transcripts of the qualitative data produced by the open-ended questions (questions 9 to 12 of Annexure A) since the Web-survey required respondents to type their answers to the open-ended questions in the Web-questionnaire. This resulted in the open-ended responses being ready for analysis. By applying **content analysis** to the open-ended responses of the formative survey, a list of modal salient behavioural beliefs was compiled to reflect those salient beliefs that are most commonly held within the research population. Ajzen and Fishbein (1980, p.68) explain that content analysis involves organising the content of open-ended responses by grouping together those beliefs that refer to similar outcomes. Gillham (2007, pp.21, 63, & 66) explains that content analysis involves the organising of similar answers from all the different respondents into similar categories. The aim of content analysis is ultimately to reduce and translate the variety of different answers into a manageable and comprehensible form (Gillham, 2007, p.63).

The content analysis procedure was conducted by the researcher based on the guidelines provided by Gillham (2007, pp.63 – 69). According to Gillham (2007, p.64), the first stage of content analysis is to decide on the categories

that will be needed for the research purpose. This was done by systematically working through the content of the typed, open-ended responses in order to identify and list the substantive statements – in other words, those statements that represent respondents' key beliefs about hunting. Thereafter, the researcher attentively worked through the list of substantive statements a number of times, while constantly reflecting on the content of the statements to allow his impressions a chance to settle. Based on the common themes embedded in the substantive statements, the researcher then derived a set of tentative categories. While many new categories were initially identified, progressively fewer new categories were, of course, identified as the researcher progressed through the statements. Each tentative category was given a simple heading which captured the essence of the belief (e.g., 'a way to experience and enjoy nature'; 'a way of managing wild animal populations'; 'cruel and inhumane treatment of wild animals').

Having compiled a list of tentative categories, the researcher then considered whether some of the categories could be combined under one heading or, alternatively, split up. Only those categories representing beliefs which are essentially similar were combined. Thereafter, the researcher worked through the list of substantive statements again, checking each statement against the category list to see under which category each statement belongs. A question mark was placed next to those statements which the researcher found difficult to assign to an appropriate category. The wording of category headings was continuously modified so that they would fit the substantive statements better or that they could include statements which were difficult to assign to an

existing category. New categories were also added where necessary. This procedure was repeated until the researcher was completely satisfied that the identified categories were adequate.

Gillham (2007, pp.64 & 69) explains that once the categories have been finalised, the researcher has to decide under which category each of the substantive statements belongs. This, of course, required that statements, which referred to essentially similar beliefs, be grouped together in appropriate categories. This was done by making use of **content analysis grids** – as recommended by Gillham (2007, pp.67 – 69). For the purpose of this study, it made sense to have **two separate grids**: one for the statements pertaining to respondents' emitted '**likes**' and '**positive consequences**' of hunting (question 9 and 11 of Annexure A) and another one for the statements pertaining to respondents' emitted '**dislikes**' and '**negative consequences**' of hunting (question 10 and 12 of Annexure A). These content analysis grids are presented in Appendix 1 and Appendix 2. Consistent with Gillham's (2007, pp.67 – 69) recommendations, each content analysis grid listed the category headings along the top of the grid, and the identifying code for the respondents down the side of the grid. After constructing these content analysis grids, the researcher worked through the list of substantive statements once again for the final time, assigning each statement to an appropriate category. Those statements that could not be assigned to an appropriate category were classified under a separate category that was named 'unclassified statements'. Gillham (2007, p.65) explains that, in

practice, there are almost always unclassifiable statements during a content analysis.

After every single statement was assigned to an appropriate category, the researcher then used the content analysis grids to analyse the qualitative data in a number of ways. The number of participants whose statements appeared in each of the belief categories in the content analysis grids was counted for every attitudinal category. This enabled the researcher to calculate the mean number of positive and negative salient beliefs that were emitted by respondents in the various attitudinal categories for comparative purposes. This provided some noteworthy information on the mean number of salient beliefs about hunting that was readily accessible to participants in every attitudinal category (see Table 4.1 in chapter 4). More importantly, however, by counting the number of participants whose statements appeared in each of the belief categories in the content analysis grids, it was possible to identify those salient behavioural beliefs about hunting that were most frequently emitted by respondents (Table 4.2 in chapter 4). Based on the most frequently emitted beliefs, the researcher then selected a **modal set of salient beliefs** for inclusion in the primary survey of this study. To make sure that the selection procedure was objective and not biased by the researcher's subjective judgements, a predetermined **decision rule** was used to guide the researcher's decision with respect to which salient beliefs to include in the modal set. The particular decision rule that was used to guide the selection procedure was twofold and employed a combination of two of the decision rules that are recommended by Fishbein and Ajzen (2010, p.103) (see

paragraph 11 in section 2.4.5 of chapter 2 for a discussion of the various decision rules recommended by Fishbein and Ajzen). **The researcher decided to select beliefs by their frequency of emission for inclusion in the modal set until a maximum of 75% of all the beliefs listed were accounted for or until all the beliefs that were mentioned by at least 15% of the sample was selected.** Whichever one of these two criteria was satisfied first thus determined when the selection of beliefs for inclusion in the modal set would stop. The total number of beliefs emitted by all participants in the qualitative elicitation sample ($n = 60$) was 339. The researcher thus included in the modal set as many of the most frequently mentioned outcomes (that were mentioned by at least 15% of the sample) as needed to account for 254 emitted beliefs (which represent 75% of all the beliefs emitted). **This decision rule resulted in 14 of the most frequently emitted behavioural beliefs being included in the modal set of salient beliefs about hunting.** These 14 salient beliefs that were included in the modal set are listed in Table 4.3 of chapter 4. The primary survey's questionnaire was developed on the basis of the 14 salient beliefs in the modal set and therefore formed a central part of the primary survey.

The quantitative data of the formative survey, on the other hand, was captured by exporting the data from the Web-survey's electronic database directly to Microsoft Office Excel 2007 software package. This procedure virtually eliminates any data entry errors. The Institute for Statistical Consultation at Nelson Mandela Metropolitan University undertook the processing of the data. The software package Statistica version 9.0 was used for the statistical

analysis. The formative survey's quantitative data was used for the theoretical purpose of formally testing and verifying the validity of the direct attitude measure (A_B) before it was used in the survey instruments of the subsequent primary survey of this study. Recall that, in order to test the validity of a direct attitude measure, it must be verified that it sufficiently captures both the instrumental and experiential aspects of the attitude under consideration (Eagly & Chaiken, 1993, p.16; Fishbein & Ajzen, 2010, p.85). This expectation was tested through two consecutive analysis procedures. In the first procedure, the Cronbach alpha coefficient for the various instrumental and experiential measures of attitude (question 13, 15, and 17 and questions 14, 16, and 18 of Annexure A, respectively) were calculated to verify that they do indeed produce reliable results. The Cronbach alpha coefficient measures the internal reliability of scale items and is an indicator of the consistency with which the related items in a summated scale measure the same construct (Litwin, 2003, pp.20 – 22). The Cronbach alpha coefficient ranges from 0 to 1. The higher the score, the more reliable the scale items are. A Cronbach alpha coefficient of 0.7 or higher is generally considered to be an acceptable reliability coefficient, although lower thresholds may sometimes be used as well (Litwin, 2003, p.25). The Cronbach alpha coefficients for the three instrumental measures of attitude as well as for the three experiential measures of attitude were both very high (0.97 and 0.95, respectively), indicating that these scales produced highly reliable results. Thereafter, in the second analysis procedure, these internally consistent instrumental and experiential measures of attitude were then used to formally test and validate the direct attitude measure (A_B) (question 19 of Annexure A). This was done

by calculating the mean value of all the instrumental and experiential measures and then correlating it with the direct attitude measure (A_B). An extremely significant correlation was obtained between the mean instrumental and experiential measurements of attitude and that of the direct attitude measure (A_B) ($r = 0.95$ at $p < 0.01$). **This provides strong evidence that the direct attitude measure (A_B) does indeed capture both the instrumental and experiential aspects of the attitude and, therefore, confirms the validity and reliability of the direct attitude measure (A_B).**

3.4 METHODOLOGICAL DESIGN OF THE PRIMARY SURVEY

Once the formative research phase was completed, the second and final phase of the study's empirical research commenced, namely the **primary survey**. In this phase of the empirical research, primary data of a **quantitative** nature was collected amongst a sample of members of the public across the entire attitudinal spectrum.

It is necessary to consider the purpose of the primary survey in order to fully comprehend how the primary survey fits into the research design of the study's empirical component. Oppenheim (1992, p.12) explains that the selection of a suitable survey design must be guided by the objectives and purpose of the particular survey. For this reason, a broad outline of the purpose of the study's primary survey will now follow.

3.4.1 Purpose of the primary survey

Consistent with the standard procedures stipulated by the theory of reasoned action, the primary survey was developed on the basis of the results produced by the initial formative research phase. Therefore, once the initial formative research was completed, the primary survey was then designed and administered. The primary research phase was designed to measure the constructs in the theory of reasoned action's attitude model ($A_B \propto \sum b_i e_i$). Towards this aim, the primary survey firstly obtained measures of belief strength (b_i) and outcome evaluations (e_i) for every modal salient belief; it secondly obtained a valid direct measure of participants' related attitude towards hunting (A_B); and thirdly gathered information about a number of relevant background variables of participants (demographical and social information).

The primary research allows the researcher to verify that participants' attitudes towards hunting are related to the salient beliefs identified in the initial phase. Furthermore, this phase of the research is expected to enable the researcher to: examine and understand the salient beliefs that form the basis of different attitudes towards hunting; explain differences in the salient belief structure that ultimately forms the cognitive foundations on which different attitudes towards hunting are based; explain the influence that demographical and social variables have on attitudes towards hunting and its underlying salient beliefs; and draw conclusions that may guide the

development of future strategies towards improving the social legitimacy of hunting. It can be seen that the primary research is mainly aimed at explaining the relationship between two variables (namely the relationship between salient beliefs and attitudes towards hunting), where the first variable is the cause (salient beliefs) and the second variable is the effect (attitude towards hunting) – thus, the second variable is a consequence of the first. Kowalczyk (2003, *online*) explains that research of this nature serves an **explanatory purpose**. In the case of this study, the theory of reasoned action is employed to conduct the explanatory research. Consistent with this approach, Neville (2007, p.8) agrees that in research studies with an explanatory objective, theories are often used as a basis for understanding and explaining phenomena. The design of the primary survey was guided by the abovementioned purpose of the primary survey in conjunction with the theory of reasoned action's standardized procedures.

3.4.2 Selection of a suitable survey research method

In selecting the most appropriate survey research method for collecting the data of the primary survey, a number of considerations had to be kept in mind. First and foremost, the chosen survey method must be particularly suitable for obtaining valid and reliable quantitative measurements of belief strength (b_i), outcome evaluation (e_i), and attitudes (A_B) – as required by the reasoned action approach. Secondly, the chosen survey research method must be able to involve participants from across the entire attitudinal spectrum (ranging

from individuals who approve and strongly approve of hunting; individuals who neither approve nor disapprove of hunting; and individuals who disapprove and strongly disapprove of hunting). Thirdly, the chosen survey research method must be able to acquire a sufficiently diverse sample with respect to those demographical and social background factors that are expected to be of interest to the study. Fourthly, the primary survey serves an explanatory purpose and the chosen survey research method had to be entirely compatible with the purpose of the primary survey. Finally, some practical constraints of conducting the primary survey had to be kept in mind. The survey had to be conducted within a reasonable period of time, as the researcher had limited finances, personnel and infrastructure at his disposal.

The selection of a suitable survey research method was subjected to all of the above mentioned considerations. After considering the three basic survey methods as classified by Malhotra and Birks (1999, p.225) in Figure 3.1 – namely telephone interviews, personal interviews and mail surveys – it was decided that a **mail survey** method would best serve the purpose of the primary survey. Each of the three possible types of mail surveys – namely traditional mail surveys, mail panels, and electronic mail surveys (see Figure 3.1) – were carefully considered against the criteria discussed in the previous paragraph. It was decided that an **electronic mail survey** would be adequate for the purpose of the primary survey and in line with the considerations that were stipulated in the previous paragraph. As previously noted, Dillman (2000, pp.352 – 354) and Fowler (2009, p.61) distinguish between two types of electronic surveys, namely e-mail surveys, where questions are sent and

answered through e-mail; and Web-surveys, where respondents are asked to visit a website and respond to an electronic questionnaire. After considering all the advantages and disadvantages of these two electronic survey methods, it was concluded that a **Web-survey** would again be able to meet the purpose of the primary survey. A brief discussion of the major advantages and disadvantages of Web-surveys was provided earlier in paragraph 4 of section 3.3.2 of this chapter.

3.4.3 Selection of a suitable research sample

Prior to making choices on sampling, one must have a good understanding of the special requirements that the research sample should meet in order to achieve the purpose of the study (Daniel, 2012, p.8). The research sample of the primary survey should meet three important criteria. Firstly, the sample must be drawn from members of the general public of South Africa that is 18 years of age and older. In the second place, it is imperative that the research sample contains sufficiently large proportions of participants from across the entire attitudinal spectrum (ranging from those who strongly approve; approve; neither approve nor disapprove; disapprove; and strongly disapprove). This requirement is absolutely essential in order to form an understanding of the salient belief structure on which different attitudes towards hunting are based, as well as to compare differences in the cognitive foundations on which various attitudes towards hunting are based. This is because the theory of reasoned action suggests that people with different attitudes towards hunting

may not only hold substantially different beliefs about hunting, but they are also likely to show significant variance in the strength with which they hold their beliefs (b_i) as well as how they evaluate the perceived outcomes of their beliefs (e_i). Thus, in using the expectancy-value model's summative belief index ($A_B \propto \sum b_i e_i$) to assess salient beliefs about hunting, it is imperative that the entire range of different attitudes towards hunting is well represented amongst participants. In the third place, the research sample should also contain participants from across a broad spectrum of demographical and social variables that are expected to influence people's attitudes towards hunting. This is because some demographical and social characteristics influence the experiences people have, the sources of information to which they are exposed, and the way they interpret and remember information. In this manner, demographical and social variables may not only influence the salient beliefs people form, but also the strength with which they hold their beliefs (b_i) and how they evaluate the perceived outcomes of their beliefs (e_i) (Fishbein & Ajzen, 2010, pp.18 – 20). Lastly, it should be noted that since the primary survey does not set out to make explicit generalisations about a larger population, there is no obvious need to obtain a probability sample that would be representative of the research population; instead, it is important that the different attitudinal categories be well represented amongst sample participants.

In deciding whether to use a probability sampling design or a non-probability sampling design for the primary survey, the nature of the research population

presented practical challenges similar to those experienced during the formative research phase. In short, seen in light of the size, heterogeneity and spatial distribution of the research population, adopting a probability sampling design would be extremely expensive, time consuming, impractical, and a very difficult task without the necessary infrastructure and human resources at the researcher's disposal. Furthermore, the absence of a list of the general population in South Africa from which a probability sample could be drawn complicates the task of developing a reasonable sampling frame. Under appropriate circumstances, limited resources could justify the use of a non-probability sample (Henry, 1990, pp.24 – 25), as well as when there is insurmountable difficulty in creating a reasonable sampling frame (Neuendorf, 2002, p.88). In light of these considerations, the researcher had to make use of a **non-probability sampling design**. Despite this necessary limitation, there is sufficient evidence in the literature that a non-probability sampling design would be adequate for the purpose of this study's primary survey. The literature suggests that when there is a need to target specific elements of a population (in the case of this study, specific attitudinal sub-groups must be targeted), it is more favourable to choose a non-probability sampling design (Daniel, 2012, p.73). A number of researchers who also adopted the reasoned action approach as a conceptual framework for their research have successfully used non-probability samples for purposes similar in nature to that of this particular study's primary survey (see for example, Ajzen & Driver, 1991; Daigle, Hrubes & Ajzen, 2002; Hrubes, Ajzen & Daigle, 2001; Petkova, Ajzen & Driver, 1995; Smith & Clark, 1973; Young & Kent, 1985). This

provides support for the researcher's decision to make use of a non-probability sampling design.

After carefully considering all the weaknesses and strengths of the various non-probability sampling methods and taking into account the particular purpose of the primary survey, the researcher decided to make use of **quota sampling**. Daniel (2012, pp.102 – 103) explains that “quota sampling is a non-probability sampling procedure in which the population is divided into mutually exclusive sub-categories, and the researcher solicits participation in the study from members of the sub-categories until a target number of elements to be sampled for every sub-category have been met. In a sense quota sampling combines availability sampling and purposive sampling by targeting specific numbers of elements that have specific characteristics”.

Daniel (2012, pp.104 – 105) identifies two major sub-types of quota sampling, namely proportional quota sampling and non-proportional quota sampling. In proportional quota sampling, the researcher selects sample participants to represent certain sub-groups or characteristics in proportion to their prevalence in the target population. In non-proportional quota sampling, however, the focus is simply on obtaining a minimum required number of participants for each sub-group or characteristic that is of interest, regardless of its proportion in the target population. Note that the primary survey will be mainly used to investigate and compare the underlying beliefs structure of those with different attitudes towards hunting, as well as across various demographical and social differences. Thus, there is no obvious need for the

attitudinal and background variables to be in proportion to their prevalence in the target population; instead, it was important for the different attitudinal categories and background variables to be well represented amongst sample participants. Furthermore, Daniel (2012, p.106) explains that non-proportional quota sampling can increase the likelihood that small sub-groups of the population are well represented in a sample in sufficient numbers to facilitate the comparison of sub-populations to each other. Therefore, **non-proportional quota sampling** was identified as a suitable sampling approach for the primary survey. Thus, by adopting a non-proportional quota sampling approach, the researcher was able to ensure that each of the attitudinal categories pertaining to hunting (ranging from those who strongly approve; approve; neither approve nor disapprove; disapprove; and strongly disapprove) is well represented amongst participants. The researcher solicited participation in the primary survey amongst members of the general public of South Africa until a sufficient number of responses were collected for each of the five attitudinal categories. The specific method that was used to determine when enough responses were obtained per attitudinal category to adequately represent each of the five attitudinal categories is discussed under section 3.4.4 of this chapter. Furthermore, the researcher made sure that the participants spanned across a broad spectrum of demographical and social characteristics of the general public in South Africa.

3.4.4 Sample size and composition

Daniel (2012, p.243) explains that “when a researcher uses non-probability sampling, statistical theories and calculations are not applicable in determining sample size. Instead, various conventions, rules of thumb, and *ad hoc*, non-statistical methods are used”. Consequently, the choice of the size and composition of the primary survey’s non-proportional quota sample was largely influenced by and based on various considerations, which are discussed below.

In deciding on a suitable sample size for the primary survey, the data analysis design of the primary survey was of particular importance. In short, the researcher ensured that the sample size requirements of those statistical procedures that were to be used for data analysis were met in order to ensure the internal validity of the study. Furthermore, the complexity and amount of detail the data analysis design required was carefully considered. In this regard, the minimum required sample size per cell of cross-tabulations and per sub-sample that may form part of the study’s analysis design was of particular importance.

Another important factor that was essential in deciding on a suitable sample size and its composition is the heterogeneity of the population in terms of the variables of interest (Daniel, 2012, p.240). It was important to ensure that

each of the five attitudinal categories towards hunting (strongly approve; approve; neither approve nor disapprove; disapprove; and strongly disapprove) was well represented amongst participants. Towards this goal, the researcher adopted a **sequential sampling approach** which relied on the **principle of data saturation** to govern when a sufficient sample size was obtained for each attitudinal category. Daniel (2012, p.247) agrees that such an approach is often the most effective, practical, and reasonable way of deciding on a sample size for non-probability samples. Thus, instead of preselecting a specific sample size target, sampling continued until the researcher was confident that adding additional samples to each attitudinal category did not cause the various measures of their respective belief strength (b_i) and outcome evaluations (e_i) to undergo significant changes in their central tendencies (e.g., means and standard deviations). Once this point of data saturation was reached, adding additional samples would simply result in redundant information being added.

The sample that was obtained was considered to be sufficiently diverse in terms of the study's main variable of interest – namely attitudes towards hunting. Furthermore, the sample comprised of participants from a sufficiently diverse range of demographical and social characteristics that are expected to impact on this study. Table 3.1 provides a summary of the size and composition of the non-proportional quota sample that was obtained.

Table 3.1. Primary survey's sample size and composition: attitudinal categories, as well as demographical, social and behavioural background variables

Attitudes towards hunting	Obtained sample (n = 327)	Proportion to total sample
Strongly Approve	40	12.2%
Approve	97	29.7%
Neither	52	15.9%
Disapprove	77	23.5%
Strongly Disapprove	61	18.7%
TOTAL	327	100%
Demographical background variables	Obtained sample (n = 327)	Proportion to total sample
Gender		
Male	169	51.7%
Female	158	48.3%
TOTAL	327	100%
Age		
18 to 24	158	48.3%
25 to 34	72	22.0%
35 to 44	33	10.1%
45 to 54	36	11.0%
55 and older	28	8.6%
TOTAL	327	100%
Ethnicity		
Black African	105	32.1%
Coloured	73	22.3%
White	140	42.8%
Indian or Asian	9	2.8%
TOTAL	327	100%
Qualification		
Less than grade 12	17	5.2%
Grade 12 Certificate	113	34.6%
National Diploma	72	22.0%
Degree	56	17.1%
Postgraduate Degree	69	21.1%
TOTAL	327	100%
Social and behavioural background variables	Obtained sample (n = 327)	Proportion to total sample
Social ties with people who hunt regularly		
Yes	177	54.1%
No	150	45.9%
TOTAL	327	100%
Hunting behaviour		
Never gone hunting before	211	64.5%
Go hunting once in 2 year or less	81	24.8%
Go hunting once a year or more	35	10.7%
TOTAL	327	100%

Since the sample needs to ensure that each one of the five attitudinal categories is well represented in terms of their belief strength (b_i) and outcome evaluations (e_i), it was important to ensure that an adequate number of samples was obtained for each of the five attitudinal categories. The researcher decided to employ statistical analysis procedures to verify that a point of data saturation was reached and that each of the five attitudinal categories towards hunting was, therefore, well represented in the sample. Towards this aim, all of the participants in the sample were divided into five sub-samples based on their response to the primary survey's direct attitude measure (A_B) (question 8 of Annexure B), namely those who strongly approved; approved; neither approved nor disapproved; disapproved; and strongly disapproved of hunting. The researcher argued that once a point of data saturation was reached, adding additional samples to any one of the sub-samples would no longer have a significant influence on the central tendencies (e.g., means and standard deviations) of the particular sub-sample involved. Based on this argument, the researcher decided to make use of t -tests – which is a statistical analysis procedure that is designed to detect differences in the central tendencies of two data sets (Dane, 1990, p.245) – to verify when a point of data saturation was reached for each of the sub-samples. The statistical procedures described below were then applied to each of the five sub-samples. Firstly, participants in each sub-sample were arranged in a simple random order by making use of the Microsoft Office Excel 2007 software package. Thereafter, a series of t -test analyses were used to compare the mean beliefs strength (b_i) as well as the mean outcome evaluations (e_i) of the first 30 randomly selected participants in a sub-sample

to that of all the participants in the given sub-sample. In this manner, t -test comparisons of the mean beliefs strength (b_i) and of the mean outcome evaluations (e_i) were conducted for each of the 14 salient beliefs in the modal set. Consequently, a series of 28 t -tests were conducted for each of the sub-samples in order to ensure that a point of data saturation was reached with respect to the evaluative aspects of all the salient beliefs across each of the five attitudinal categories. Sampling thus continued until the t -test analysis confirmed that all five of the sub-samples (attitudinal categories) reached a point of complete data saturation.

When the mean responses of 30 randomly chosen participants in each of the sub-samples were compared to that of all the participants in the given sub-sample, the t -tests found no evidence that statistically significant differences in the central tendencies of any of the belief strength (b_i) or outcome evaluation (e_i) measures existed. In other words, it was found that when the sample size for each of the five attitudinal categories (sub-samples) were increased beyond 30 participants, adding additional samples did not result in any changes in the central tendencies of the various belief strength (b_i) measures or outcome evaluation (e_i) measures. Thus, it could be reasonably concluded that a point of data saturation was reached in the sample and that each of the five attitudinal categories towards hunting was, therefore, well represented amongst participants.

A short summary of the results of the *t*-test comparisons between the mean responses of the total sub-samples and that of 30 randomly selected participants from each sub-sample will now follow. For the sub-sample that strongly approved of hunting ($n = 40$), the series of 28 *t*-tests produced *p*-values that ranged from $p = 0.36$ to $p = 1.00$ (with 86% of the *t*-tests indicating $p \geq 0.50$). For the sub-sample that approved of hunting ($n = 97$), the series of 28 *t*-tests produced *p*-values that ranged from $p = 0.28$ to $p = 0.97$ (with 61% of the *t*-tests indicating $p \geq 0.50$). For the sub-sample that neither approved nor disapproved of hunting ($n = 52$), the series of 28 *t*-tests produced *p*-values that ranged from $p = 0.28$ to $p = 0.93$ (with 86% of the *t*-tests indicating $p \geq 0.50$). For the sub-sample that disapproved of hunting ($n = 77$), the series of 28 *t*-tests produced *p*-values that ranged from $p = 0.30$ to $p = 0.98$ (with 54% of the *t*-tests indicating $p \geq 0.50$). For the sub-sample that strongly disapproved of hunting ($n = 61$), the series of 28 *t*-tests produced *p*-values that ranged from $p = 0.46$ to $p = 0.99$ (with 89% of the *t*-tests indicating $p \geq 0.50$). In sum, the *t*-tests did not produce a single *p*-value which indicated that statistically significant differences occurred in the central tendencies of the data as the sample size of each sub-sample was increased. This provides strong evidence that the obtained sample sizes for each attitudinal category reached a point of data saturation.

The researcher argues that this approach to selecting an adequate sample size for a non-probability sample is perhaps the most defensible, firstly because it has an explicit rationale and, secondly, because it ensures that a

sufficient sample size is chosen in a completely objective manner by eliminating the subjective judgements of the researcher. Furthermore, the researcher discussed this procedure for selecting an adequate non-probability sample size with a statistician, who also confirmed that the researcher's statistical application and reasoning is valid from a statistical point of view.

3.4.5 Design of the primary survey's research instrument

It should be recalled that an electronic Web-based questionnaire was identified as a suitable research instrument for the primary survey. The primary survey's questionnaire was developed on the basis of the results of the initial formative research phase and was designed to measure the constructs in the theory of reasoned action's attitude model ($A_B \propto \sum b_i e_i$). According to Fishbein and Ajzen (2010, p.329), the construction of the primary survey questionnaire should follow a standard procedure based on the theory of reasoned action's previously validated methods which ensures the validity and reliability of the survey questions. Chambliss and Schutt (2010, p.169) are in favour of building on existing approaches that are known to provide reliable results, because it improves the design of one's own survey instrument and adds credibility to the results that are obtained. The questionnaire of the primary survey was therefore designed according to the standard procedures stipulated by the theory of reasoned action.

Schnetler, Stoker, Dixon, Herbst & Geldenhuys (1989, p.44) emphasise the importance of a well-designed questionnaire and explain that it determines the validity of the survey results. The questionnaire of the primary survey appears in **Annexure B**. The subsequent sub-sections focus specifically on discussing all the relevant aspects of the primary survey's questionnaire design. Specifically, the questionnaire design will firstly be discussed in terms of its question contents, question types, and wording of the questions. Thereafter, the questionnaire design will be discussed with specific reference to the question order, the format and layout of the questionnaire, and finally the length of the questionnaire.

3.4.5.1 Question contents

As stated previously, the primary survey was designed to measure the constructs in the theory of reasoned action's attitude model ($A_B \propto \sum b_i e_i$). Since the primary survey questionnaire was developed on the basis of the results produced by the initial formative research, the specific question contents of the primary survey were largely determined by the formative research. In particular, the list of 14 modal salient beliefs produced by the formative research was used to construct quantitative belief measures for every modal salient belief. These quantitative belief measures were then incorporated into the primary survey to assess the strength of participants' beliefs that hunting will produce the specified outcomes (b_i) as well as their evaluations of those outcomes (e_i) (see questions 23 to 36 and questions 9 to

22 of Annexure B, respectively). Furthermore, the formative research produced a validated semantic differential scale item for obtaining a direct measure of attitude. This validated direct attitude measure was included in the primary survey questionnaire to obtain a direct measure of participants' attitudes towards hunting (A_B) (see question 8 of Annexure B). Moreover, based on the pilot data produced by the formative survey, the measures of the relevant background variables were refined and then incorporated into the primary survey questionnaire (see question 1 to 7 of Annexure B). In this manner, the question contents of the primary survey were determined based on the results of the initial formative research.

Leedy and Ormrod (2005, p.192) explain that it is essential to ensure that the content of every question in a questionnaire is in line with the goals of the particular survey and that it contributes to ultimately addressing the research questions. This was confirmed by checking all questions for relevance in terms of the information that is sought to meet the purpose of the primary survey. In addition, Oppenheim (1992, p.122) explains that every question should be linked with the conceptual framework of the study. It was therefore necessary to check that all the questions were in line with the conceptual framework of the theory of reasoned action.

3.4.5.2 Question types and wording of the questions

Two basic question types can be distinguished in survey research, namely open-ended questions and closed-ended questions (McBurney & White, 2010, p.246). The nature of both of these question types was already described in section 3.3.5.2. The theory of reasoned action's standard procedure for designing the primary survey instrument prescribes the use of **closed-ended questions** of a quantitative nature.

Oppenheim (1992, p.113) notes that closed-ended questions are generally used to collect information that is factual or attitudinal in nature. Consistent with this view, the purpose of the primary survey was to obtain information of a factual nature as well as of an attitudinal nature from participants. Consequently, two types of closed-ended questions were included in the questionnaire. Firstly, factual questions were employed to collect data on a number of background variables relevant to this study (questions 1 to 7 of Annexure B). The second type of closed-ended questions used in the questionnaire was scale-type questions. Scale-type questions were employed to obtain quantitative measures of participants' attitudes towards hunting as well as of various aspects of participants' salient beliefs. More specifically, the semantic differential attitude scaling method was used to obtain a single direct measure of participants' attitudes towards hunting (A_B) (question 8 of Annexure B), while bipolar adjective scales were used to obtain measures of participants' belief strength (b_i) and outcome evaluation (e_i) for each of the 14

modal salient beliefs (questions 23 to 36 and questions 9 to 22 of Annexure B, respectively). The use of these two types of scale questions are in line with the standard procedure prescribed by the theory of reasoned action.

Oppenheim (1992, p.113) explains that the response options a closed-ended question offers to respondents are very much part of the question because they guide the respondent's answers. It is therefore important to give due consideration to the response options offered by closed-ended questions. The researcher ensured that the response options for every question were adequate in the sense that it will account for all the possible responses that the questions may evoke. It was also ensured that the response options were easily understandable and in context with the contents of the questions. As far as the scale-type questions were concerned, it should be recalled from previous discussions that five-point scales are expected to produce the most accurate ratings within the South African setting (see paragraph 4 of section 3.3.5.2). Therefore, the response options of all the scale-type questions consisted of five-point bipolar scales. Attitudes towards hunting (A_B) was measured on a single five-point *strongly approve* to *strongly disapprove* semantic differential scale (scored +2 to -2). As far as the belief measures are concerned, belief strength (b_i) was assessed on a five-point *extremely likely* to *extremely unlikely* bipolar adjective scale as well as on a *strongly agree* to *strongly disagree* bipolar adjective scale (scored +2 to -2); outcome evaluation (e_i), on the other hand, was assessed on a five-point *extremely good* to *extremely bad* bipolar adjective scale (also scored +2 to -2).

In order to measure participants' belief strength (b_i) and outcome evaluations (e_i), the researcher had to formulate belief statements based on the 14 modal salient beliefs produced by the initial formative research phase. As far as wording of the questions is concerned, Fishbein and Ajzen (2010, pp.44) emphasise that it is important to ensure that the belief statements in the primary survey strictly conform to the principle of compatibility (see paragraph 5 of section 2.4.6.2 in chapter 2). Thus, in formulating the belief statements, the researcher had to make sure that the various belief statements were worded exactly as the modal salient beliefs were identified during the content analysis procedure of the formative research. This was done to ensure that participants' belief strengths (b_i) and outcome evaluations (e_i) were assessed with respect to exactly the same modal salient beliefs than what was identified during the formative research (Fishbein & Ajzen, 2010, pp.105 – 106). As far as the wording and design of the direct attitude measure (A_B) is concerned, it should be recalled that it was previously validated during the initial formative research phase (see paragraph 7 of section 3.3.8). To further ensure complete compatibility between the direct attitude measure (A_B) and all measures of belief strengths (b_i) and outcome evaluations (e_i), the researcher decided to provide participants with a full definition of the term 'hunting' – with respect to the context, action, and target of the behaviour (legal hunting of wild animals) – at the very beginning of the primary survey questionnaire.

In wording the questions of the primary survey, a number of general considerations were taken into account. These general considerations

pertaining to question wording were very similar to that of the formative survey's research instrument (see the very last paragraph of section 3.3.5.2) and will therefore not be repeated in this section.

3.4.5.3 Question order

Once the questions for the primary survey were formulated, the order in which the questions appeared in the questionnaire was carefully planned. Oppenheim (1992, p.112) explains that the selection of the best question order is often arbitrary because each survey produces its own problems as far as question-order effects are concerned. In planning the most appropriate question order for the primary survey, the researcher was again guided by the general guidelines pertaining to question order that were discussed earlier in this chapter (see paragraph 1, 2 and 3 of section 3.3.5.3). In addition to applying those general guidelines, the researcher also took two additional considerations into account in order to minimise any possible question-order effects in the primary survey's questionnaire. In the first place, the researcher intentionally asked participants to express their attitude towards hunting (question 8 of Annexure B) before they were presented with the various belief statements about hunting (questions 9 to 36 of Annexure B). This was specifically done to avoid the risk of putting some ideas or beliefs into respondents' minds that may influence their currently prevailing attitudes towards hunting. The second consideration had to do with the order in which belief statements of the various belief strength (b_i) and outcome evaluation

(e_i) measures were asked. The researcher argued that the most reasonable approach would be to arrange the belief statements according to their frequency of emission during the elicitation procedure of the formative research phase (see Table 4.2). Thus, those belief statements that reflect the most often emitted salient beliefs were presented to participants first, followed by the belief statements that reflect the less frequently emitted salient beliefs.

3.4.5.4 Format and layout of the questionnaire

In many ways, the basic format and layout of the primary survey's questionnaire was very similar to that of the formative survey in the sense that both conformed to the general guidelines prescribed by Chambliss and Schutt (2010, pp.179 – 182) as well as Schnetler *et al.* (1989, p.86) for creating a Web-questionnaire with an effective format and layout. These general guidelines were discussed previously in paragraph 1 and 2 of section 3.3.5.4 of this chapter. Furthermore, a format and layout approach similar to that of the formative survey's questionnaire were used to provide participants with a definition of hunting and to ensure that they had an uniform understanding of the term hunting before answering the primary survey's questionnaire (see paragraph 2 of section 3.3.5.4).

The primary survey's questionnaire was divided into five sections, each comprised of questions that addresses a different theme (see Annexure B):

section A of the questionnaire contained questions about the demographical background of respondents; section B of the questionnaire was focused on collecting background information on respondents' social ties and their previous direct exposure to hunting; section C of the questionnaire contained only a single question that obtained a direct measure of respondents' attitudes towards hunting (A_B); and, finally, section D and section E of the questionnaire contained the outcome evaluation (e_i) measures and the belief strength (b_i) measures, respectively, for all the modal salient beliefs. Similar to the formative survey, the format and layout of the primary survey's questionnaire was also designed to control the flow of the questions, to ensure that questions are answered in an identical order, and to make the questionnaire seem shorter (see paragraph 3 of section 3.3.5.4).

3.4.5.5 Length of the questionnaire

The researcher tried to keep the questionnaire as short as possible. However, the theory of reasoned action's standard procedure for designing the primary survey questions required that two belief statements be constructed for every modal salient belief, one to measure respondents' belief strength (b_i) and the other one to measure respondents' outcome evaluation (e_i). This resulted in a relatively large number of questions being included in the primary survey. In total, 37 closed-ended questions were asked. The Web-survey automatically recorded the amount of time it took respondents to complete the survey. On average, it took respondents 14 minutes and 38

seconds to complete the primary survey. Thus, it may be argued that the time it took to complete the primary survey questionnaire was acceptable.

3.4.6 Pre-testing

Prior to pre-testing, all aspects of the questionnaire design of the primary survey were checked to confirm that they strictly conform to the standard procedures prescribed by the theory of reasoned action. Thereafter, the primary survey's questionnaire was pre-tested both informally and formally. Similar to the pre-testing of the preceding formative survey's questionnaire, the primary survey's questionnaire was presented to the study's promoter and statistician, as well as to the NMMU REC-H for criticism, for comments and inputs (see section 3.3.6). The practical application of the primary survey's questionnaire was put to the test by collecting some pilot data from a small number of selected respondents. The researcher asked pilot respondents for their feedback on a number of aspects pertaining to the questionnaire design, the clarity of the instructions and questions, as well as the length of the questionnaire. The pilot data was also analysed and checked for inconsistencies to make sure that all questionnaire items produced reliable results.

3.4.7 Administering the primary survey and the response

The primary survey was administered as a Web-survey. The aim was to solicit participation in the survey from members of the public with different attitudes towards hunting until a point of data saturation was reached for each of the five attitudinal sub-categories (namely: strongly approve; approve; neither approve nor disapprove; disapprove; and strongly disapprove).

The primary survey was administered in essentially the same way as the formative survey (see paragraph 1 and 2 of section 3.3.7). The electronic link to the Web-questionnaire was distributed by making use of a preamble letter that served the same function as that of the formative survey's preamble letter. However, unlike the formative survey, the primary survey's preamble letter was distributed amongst members of the target population by making use of three different approaches. Firstly, the students and staff members of NMMU were invited to participate in the primary survey by distributing the preamble letter via the so-called NMMU Communique service. It was argued that students and staff members of NMMU were all members of the public of South Africa and were a convenient population to collect data from. Secondly, the researcher personally approached members of the public at businesses and on the street to solicit their participation in the survey. The researcher briefly explained the purpose of the research to potential participants, provided them with a preamble letter, and asked if they would be willing to participate in the Web-survey. Willing participants were then requested to

provide their e-mail addresses to the researcher, after which the researcher e-mailed the electronic link to the Web-survey to them on the very same day. The researcher found that most of the participants who verbally agreed to participate in the Web-survey lived up to their commitment and took part in the Web-survey. This approach to distributing the Web-survey was limited to only Jeffreys Bay, Uitenhage, and Port Elizabeth. The researcher acknowledges that both these methods of distributing the Web-survey are geographically limited. Thus, in an attempt to improve the geographical distribution of the Web-survey, the researcher also made use of social media (Facebook, in particular) as a platform to distribute the Web-survey across different parts of South Africa. In the case of all three of the abovementioned methods of distributing the Web-survey, the demographical information that were collected in section A of the questionnaire was used to confirm that all participants were 18 years of age or older (question 2 of Annexure B) and they were indeed South African citizens (question 5 of Annexure B).

The researcher acknowledges that, compared to the research population (general public of South Africa that is 18 years of age and older), the total sample is geographically limited and likely to over-represent the higher socio-economic classes. However, these limitations were to a large degree unavoidable due to the practical constraints pertaining to sampling that was discussed previously (see paragraph 2 of section 3.4.3). Nevertheless, as far as the over-representation of the higher socio-economic classes in the sample is concerned, the researcher is of opinion that this limitation is somewhat less critical to the validity of the study. Recall that the ultimate aim of this study is

to provide guidelines for developing strategies to improve public acceptance of hunting. The researcher argues that, because people from higher socio-economic classes are generally the segment of the public that are most likely to be exposed to mass media and public communication outlets (news papers, television, internet, social media, etc.), it seems only logical that persuasive messages that are conveyed via these public communication channels would be most effective if it is directed at this very segment of the public. Therefore, in the case of this study, an over-representation of the higher socio-economic classes in the research sample may, at least to some degree, be regarded as advantageous to the ultimate goal of the study.

The primary survey was administered over a relatively short period of time and the data collection took place from 8 October 2013 to 1 November 2013. Data collection continued until it was confirmed that a point of data saturation was reached. A total of 333 participants responded to the primary survey's Web-questionnaire, of which exactly 327 participants fully completed the questionnaire and were included in the final sample of the primary survey.

3.4.8 Capturing and processing of the primary survey's data

The data of the primary survey was captured by exporting the data from the Web-survey's electronic database directly to Microsoft Office Excel 2007 software package. This procedure eliminates the possibility of any data entry

errors occurring. The Institute for Statistical Consultation at Nelson Mandela Metropolitan University undertook the processing of the data. The software package Statistica version 9.0 was used for the statistical analysis. The data was analysed using inferential statistical procedures. Dane (1990, p.245) agrees with this approach and explains that explanatory research often involves the use of inferential statistics (Dane, 1990, p.245).

Following the theory of reasoned action, attitudes are comprised of people's behavioural beliefs weighted by their outcome evaluations. The primary survey data was used to calculate participants' mean belief strength (b_i) and outcome evaluation (e_i) scores for each of the salient beliefs in the modal set. In addition, the mean belief-evaluation scores ($b \times e$ products) were also calculated for every modal salient belief by multiplying the belief statements' perceived likelihood of occurrence (b_i) by their outcome evaluations (e_i). Using this data, the expectancy-value summation ($\sum b_i e_i$) across all participants were then calculated. Furthermore, the primary survey also contained data about participants' attitudes towards hunting (A_B). The abovementioned results are displayed in Tables throughout chapter 4 (see Table 4.3 to Table 4.31 in chapter 4). A noteworthy aspect of the results is that both the mean belief strength (b_i) and mean outcome evaluation (e_i) values of all the salient beliefs ranged from -2 to $+2$, while the $b \times e$ products of all the salient beliefs ranged from -4 to $+4$. The direct attitude measure (A_B), in turn, ranged from -2 to $+2$.

By making use of correlation analyses, the primary research phase allows one to make sure that attitudes are, as expected, related to the salient beliefs identified in the initial formative research phase (Fishbein & Ajzen, 2010, p.329). This was done by correlating the mean $b \times e$ products of every individual salient belief with the direct measure of attitude (A_B), as well as by correlating the expectancy-value model's sum of belief-evaluation products ($\sum b_i e_i$) across all the modal salient beliefs with the direct measure of attitude (A_B). Once it was established that participants' attitudes towards hunting may be accurately inferred from the modal salient beliefs that were included in the primary survey, the data was subjected to further statistical analysis. Inferential statistics were used to detect where statistically significant differences existed between participants across a variety of variables as far as their mean belief strength measures (b_i), mean outcome evaluations (e_i) and mean $b \times e$ products are concerned. In particular, Analysis of Variance (ANOVA) and t -test analyses were used to reveal where statistically significant differences existed between participants with different attitudes towards hunting and between participants from different backgrounds. Dane (1990, p.245) explains that statistical procedures such as t -tests and ANOVAs are designed to detect differences in central tendencies (e.g., means and standard deviations) of data sets – that is, between different groups within the sample. Dane (1990, p.245) also states that these analysis procedures are appropriate for analysing explanatory research data of a quantitative nature. While t -tests were used to detect statistically significant differences in the central tendencies of two groups, ANOVA tests were used to detect statistically significant differences in the central tendencies of more than two

groups. In the cases where ANOVA tests detected statistically significant differences between more than two groups, Tukey's post-hoc tests were used to reveal the particular between-group differences that exist. It should be noted that, to maintain statistical integrity, a Tukey's post-hoc test was only performed once an ANOVA test detected statistically significant differences between more than two groups. The results of the statistical analysis procedures are displayed in Tables and statistically significant between-group differences are indicated with superscripts or asterisks symbols (see Table 4.3 to Table 4.31 in chapter 4). Furthermore, Cohen's d effect size measures were calculated for every statistically significant between-group difference that was identified. Cohen's d effect size measures provide an indication of the extent to which between-group differences were large enough to be meaningful from a practical point of view. The thresholds that were used to interpret Cohen's d were as follows: a Cohen's $d < 0.50$ represents a small effect size; a Cohen's d ranging from 0.50 to 0.79 reflects a moderate effect size; and a Cohen's $d \geq 0.80$ indicates a large effect size. Because of space constraints, the Cohen's d effect size measures for between-group differences are not indicated in the Tables but, instead, are reported in the discussion of the results where it is of interpretive value.

3.4.9 Illustrating the logic of the theory of reasoned action at the level of individual salient beliefs

Before discussing the overall research results in the next chapter, the researcher deemed it necessary to provide a practical example from the actual research results to demonstrate how every salient belief was analysed in a manner that corresponds to the logic of the theory of reasoned action. For this purpose, take for example the inherently positive salient belief that '*hunting contributes to the conservation of wild animals*'. This belief was one of the modal salient beliefs identified by the formative research phase. The belief was included in the primary survey and assessed in terms of the strength with which participants perceived it to be a likely outcome of hunting (b_i) as well as the degree to which participants had positive or negative evaluations of this outcome of hunting (e_i). The $b \times e$ product for the particular salient belief was calculated.

In Table 4.3 of chapter 4, it can be seen that the $b \times e$ product of this particular salient belief correlated strongly with a direct measure of attitudes towards hunting (A_B) ($r = 0.66$ at $p < 0.01$) and, therefore, accounted for a considerable amount of variation in attitudes towards hunting ($r^2 = 0.44$). This provides strong evidence that the particular belief discriminates significantly between participants with different attitudes towards hunting and that it is an important causal determinant which accounts for attitudinal differences.

For reasons discussed later in chapter 4, the research sample was divided into three broad attitudinal categories for the purposes of data analysis, namely supporters, moderates, and opposers of hunting. The results in Table 4.5 and Table 4.6 of chapter 4 displays the results of a comparison of the three attitudinal sub-groups in terms of their belief strength (b_i) and outcome evaluation (e_i) pertaining to this particular salient belief. ANOVA tests revealed that participants from the three attitudinal sub-groups differed significantly with respect to both their belief strength (b_i) and outcome evaluation (e_i) of this particular belief ($F = 64.78, p < 0.01$ and $F = 3.55, p < 0.01$). Subsequent analysis with Tukey post-hoc tests found that supporters, moderates, and opposers all differed substantially from one another in the strength (b_i) with which they believed that '*hunting contributes to the conservation of wild animals*' (between-group differences significant at $p < 0.05$, Cohen's d ranged from 1.01 to 2.08 ~ very large effect sizes). It can be seen that the three attitudinal sub-groups were, however, much less divergent in terms of their outcome evaluations (e_i) towards the notion of '*conserving wild animals*', and was judged to be highly favourable by supporters, moderates, as well as opposers. Tukey's post-hoc analysis found that supporters had significantly more favourable evaluations towards '*conserving wild animals*' than did moderates and opposers (between-group differences significant at $p < 0.05$, Cohen's $d = 0.61$ and 0.55 , respectively ~ moderate effect sizes). However, no statistically meaningful difference were found to exist between the mean outcome evaluations (e_i) of moderates and opposers with respect to this particular salient belief.

Closer inspection of the values shown in Table 4.4, Table 4.5, and Table 4.6 provide more insight into the nature of these observed differences. More specifically, supporters believed that hunting will be very likely to '*contribute to the conservation of wild animals*' ($\bar{x} = +1.55$ on a scale ranging from -2 to $+2$) and judged it to be an extremely favourable outcome ($\bar{x} = +1.93$ on a scale ranging from -2 to $+2$). When multiplied, the $b \times e$ product suggests that this particular belief had a very strong positive impact on the attitudes of supporters ($\bar{x} = +3.00$, with values ranging from -4 to $+4$). Opposers of hunting, on the other hand, perceived it to be very unlikely that hunting will '*contribute to the conservation of wild animals*' ($\bar{x} = -1.15$ on a scale ranging from -2 to $+2$), and also judged the notion of '*conserving wild animals*' to be very favourable ($\bar{x} = +1.56$ on a scale ranging from -2 to $+2$). When multiplied, the $b \times e$ product may seem to suggest that this particular belief had a very strong negative impact on supporters' attitudes towards hunting ($\bar{x} = -2.13$ values ranging from -4 to $+4$). However, reflecting on the latter, one would come to realise that this negatively valued $b \times e$ product may be attributed to the fact that opposers believed that hunting does not result in the '*conservation of wild animals*'. Since people's attitudes towards hunting are expected to be based specifically on the outcomes they believe follow from hunting, not on outcomes that they do not associate with hunting, it would thus be invalid and illogical to argue that this belief has had a negative impact on opposers' attitudes towards hunting. When people do not associate a particular outcome with hunting, it is essentially absent from the cognitive processes which ultimately determine their attitudes towards hunting. Therefore, in the case of the above example, it would be more appropriate to

interpret the negatively valued $b \times e$ product for this belief as having no impact on opposers' attitudes towards hunting. It is worth noting that this reasoning applies to all instances where participants believe that one or more of the listed salient beliefs are unlikely to be an outcome of hunting. Returning to the results, it can be seen that participants with moderate attitudes towards hunting, in turn, had essentially neutral opinions about the '*conservation of wild animals*' being a likely outcome of hunting ($\bar{x} = +0.04$ on a scale ranging from -2 to $+2$), and also had fairly strong positive evaluations towards '*conserving wild animals*' ($\bar{x} = +1.54$ on a scale ranging from -2 to $+2$). When multiplied, however, the $b \times e$ product suggests that this particular belief essentially had an overall neutral impact on the attitudes of moderates ($\bar{x} = +0.12$, with values ranging from -4 to $+4$).

The results from the above mentioned example suggest that this particular belief holds very important implications for broadening the base of public acceptance of hunting. This particular belief's strong correlation with a direct measure of attitudes towards hunting indicates that this particular belief discriminates considerably between individuals with different attitudes towards hunting, and that changing this belief will very likely result in changes in attitudes. To strengthen this particular belief's overall positive impact on attitude towards hunting, a substantial positive shift in its $b \times e$ products needs to be effectuated. This can, of course, be achieved by influencing either the strength of the belief (b_i) or the evaluation of its outcome (e_i). Towards this aim, the results suggest that little can be done to further raise supporters',

moderates', or opposers' already favourable outcome evaluations (e_i) towards '*conserving wild animals*'. However, it is evident that there is ample room for increasing the perceived likelihood (b_i) of moderates and opposers that '*hunting contributes towards the conservation of wild animals*'. However, since previous research has found that staunch opponents of hunting are often very resistant to changing their attitudes, it may be more sensible and effective to target the moderate attitudinal sub-group. In sum then, it may be concluded that the most effective way of getting this particular belief to have a more powerful positive impact on attitudes towards hunting would be by convincing those with moderate attitudes that '*hunting contributes to the conservation of wild animals*'. Fishbein and Ajzen (2010, p.334) explain that "it is important to realise that changing only one or two beliefs may not be sufficient to produce a change in the overall attitude. Only, when there is a substantial shift in the summative belief index ($\sum b_i e_i$) will a change in attitude occur".

The example discussed above demonstrates how the expectancy-value model facilitates the analyses of different attitudes towards hunting at the level of an individual salient belief. However, in order to form a more complete understanding of the cognitive foundations underlying the attitudes of supporters, moderates, and opposers, it was necessary to consider the influences of all of the listed salient beliefs and their impact on attitudes towards hunting in a parallel fashion to that of the above example. Note, however, that the focus of the discussions of the research results that follow in chapter 4 were directed towards outlining the broad overall findings that

emanated from such a detailed analysis of every salient belief, rather than to engage in meticulous discussions on findings pertaining to every individual salient belief in itself.

3.5 SUMMARY

This chapter deals with the research design and methodology of the study. The chapter commenced with a broad outline of the study's research design. Towards planning an appropriate research design, the nature of the required data was considered and it was found that data of both a **primary** nature and a **secondary** nature are needed to meet the objectives of the research. It was explained that the secondary data is gathered through the study's **literature component**, while the primary data is collected as part of the study's **empirical component**. The literature component of this study firstly establishes the cognitive foundation that is needed to conduct the study; secondly, it establishes a conceptual framework that serves as the very basis on which the empirical component of the study is designed; and thirdly, it offers useful perspectives on the methodological design of the study's empirical component. In short, the literature component of the study identified the **theory of reasoned action** as the most suitable conceptual framework for the study. The empirical component of this study, on the other hand, was developed on the basis of the reasoned action approach and it is aimed at collecting the primary data needed to fully address the research purpose of the study.

It was explained that the study's empirical component calls for a **mixed-method research design**, containing elements of both qualitative and quantitative research approaches. Consistent with the reasoned action approach, **survey research** methods were used for collecting the primary data. It was explained that the empirical design of this study required that two separate – but interrelated – surveys be conducted, namely a **formative survey** and a **primary survey**. The research population was identified as members of the general public of South Africa that is 18 years of age and older. The discussion then turned to the particular purpose and methodological design of the formative survey, followed by that of the primary survey.

It was explained that the formative survey was mainly of a **qualitative** nature, although some **quantitative** components were also included in its design. The main purpose of the formative survey was to identify a set of salient behavioural beliefs about hunting that are commonly held by the public (through its qualitative component), as well as to collect pilot data to develop a valid direct measure of attitudes towards hunting (through its quantitative component). It was pointed out that the formative survey served an **exploratory** purpose. Various survey methods were studied and the most suitable methods for this study's formative survey were selected. It was decided to use an electronic **Web-survey**. The design of a suitable questionnaire was discussed. After the suitability of all the possible sampling designs were considered against the purpose and practical limitations of the formative survey, it was decided to make use of a combination of two **non-**

probability sampling techniques, namely **availability sampling** and **purposive sampling**. It was decided to adopt a sequential sampling approach which relied on the **principle of data saturation** to determine when a sufficiently large sample was obtained. Before administering the Web-questionnaire, it was pre-tested to ensure that all possible problems were eliminated. After due consideration, the Web-survey was administered amongst the students and staff members of the Nelson Mandela Metropolitan University via e-mail. It was explained that the electronic Web-survey was **self-administered** and the responses were discussed. Finally an explanation of the capturing and processing of the data was provided. The data was captured by exporting the data from the Web-survey's electronic database directly to the Microsoft Office Excel 2007 software package. It was explained that the qualitative data was subjected to **content analysis** and a list of behavioural beliefs about hunting was compiled. Based on the results of the content analysis, a **modal set of salient beliefs about hunting** were identified. The quantitative data, on the other hand, was analysed using **statistical procedures**. It provided strong evidence that the **direct attitude measure** produces a valid and reliable measurement of members of the public's attitudes towards hunting.

Following the formative survey, the particular purpose and methodological design of the study's primary survey was then discussed. It was explained that the primary survey was **quantitative** in nature. Based largely on the results produced by the preceding formative research, the primary survey assessed each of the modal salient beliefs that were identified and obtained

reliable measurements of participants' attitudes towards hunting. After considering the adequacy of various survey methods, it was again decided to use an electronic **Web-survey** as a data collection instrument. The design of the primary survey's questionnaire was discussed. After the suitability of all the possible sampling designs were considered against the purpose and practical limitations of the primary survey, it was decided to make use of a **non-probability sampling** technique namely **non-proportional quota sampling**. The objective with this sampling procedure was to ensure that all of the attitudinal categories pertaining to hunting were well accounted for in the research sample. A sequential sampling approach which relied on the **principle of data saturation** was again identified as the most rational approach to determine when a large enough sample had been obtained. The statistical procedure that was used to confirm that the sample reached a point of data saturation was briefly described. Before the primary survey's Web-questionnaire was administered, it was pre-tested to ensure that all possible problems had been eliminated. The administering of, and the response to, the Web-questionnaire were then discussed. It was explained that the electronic Web-questionnaire was **self-administered**. The researcher solicited participation in the Web-survey by approaching members of the public at businesses and on the street, as well as by distributing the Web-questionnaire via social media (Facebook) and the NMMU internal e-mail service. The researcher then acknowledged some limitations pertaining to this approach to administering the Web-survey. Finally an explanation of the capturing and processing of the data was provided. The data was captured by exporting the data from the Web-survey's electronic database directly to Microsoft Office

Excel 2007 software package. The data was processed and analysed using **inferential statistics**.

CHAPTER 4

PRIMARY INFORMATION ON ATTITUDES TOWARDS HUNTING AND ITS CAUSAL DETERMINANTS

4.1 INTRODUCTION

In this chapter, the empirical results of the formative survey and the primary survey are explained and discussed. The formative survey and the primary survey were mainly aimed at solving the remainder of the sub-problems and the main research problem of this study. The results from the two surveys will be discussed separately in this chapter. Together, the results that emanated from the formative and primary survey will be used in chapter 5 to lay down guidelines and make recommendations with respect to improving the social legitimacy of hunting.

4.2 FORMATIVE SURVEY RESULTS

This section reports on the results and findings of the qualitative research component of the formative survey. To elicit the salient behavioural beliefs that are present in the research population, a sample of the research population was asked about what they 'like' and 'dislike' about hunting and to think about the 'positive' and 'negative' consequences (or the 'advantages'

and ‘disadvantages’) of hunting. The content analysis grids that emanated from analysing the open-ended responses to these questions (see Appendix 1 and 2) provided insightful information on the salient beliefs about hunting that are present within the research population. The researcher realises that, since the formative survey relied on a non-probability sampling design, it is not possible to make any conclusive extrapolations or generalisations about the research population from the data; nevertheless the results of the formative survey do reveal some interesting phenomena that the researcher felt might be of interest to the study and is thus worth pointing out.

In the first sub-section to follow, the mean number of positive and negative salient behavioural beliefs about hunting that were emitted by respondents in each of the attitudinal categories will be compared. In the second sub-section, the particular salient behavioural beliefs about hunting that appear to be most prominent in the research population is considered.

4.2.1 Saliency of behavioural beliefs about hunting

Table 4.1 displays the mean number of positive and negative salient behavioural beliefs about hunting that was emitted by respondents in each of the attitudinal categories. On average, all the participants combined emitted 2.6 positive salient beliefs and 3.3 negative salient beliefs about hunting. This suggests that negative beliefs about hunting were more readily accessible or

salient amongst respondents than were positive beliefs about hunting. Thus, generally speaking, participants seem to be more inclined to associate hunting with negative outcomes than with positive outcomes. It is also noteworthy that participants from all five of the attitudinal categories mentioned both positive and negative beliefs about hunting. Thus, participants who supported hunting, those with neutral attitudes towards hunting, and those who opposed hunting simultaneously associated hunting with a variety of positive and negative outcomes. This suggests that participants are likely to be ambivalent in their attitudes towards hunting (see section 2.2.4 of chapter 2). Consistent with this expectation, Muth and Jamison (2000, p.842) point out that the public is often ambivalent about issues pertaining to wildlife.

TABLE 4.1. Mean number of positive and negative salient behavioural beliefs about hunting emitted.

Attitudinal category	Mean number of positive beliefs emitted		Mean number of negative beliefs emitted	
	Individual attitudinal category	Main attitudinal category	Individual attitudinal category	Main attitudinal category
Strongly approve ($n = 7$)	5.0	3.5	2.9	3.5
Approve ($n = 13$)	2.7		3.8	
Neither ($n = 20$)	2.1	2.1	2.6	2.6
Disapprove ($n = 13$)	2.7	2.3	3.5	3.7
Strongly disapprove ($n = 7$)	1.4		4.1	
Total ($n = 60$)	2.6	2.6	3.3	3.3

Note: Because of rounding, some figures in the columns reflecting the main attitudinal categories may appear to be off by as much as 0.35.

Examination of the results in Table 4.1 indicates that, on average, participants with negative attitudes towards hunting hold substantially more negative salient beliefs ($\bar{x} = 3.7$) than positive salient beliefs ($\bar{x} = 2.3$) about hunting. Closer investigation of the results revealed the same tendency and shows that participants who disapproved and participants who strongly disapproved of hunting recognise considerably more negative outcomes ($\bar{x} = 3.5$ and $\bar{x} = 4.1$, respectively) than positive outcomes ($\bar{x} = 2.7$ and $\bar{x} = 1.4$, respectively) of hunting. Furthermore, these results indicate that participants who strongly disapproved of hunting holds slightly more negative salient beliefs and considerably less positive salient beliefs about hunting than participants who disapproved of hunting. This suggests that as the strength with which negative attitudes towards hunting are held increase, the number of negative outcomes associated with hunting also shows a marked increase while the number of positive outcomes associated with hunting decreases substantially.

From the results in Table 4.1 it is evident that, on average, participants with positive attitudes towards hunting held approximately the same number of positive salient beliefs ($\bar{x} = 3.5$) than negative salient beliefs ($\bar{x} = 3.5$) about hunting. Thus, compared to participants with negative attitudes towards hunting, it seems as if participants with positive attitudes towards hunting hold a much more balanced set of positive and negative salient beliefs about hunting. Closer investigation of the results suggest that participants who strongly approved of hunting are, however, inclined to hold considerably more positive salient beliefs ($\bar{x} = 5.0$) than negative salient beliefs ($\bar{x} = 2.9$) about

hunting. Thus, it seems as if participants with strong attitudes in favour of hunting based their attitudes on a set of salient beliefs that are predominantly comprised of positive salient beliefs about hunting. In sharp contrast, however, it is evident that those participants who approved of hunting recognised more negative beliefs ($\bar{x} = 3.8$) than positive beliefs ($\bar{x} = 2.7$) about hunting. Although they recognised more negative outcomes of hunting than positive outcomes, they still expressed their approval of hunting. This suggests that the overall influence of their positive beliefs outweighed that of their negative beliefs about hunting.

It is worth noting that the largest number of salient beliefs is present amongst participants who hold strong attitudes towards hunting (Table 4.1). Participants who strongly approved of hunting held an average of 5.0 positive salient beliefs about hunting and those who strongly disapproved of hunting held an average of 4.1 negative salient beliefs about hunting. This finding is consistent with what is known about the psychology of strong attitudes. Wang Erber, Hodges and Wilson (as cited in Perloff, 2010, pp.60 – 61) explain that people with strong attitudes towards an issue tend to seek out information relevant to the topic, thereby reinforcing their strongly held attitudes and arming them with even more arguments with which to resist attempts to change their attitudes.

Further examination of the results in Table 4.1 reveal that in comparison with participants who support and oppose hunting, participants with neutral

attitudes towards hunting held noticeably less positive and negative salient beliefs about hunting ($\bar{x} = 2.1$ and $\bar{x} = 2.6$, respectively). A possible interpretation of this is that individuals who have impartial attitudes towards hunting are, in all likelihood, less interested and less knowledgeable about the topic of hunting or issues pertaining to wildlife; as a result, their attitude towards hunting is founded on substantially less salient beliefs. It is also worth noting that there is little difference between the mean number of positive and negative salient beliefs that are held by participants with neutral attitudes towards hunting. This finding suggests that individuals who hold impartial attitudes towards hunting seem to base their attitudes on a fairly balanced set of positive and negative salient beliefs.

The above discussion suggests that, to some extent, the number of positive and negative salient beliefs about hunting that are held by participants seem to generally correspond with the degree to which they support or oppose hunting. It should, however, be realised that a person's attitude towards hunting is not a function of the number of positive and negative salient outcomes associated with hunting; instead, the strength with which these underlying salient beliefs are held and the degree to which the outcome of these salient beliefs are positively or negatively evaluated will ultimately determine a person's attitude towards hunting.

4.2.2 Identifying the salient behavioural beliefs that are the causal determinants of attitudes towards hunting

In order to elicit the salient behavioural beliefs people often associate with hunting, participants in the formative survey were asked what they '*like*' and '*dislike*' about hunting and to think about the '*positive*' and '*negative*' consequences (or the '*advantages*' and '*disadvantages*') of hunting. Table 4.2 provides a summary of the results that were obtained from analysing the content of participants' open-ended responses to these questions (also see the content analysis grids in Appendix 1 and Appendix 2 that were constructed during the content analysis procedure). Column 1 of Table 4.2 represents the distinctive belief categories that emerged from the content analysis of the open-ended responses. Each of these belief categories represents a salient behavioural belief that links hunting to a perceived positive or negative outcome. Column 2, in turn, represents the frequency with which participants emitted each salient belief during their open-ended responses. Although the information shown in Table 4.2 cannot be used to make any conclusive generalisations for the research population, the results do, however, confirm the presence of specific salient beliefs in the research population and also gives an indication of the prominence of those salient beliefs in the research population.

TABLE 4.2. Belief categories representing the frequency of emission of positive and negative behavioural beliefs about hunting for the entire research sample ($n = 60$).

Belief categories representing the positive and negative salient behavioural beliefs about hunting	Frequency of emission
– Hunting results in the endangerment or extinction of wild animal species.	58%
+ Hunting is a way of managing the number of wild animals in an area to prevent over-population.	55%
+ Hunting is a way for people to get fresh meat or meat products (e.g., biltong).	53%
+ Hunting holds economic benefits for the country (e.g., job creation, tourism, income for farmers / communities, etc.).	33%
+ Hunting is a way for people to experience nature and the outdoors.	32%
– Hunters take pleasure and enjoyment in killing wild animals.	28%
– Hunting leads to unethical hunting practices that do not give animals a fair chance of survival.	25%
– Hunters often kill animals unnecessarily without having a good reason or useful purpose (e.g., to get meat) for doing so.	22%
– Hunting results in wild animals being killed by hunters.	22%
– Hunting is disruptive and harmful to wild animals.	22%
+ Hunting contributes towards the conservation of wild animals.	17%
– Hunting results in wild animals being wounded.	17%
– Hunting results in the cruel and inhumane treatment of wild animals.	15%
– Hunting causes pain and suffering to wild animals.	15%
+ Hunting is an enjoyable experience (fun, exciting, relaxing)	13%
– Hunting leads to various illegal practices (such as poaching, traps, etc.).	12%
– People go hunting without possessing the necessary skills, experience or training to make a clean kill.	12%
+ Hunting can promote environmental awareness by teaching people about nature and by getting people interested in nature.	10%
+ Game meat is healthy.	10%
+ Hunting is a challenging activity in the sense that it tests your skills and abilities - provides a sense of accomplishment.	8%
– Hunters behave themselves poorly while hunting.	7%
– Hunting promotes violence.	7%

- Hunting makes me feel bad (e.g., upsetting, guilt, sadness, empathy).	7%
- Hunters are disrespectful towards animals.	7%
+ Hunting is a way of socializing and bonding with friends and family.	5%
+ Hunting is a humane way of harvesting food.	5%
- Hunting will expose me to the sight of blood and dead animals.	5%
+ Hunting teaches valuable life lessons (e.g., responsibility, discipline).	3%
+ Hunting is a way of controlling problem animals.	3%
- Hunters have barbaric rituals and hunting traditions.	3%
- Hunting is a dangerous activity.	3%
- Unclassified negative beliefs.	18%
+ Unclassified positive beliefs.	13%
<hr/>	
- <i>Negative beliefs representing participants' dislikes and perceived disadvantages or negative consequences of hunting.</i>	
+ <i>Positive beliefs representing participants' likes and perceived advantages or positive consequences of hunting.</i>	
<hr/>	

Examination of the results in Table 4.2 indicates that in total 31 salient beliefs about hunting were emitted by the research sample, 18 of which linked hunting to negative outcomes and 13 of which linked hunting to positive outcomes. Some noteworthy observations could be made from the results displayed in Table 4.2. In the first place, those salient beliefs about hunting that were most readily emitted reflect the information on which participants often based their attitudes towards hunting. Thus, an effective strategy to change attitudes towards hunting would be to influence those specific salient beliefs on which people readily base their attitudes towards hunting. In the second place, the relatively low frequency at which many of the potentially influential positive beliefs were emitted suggests that a significant proportion of the participants are unaware of many of those positive outcomes of hunting. This suggests an opportunity to influence peoples' attitudes towards hunting by raising their awareness of those particular positive beliefs about hunting.

Based on the salient beliefs that were identified by the qualitative component of the formative survey, a modal set of 14 salient beliefs about hunting was selected. The entire selection procedure was governed by a predetermined decision rule that was specified earlier in chapter 3 (paragraph 6 of section 3.3.8). The modal set of salient beliefs about hunting included the 14 most frequently emitted salient beliefs about hunting that are listed in Table 4.2. It formed the basis on which the questionnaire of the primary survey was developed.

4.3 PRIMARY SURVEY RESULTS

The major purpose of the second phase of the empirical research, namely the primary research phase, is to further investigate the causal determinants on which attitudes towards hunting are based. The results of the primary survey allow the researcher to verify that participants' attitudes towards hunting are, as expected, related to the salient beliefs identified in the formative research phase. Furthermore, the primary survey results are expected to enable the researcher to: examine and understand the most important salient beliefs that form the basis of different attitudes towards hunting; explain differences in the salient belief structure that ultimately forms the cognitive foundations on which different attitudes towards hunting are based; and explain the influence that demographical and social variables have on attitudes towards hunting and its underlying salient beliefs. These results are expected to provide valuable insight into the cognitive foundation of attitudes towards hunting that may

guide the development of future strategies towards improving the social legitimacy of hunting.

4.3.1 Empirical validation of the modal set of salient beliefs as the underlying causal determinants of attitudes towards hunting

Based on the study's prior formative research phase that involved belief elicitations, the researcher identified a modal set of 14 salient beliefs about hunting. The salient beliefs that were included in the modal set are listed in Table 4.3 and formed a central part of the study's primary survey. From the perspective of the expectancy-value model, it is assumed that these readily accessible favourable and unfavourable outcomes represent the modal salient beliefs that underlie attitudes towards hunting amongst members of the public. For this assumption to be valid, the expectancy-value model's composite measure of beliefs ($\sum b_i e_i$) is expected to correlate with a direct measure of participants' attitudes (A_B). To compute the $\sum b_i e_i$ index, the primary survey obtained measures of the strength with which each of the 14 salient beliefs in the modal set is held (b_i) and the degree to which the perceived outcome of each belief are positively or negatively evaluated (e_i). Belief strength (b_i) was assessed on a five-point *extremely likely* to *extremely unlikely* scale as well as on a *strongly agree* to *strongly disagree* scale (scored +2 to -2), while outcome evaluation (e_i) was assessed on a five-point *extremely good* to *extremely bad* scale (also scored +2 to -2). The primary survey also obtained a direct measure of participants' related attitude towards hunting (A_B) by using

a single five-point semantic differential evaluative scale that was tested and validated beforehand during the initial formative research phase of this study (see paragraph 7 of section 3.3.8 in chapter 3). The summed product of the belief strength and outcome evaluation scores ($\sum b_i e_i$) of all 14 salient beliefs was found to have a significant correlation of $r = 0.80$ ($p < 0.01$) with the direct measure of attitude (A_B). Closer inspection of the last column of Table 4.3 revealed that the mean $b \times e$ product of all of the individual beliefs also correlated significantly with the direct measure of attitude (A_B), suggesting that they each accounted for a considerable amount of variation in participants' attitudes towards hunting (r ranging from 0.39 to 0.71 at $p < 0.01$). The magnitude of these correlations provides an indication of the relative influence of each individual belief on the sample's overall attitudes towards hunting. Two of the salient beliefs listed in Table 4.3 were, however, found to have only moderate correlations with the sample's overall attitude towards hunting ($r = 0.39$ and $r = 0.46$ at $p < 0.01$). Further analysis revealed that when these two salient beliefs were omitted from the expectancy-value $\sum b_i e_i$ index, the model's prediction of the direct measure of attitude (A_B) improved slightly. For this reason, the researcher decided to exclude those two particular salient beliefs from the study. When the $\sum b_i e_i$ index was based only on the remaining 12 salient beliefs, its correlation with the direct measure of attitudes towards hunting (A_B) increased slightly to 0.82 ($p < 0.01$). This provides strong evidence that participants' attitudes towards hunting were, as expected, strongly related to the 12 salient beliefs in the modal set. It confirms that these beliefs accurately account for participants' attitudes towards hunting.

Having found that there is an extremely strong correlation between the expectancy-value $\sum b_i e_i$ index and the direct attitude measure (A_B) confirms, firstly, that the elicitation procedure did indeed identify relevant salient beliefs about hunting; secondly, that this modal set of salient beliefs accurately represent important causal determinants of the attitudes under consideration; thirdly, that together these salient beliefs accounted for a large amount of the variance in participants' attitudes towards hunting ($r^2 = 0.67$); and fourthly, that any modification of this set of salient beliefs are likely to have a significant impact on participants' attitudes towards hunting. Clearly, in itself, this finding already provides considerable insight into the causal determinants of the public's attitudes towards hunting and the implications it holds for improving the social legitimacy of hunting.

Having established that the modal set of 12 salient beliefs is strongly related to attitudes towards hunting, the results of the primary survey will now be progressively examined in greater detail.

TABLE 4.3. Behavioural beliefs about hunting: belief strength, outcome evaluation, belief-evaluation product, and correlations of belief-evaluation products with direct attitude measure for the entire research sample ($n = 327$).

Behavioural beliefs (Abbreviated)	Belief Strength (b_i) ($n = 327$)		Outcome evaluation (e_i) ($n = 327$)		$b \times e$ Products ($n = 327$)		Correlation $b \times e$ with attitude (A_B) ($n = 327$)
	\bar{x}	s	\bar{x}	s	\bar{x}	s	r
– Disruptive and harmful to wild animal populations.	0.37	(1.20)	-1.48	(0.69)	-0.70	(2.08)	0.71
– Results in wild animals being killed by hunters.	1.30	(0.78)	-0.22	(1.16)	-0.33	(1.96)	0.70
+ Contributes to conservation of wild animals.	0.00	(1.34)	1.59	(0.68)	0.05	(2.44)	0.66
– Cruel and inhumane treatment of wild animals.	0.50	(1.23)	-1.78	(0.51)	-0.98	(2.28)	0.66
– Leads to unethical hunting practices.	0.45	(1.27)	-1.70	(0.63)	-0.83	(2.39)	0.63
– Causes pain and suffering to wild animals.	0.80	(1.16)	-1.63	(0.60)	-1.46	(2.11)	0.63
+ Experience nature and the outdoors.	0.10	(1.39)	1.54	(0.76)	0.39	(2.46)	0.62
– Hunters kill animals unnecessarily.	0.33	(1.25)	-1.65	(0.63)	-0.60	(2.28)	0.59
– Endangerment and extinction of wild animal species.	0.45	(1.28)	-1.76	(0.53)	-0.80	(2.44)	0.58
+ Managing wild animals to prevent over-population.	0.57	(1.12)	1.04	(0.86)	1.14	(1.57)	0.58
+ Hold economic benefits for the country.	0.88	(1.06)	1.17	(0.72)	1.33	(1.65)	0.54
– Hunters take pleasure and enjoyment in killing.	0.47	(1.17)	-0.82	(1.11)	-0.55	(1.90)	0.51
+ Get fresh meat or meat products (e.g., biltong).	0.73	(1.01)	0.79	(0.97)	1.08	(1.44)	0.46
– Results in wild animals being wounded.	0.91	(1.05)	-1.51	(0.70)	-1.43	(1.98)	0.39
Sum of belief-evaluation products ($\sum b_i e_i$) based the 12 salient beliefs the modal set:					-3.34	(19.52)	0.82

Note: Belief strength (b_i) and outcome evaluation (e_i) scores can range from -2 to +2, belief-evaluation products ($b \times e$) can range from -4 to +4, and the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48 when based on the 12 selected salient beliefs.

All correlations are significant at $p < 0.001$.

Correlation between A_B and $\sum b_i e_i$ based on the 12 selected salient beliefs = 0.82 (significant at $p < 0.001$).

Correlation between A_B and $\sum b_i e_i$ based on the 14 selected salient beliefs = 0.80 (significant at $p < 0.001$).

4.3.2 Broad outline of the primary survey's research results for the entire research sample

The data presented in Table 4.3 summarises the results of the primary survey for all the participants across the entire research sample ($n = 327$). It can be seen that the modal set of salient beliefs listed in Table 4.3 links hunting to a variety of positive and negative outcomes. Note that this set of salient beliefs suggests that, on average, the research sample essentially held neutral attitudes towards hunting. That is, the mean expectancy-value summation ($\sum b_i e_i$) across all participants, which could range from -48 to $+48$, was only -3.34 (Table 4.3). Consistent with this, the mean direct attitude score (A_B) across the entire research sample ($n = 327$) also indicated that, on average, participants' attitudes towards hunting were essentially neutral ($\bar{x} = -0.07$ on a *strongly approve* to *strongly disapprove* scale ranging from $+2$ to -2). This may suggest that the overall sample contained a balanced set of attitudes and salient beliefs pertaining to hunting, thus enhancing the objectivity and adequacy of the sample for investigating the salient beliefs that inform peoples' attitudes towards hunting. It is also noteworthy that the standard deviations of both the summative belief composite ($\sum b_i e_i$) and the direct attitude measure (A_B) were both quite large ($s = 19.52$ and $s = 1.33$, respectively), indicating that there was considerable variation within participants' attitudes and evaluative aspects of their beliefs towards hunting. This large amount of variation may be attributed to the fact that the sample consisted of individuals with divergent attitudes towards hunting. The latter

finding provides further evidence that the sample would be able to provide valuable information regarding those causal determinants that discriminate between participants with different attitudes towards hunting.

A further noteworthy aspect of the data has to do with the mean belief strength (b_i) and outcome evaluations (e_i) that were obtained for the entire research sample. Column 1 of Table 4.3 displays the means and, in parentheses, the standard deviations of the belief strength measures (b_i) and, in column 2, the means and standard deviations of the outcome evaluations (e_i) of all the respondents who participated in the primary survey. Consider for a moment that the elicitation procedure that was used to identify salient beliefs about hunting typically encouraged a sample of the research population to express the outcomes or consequences they believed follow from hunting, not outcomes that they do not associate with hunting. Furthermore, because this study is concerned with uncovering the most prominent salient beliefs held by members of the public, the most frequently mentioned beliefs were selected for the modal set on which the primary survey was then based. This implies that most members of the public should agree that the beliefs in the modal set are outcomes of hunting (Fishbein & Ajzen, 2010, p.122). This expectation is, indeed, supported by the data in column 1 of Table 4.3 where it can be seen that, for each salient belief listed, the mean belief strength (b_i) across all participants was on the positive side of the -2 to $+2$ scale (\bar{x} for all the salient beliefs ranged from 0.00 to $+1.30$).

Closer inspection of the research sample's mean belief strength (b_i) values (column 1 of Table 4.3) show that by far the most strongly held salient belief in the sample associates hunting with '*wild animals getting killed by hunters*' ($\bar{x} = +1.30$, $s = 0.78$). The relatively low standard deviation associated with this particular belief also indicates that participants were largely in agreement that this is a very likely outcome of hunting. This finding comes as no surprise, because '*wild animals getting killed by hunters*' is arguably one of the most direct and logical consequences of hunting. Other salient beliefs that were perceived to be somewhat likely outcomes of hunting were that hunting '*holds economic benefits for the country*' ($\bar{x} = +0.88$), and '*causes pain and suffering of wild animals*' ($\bar{x} = +0.80$). The results further show that, on average, participants in the entire sample held the remainder of the salient beliefs with noticeably less conviction or certainty. The mean belief strength (b_i) values suggest that participants in the sample were least likely to believe that hunting results in some positive outcomes, such as that it '*contributes to the conservation of wild animals*' ($\bar{x} = 0.00$, $s = 1.34$) and '*is a way experiencing nature and the outdoors*' ($\bar{x} = +0.10$, $s = 1.39$). These two positive beliefs also had comparatively high standard deviations, suggesting that there were considerable more variance with respect to how likely participants believed that hunting will result in these favourable outcomes. The fact that these potentially influential favourable beliefs are very weakly held and that participants were largely divergent in their opinions of how likely it is that hunting will result in these outcomes suggests that there may be ample room and opportunities for strengthening the perceived likelihood that hunting results in these favourable outcomes.

As far as outcome evaluations (e_i) are concerned, it is worth noting that, on average, participants in the sample had relatively strong positive evaluations towards those beliefs that link hunting to favourable outcomes, and relatively strong negative evaluations towards those beliefs that link hunting to unfavourable outcomes (column 2 of Table 4.3). Furthermore, the relatively small standard deviations associated with most of the mean outcome evaluations (e_i) indicate that there was general consensus amongst participants regarding their positive and negative evaluations of each salient belief. The only exceptions occurred with respect to participants' mean evaluation of '*hunters taking pleasure and enjoyment in killing wild animals*' ($\bar{x} = -0.82$, $s = 1.11$) and '*hunters killing wild animals during a hunt*' ($\bar{x} = -0.22$, $s = 1.16$), both of which were judged to be considerably less negative compared to the other unfavourable outcomes associated with hunting. Compared to the other beliefs, these particular beliefs also obtained relatively high standard deviations with respect to outcome evaluations (e_i), suggesting that participants differed substantially in their positive and negative evaluations (e_i) of these two outcomes. Thus, it seems as if these two salient beliefs discriminated considerably amongst participants with different attitudes towards hunting as far as their outcome evaluations (e_i) are concerned.

It is evident from the results in Table 4.3 that, in broad terms, there were considerably more variance in participants' mean belief strength (b_i) than in their mean outcome evaluations (e_i) (exceptions to this generalisation were already singled out in the preceding discussions). Keeping in mind that the

sample is comprised of individuals with divergent attitudes towards hunting, it seems only logical that participants in the sample would differ substantially in the strength with which they associate the various salient beliefs with hunting. For example, it could be reasonably assumed that participants who approved of hunting would be more likely to believe that hunting results in favourable outcomes (e.g., '*experiencing nature and the outdoors*', '*hunting contributes to conservation*', etc.), while participants who disapproved of hunting would be much less inclined to associate hunting with favourable outcomes. With respect to outcome evaluations (e_i), on the other hand, it makes sense that most participants would tend to have similar positive and negative evaluations of the outcomes listed, irrespective of their attitudes towards hunting. For example, most people – irrespective of whether they approve or disapprove of hunting – would agree that outcomes such as '*endangering wild animals species and driving them to extinction*' or '*causing pain and suffering to wild animals*' are extremely negative, while outcomes such as '*contributing to conservation*' or '*experiencing nature and the outdoors*' are very positive.

The findings and discussion in the above paragraph holds very important implications for developing interventions aimed at improving public acceptance of hunting. It should be recalled that attitudes could be influenced by modifying the existing beliefs on which the targeted attitude is based, and that this modification may take place either in the strength of a belief (b_i) or in the evaluation of its outcome (e_i) (see section 2.5.2.1 of chapter 2). The fact that most participants largely agreed in their evaluations of the listed outcomes of hunting indicates that it would be extremely difficult to influence

public attitudes towards hunting by attempting to modify peoples' outcome evaluations (e_i) of the beliefs they associate with hunting. To convince people to adopt positive evaluations, or even less negative evaluations, for inherently unfavourable outcomes (e.g., '*endangering wild animals and drive them to extinction*', '*disrupting and harm wild animals*', '*causing pain and suffering to wild animals*', etc.) would be illogical and extremely difficult – if not impossible. Only with respect to some inherently positive beliefs may it be possible to further strengthen people's positive evaluations of favourable outcomes associated with hunting – given that there is enough room for change to occur in a given belief's positive evaluations. To the contrary, participants in the sample showed considerable variance in the strength with which they perceived each belief to be a likely outcome of hunting (b_i). This suggests that communications to improve public acceptance of hunting would be more successful if it is directed at influencing the strength with which a particular belief is held (b_i). This can, of course, be done either by increasing peoples' perception of the likelihood that hunting will result in positive outcomes (e.g., '*hunting contributes to conservation*', '*hunting is a way to experience nature and the outdoors*', etc.), or by decreasing people's perception that hunting will result in negative outcomes (e.g., '*hunting is disruptive and harmful to wild animal populations*', '*hunting causes pain and suffering to wild animals*', etc.). Clearly then, the above discussion of the results suggest that it would be much more difficult to change the outcome evaluations (e_i) of those salient beliefs that are associated with hunting than it would be to change the strength with which those salient beliefs are held (b_i). In further support of this finding, the magnitude of the values displayed in Table 4.3 indicate that

participants held their outcome evaluations (e_i) with much greater conviction and certainty than their belief strength (b_i). This raises the expectation that the public would be fairly resistant to changing their outcome evaluations (e_i). In conclusion then, communication strategies to improve public acceptance of hunting are expected to be most successful if it is focused primarily on influencing the strength with which various beliefs about hunting are held (b_i).

A further noteworthy aspects of the data has to do with the products of the belief strength measures and the outcome evaluations ($b \times e$) for each salient belief. The impact of every salient belief on the sample's overall attitude can be determined by examining its mean $b \times e$ products (column 4 of Table 3.4). It can be seen that, on average, the salient beliefs with the strongest positive impact on the sample's overall attitudes towards hunting included the beliefs that '*hunting holds economic benefits for the country*' and '*hunting is a way of managing wild animals to prevent over-population*' ($\bar{x} = +1.33$ and $\bar{x} = +1.14$ respectively, with values ranging from -4 to $+4$). On the other hand, the single salient belief that had by far the strongest negative impact on the sample's overall attitudes towards hunting was that '*hunting causes pain and suffering to wild animals*' ($\bar{x} = -1.46$ with values ranging from -4 to $+4$). A very noteworthy aspect of the mean $b \times e$ products has to do with the two positive beliefs that '*hunting contributes to the conservation of wild animals*', and that '*hunting is a way of experiencing nature and the outdoors*' ($\bar{x} = +0.05$ and $\bar{x} = +0.39$, respectively, with values ranging from -4 to $+4$). Although participants regarded these salient beliefs as fairly positive outcomes of

hunting (e_i), it can be seen that they essentially had a very small overall impact on participants' attitudes towards hunting. This can be explained by the fact that, on average, participants perceived these beliefs to be the least likely outcomes of hunting (b_i). This suggests a possible opportunity to influence public attitudes towards hunting by increasing the overall strength with which these particular salient beliefs (b_i) are held, that is, by increasing the perceived likelihood that these positive outcomes will occur as a result of hunting.

So far, the discussion of the results were largely focused on summarising the results of the primary survey across the overall sample; forming a broad understanding of what informs public attitudes towards hunting; pointing out some noteworthy aspects that emerged from the aggregated data set; and making basic inferences with respect to developing effective communication strategies aimed at improving the social legitimacy of hunting. More detailed information could, however, be obtained by comparing the salient beliefs and all its evaluative aspects of participants who held different attitudes towards hunting. Such an analysis now follows.

4.3.3 Attitudes towards hunting and its causal determinants

To fully understand why people support or oppose hunting and how to go about improving the social legitimacy of hunting, it is necessary to examine

the underlying salient beliefs that form the cognitive foundations on which different attitudes towards hunting are based. To do this, the total research sample was divided into sub-groups based on participants' attitudes towards hunting. Five attitudinal sub-groups could be distinguished based on the study's direct attitude measure (A_B), namely participants who strongly approved; approved; neither approved nor disapproved; disapproved; and strongly disapproved of hunting. Tables 4.29, Table 4.30 and Table 4.31 presented in Appendix 3 provides a summary of the mean $b \times e$ products, belief strength measures (b_i) and outcome evaluations (e_i), respectively, for all five attitudinal sub-groups. It contains detailed information on the salient beliefs underlying each of the five attitudinal sub-groups and contains detailed comparisons of between-group differences based on Tukey post-hoc analysis. Although such a detailed analysis of every individual attitudinal sub-group may be meaningful from a theoretical point of view, it does however seem to produce somewhat redundant information that is of little practical use. Consistent with the contemporary understanding of the psychology of strong attitudes (see section 2.2.5 of chapter 2), previous research has shown that staunch opponents to hunting are very resistant to changing their attitudes, and that those with moderate attitudes towards hunting represent the most promising audience for strengthening support for hunting (Campbell & MacKay, 2003; Herzog, 1993; Shaw, 1977). Therefore, efforts to broaden the base of public acceptance of hunting should be directed at the segment of the public which is presently not strongly in favour of or against hunting. Consequently, from a practical point of view, communication efforts to improve public acceptance of hunting needs to resonate with the segment of the public

that holds moderate attitudes towards hunting. Towards this aim, it was thus considered more meaningful to combine the three attitudinal sub-groups that were not strongly committed for or against hunting (namely, those who approved of hunting, neither approved nor disapproved of hunting, and disapproved of hunting) to form a sub-group that represents participants with moderate attitudes towards hunting. Consequently, for the purposes of discussing the results, a distinction will only be made between three attitudinal sub-groups, namely participants who **strongly approved** of hunting, participants with **moderate** attitudes towards hunting, and participants who **strongly disapproved** of hunting. In order to ease the flow of the discussions that follow, these three attitudinal sub-groups will be referred to as **supporters**, **moderates**, and **opposers** of hunting. Table 4.4, Table 4.5, and Table 4.6 display the means and, in parentheses, the standard deviations of the $b \times e$ products, belief strength measures (b_i), and outcome evaluations (e_i) of every salient belief for each of three attitudinal sub-groups. The results in these Tables served as a platform to examine and compare the various evaluative aspects of all the salient beliefs that underlie each of the three attitudinal sub-groups.

Having divided participants into supporters, moderates, and opposers based on their respective attitudes towards hunting, the data was analysed using various inferential statistical procedures. A series of Analysis of Variance (ANOVA) tests were used to reveal where statistically significant differences existed between the mean belief strength measures (b_i), mean outcome

evaluations (e_i) and mean $b \times e$ products of supporters, moderates, and opposers. Further analysis with Tukey post-hoc tests then revealed differences between the three attitudinal sub-groups with respect to the various evaluative aspects of each salient belief. The between-group differences for every salient belief are indicated in the relevant Tables by making use of superscripts. Mean values that do not share a superscript were found to be significantly different, while there were no statistical differences between those mean values that share a superscript. Where a statistically significant difference between any of the attitudinal sub-groups were identified, the Cohen's d effect size measures were calculated to establish to what extent the between-group differences were large enough to be practically meaningful. A final noteworthy aspect of the results is that both the mean belief strength (b_i) and mean outcome evaluation (e_i) values of all the salient beliefs ranged from -2 to $+2$, while the $b \times e$ products of all the salient belief ranged from -4 to $+4$. The direct attitude measure (A_B), in turn, ranged from -2 to $+2$.

Earlier in this chapter, 12 salient beliefs were selected to form part of this study's investigation into the causal determinants of attitudes towards hunting. Based on the empirical criterion of the expectancy-value model, it was established that, in summation, this set of modal salient beliefs accurately account for participants' attitudes towards hunting. It is now possible to further identify the underlying salient beliefs that, if changed, are likely to have the most significant impact on participants' attitudes towards hunting. The last

column of Table 4.3 facilitates this procedure and displays the correlation coefficients between every individual belief's mean $b \times e$ product and the direct measure of attitudes towards hunting (A_B). It indicates the ability of every individual salient belief to account for variation in participants' attitudes towards hunting. It also provides an indication of each belief's explanatory power and enables one to identify the particular salient beliefs that discriminate the most between individuals with different attitudes towards hunting. The stronger the correlation, the more the salient belief in question discriminates between participants with different attitudes towards hunting and the more likely it is that changing the belief will result in corresponding changes in attitudes. Note that the salient beliefs listed in Table 4.3 were arranged according to the magnitude of their correlations with participants' overall attitudes towards hunting (A_B). Evidently, the two salient beliefs that *'hunting is disruptive and harmful to wild animal populations'* and that *'hunting results in wild animals being killed by hunters'* were most strongly related to participants' attitudes ($r = 0.71$ and 0.70 , respectively). Other strongly related beliefs included the belief that hunting *'contributes to conservation of wild animals'* ($r = 0.66$); *'results in the cruel and inhumane treatment of wild animals'* ($r = 0.66$); *'leads to unethical hunting practices that do not give animals a fair chance of survival'* ($r = 0.63$); *'causes pain and suffering to wild animals'* ($r = 0.63$); *'is a way to experience nature and the outdoors'* ($r = 0.62$); *'leads to hunters killing animals unnecessarily'* ($r = 0.59$); *'results in the endangerment and extinction of wild animal species'* ($r = 0.58$); *'is a way of managing the number of wild animals in an area to prevent over-population'* ($r = 0.58$); *'holds economic benefits for the country'* ($r = 0.54$); and that

'hunters take pleasure and enjoyment in killing' ($r = 0.51$). This arrangement portrays which salient beliefs discriminate the most between participants with different attitudes towards hunting and, if changed, are most likely to have a strong impact on participants' attitudes towards hunting.

Having established the relative importance of each salient belief as far as understanding and changing attitudes towards hunting is concerned, it is meaningful to investigate the impact that every salient belief had on the attitudes of supporters, moderates, and opposers. Towards this aim, the mean $b \times e$ products of every individual salient belief were compared between all three attitudinal sub-groups by making use of a series of Tukey post-hoc tests. Such a comparative analysis enables one to identify differences in the relative impact that every individual salient belief had on the respective attitudes of supporters, moderates, and opposers. The results of this investigation are displayed in Table 4.4. Broadly speaking, the results indicate that there are large differences in the mean $b \times e$ products and, thus, in the overall impact that every salient belief had on the attitudes of supporters, moderates, and opposers. As indicated in Table 4.4, detailed between-group analysis with Tukey post-hoc tests found statistically significant differences between supporters, moderates, and opposers with respect to every individual salient belief's mean $b \times e$ product (all between-group differences were significant at $p < 0.05$). All of these between-group differences were also found to be of high practical significance, with Cohen's d effect size measures ranging from 0.93 to 1.74 (very large effect size)

between supporters and moderates; from 0.58 to 1.56 (moderate to very large effect size) between opposers and moderates; and from 1.46 to 3.25 (very large to extremely large effect size) between supporters and opposers. This suggests, firstly, that large differences exist between the cognitive foundations on which supporters, moderates, and opposers based their attitudes towards hunting; and secondly, that all 12 of the salient beliefs were responsible for fundamental differences in the cognitive foundations on which supporters, moderates, and opposers based their respective attitudes towards hunting.

By examining the mean $b \times e$ products displayed in Table 4.4, it is possible to gain a somewhat deeper understanding of each belief's contribution to the attitudes of supporters, moderates, and opposers. It should, however, be noted that the $b \times e$ products of each belief should be viewed in conjunction with their respective belief strength (b_i) and outcome evaluations (e_i) measures (Table 4.5 and Table 4.6, respectively) in order for it to be truly meaningful. For this reason, most of the findings that may be deduced from the mean $b \times e$ products will be discussed in detail only once consideration has been given to the belief strength (b_i) and outcome evaluations (e_i) which constitute the $b \times e$ products of the various salient beliefs. Nevertheless, at this stage it may be worth noting that, generally speaking, most of the salient beliefs impacted strongly on the attitudes of both supporters and opposers, but much less on the attitudes of moderates (Table 4.4). This suggests that moderates based their attitudes towards hunting on a much more neutral or impartial set of salient beliefs compared to that of supporters and opposers.

This expectation is also portrayed by the expectancy-value model's belief-based estimation ($\sum b_i e_i$) of the attitudes of supporters, moderates, and opposers (Table 4.4). It can be seen that the $\sum b_i e_i$ index across all 12 salient beliefs, which could range from +48 to -48, amounted to +24.13 for supporters and to -24.74 for opposers, reflecting belief-based estimations of fairly strong positive and negative attitudes of similar magnitude for these two attitudinal sub-groups, respectively. The $\sum b_i e_i$ index for moderates, on the other hand, was only -2.42, reflecting a belief-based estimation of essentially neutral attitudes towards hunting. Clearly then, the results suggest that the salient beliefs generally exerted a strong positive impact on the attitudes of supporters and a strong negative impact on the attitudes of opposers. In contrast, the results suggest that the salient beliefs exerted a fairly impartial impact on the attitudes of moderates, thereby contributing to their attitudes in a much more neutral fashion. This raises the expectation that not only would it be easier to influence and change the attitudes of moderates, but also that there would be considerably more opportunities to change the attitudes of moderates and fairly little opportunities to influence the attitudes of supporters and opposers. This expectation will be explored in more detail later in this chapter.

As noted in the beginning of the previous paragraph, to fully understand the reasons for the observed differences in the impact every salient belief had on the attitudes of supporters, moderates, and opposers, it is necessary to investigate the belief strength (b_i) and outcome evaluations (e_i) that constitute

the mean $b \times e$ products of the salient beliefs. Towards this aim, inspection of the data displayed in Table 4.5 and Table 4.6 reveal that the substantial differences in the mean $b \times e$ products between supporters, moderates, and opposers may be attributed largely to their divergent belief strength (b_i) and, to a much lesser degree, to their outcome evaluations (e_i). It is evident that the three attitudinal sub-groups differed significantly in their belief strength (b_i) with respect to virtually all of the salient beliefs listed (Table 4.5). More importantly, it can be seen that the observed differences in belief strength (b_i) were not only differences in degree, but most often also differences in direction – with most of the salient beliefs being regarded as a likely outcome of hunting by one attitudinal sub-group, but as an unlikely outcome of hunting by another attitudinal sub-group, and vice-versa. The only exceptions to the latter were observed with respect to the salient beliefs that *‘hunting results in wild animals being killed by hunters’* and that *‘hunters take pleasure and enjoyment in killing wild animals’*, in which case all three of the attitudinal sub-groups regarded these two salient beliefs as likely outcomes of hunting and differed only in the degree of their belief strength (b_i). In sharp contrast to belief strength (b_i), it is evident that all three of the attitudinal sub-groups were largely unanimous with respect to the direction of their favourable and unfavourable evaluations (e_i) of the listed salient beliefs and mainly differed in the degree of their outcome evaluations (e_i). Thus, supporters, moderates, and opposers generally agreed in their positive and negative evaluations (e_i) of the outcomes listed, irrespective of their attitudes towards hunting. The only exceptions to the latter were, again, observed with respect to the beliefs that *‘hunting results in wild animals being killed by hunters’* and that *‘hunters*

take pleasure and enjoyment in killing wild animals'. While supporters regarded these two salient beliefs as favourable outcomes of hunting, moderates and opposers regarded it as unfavourable outcomes. The fact that most participants largely agreed in their evaluations (e_i) of the listed outcomes of hunting suggest that these outcomes are inherently positive or negative – this again raises the expectation that it would be difficult to influence or change public attitudes towards hunting by attempting to modify people's evaluations of the outcomes they associate with hunting (e_i). In sum then, the results indicate that supporters, moderates, and opposers differed largely in their perceived likelihoods that hunting will result in the various salient outcomes (b_i), but that they were much more unanimous with respect to their evaluations of the various salient outcomes (e_i). This suggests that the substantial differences in the mean $b \times e$ products between supporters, moderates, and opposers may be attributed primarily to their divergent belief strength (b_i) and, to a much lesser degree, to their outcome evaluations (e_i). The differences between the three attitudinal sub-groups' belief strength (b_i) and the outcome evaluations (e_i) of the various salient beliefs will now be investigated in more detail.

Detailed comparative analysis were conducted with a series of Tukey post-hoc tests to identify statistically significant differences between supporters, moderates, and opposers with respect to the belief strength (b_i) and outcome evaluation (e_i) of every individual salient belief. The between-group differences that were identified with respect to the belief strength (b_i) are

indicated in Table 4.5, while the between-group differences that were identified with respect to outcome evaluations (e_i) are indicated in Table 4.6. All of the between-group differences that were identified were statistically significant at $p < 0.05$. As far as belief strength (b_i) is concerned, the results in Table 4.5 show that all three of the attitudinal sub-groups were found to differ greatly from one another with respect to nearly all of the salient beliefs listed. Further analysis with Cohen's d tests revealed that all of these between-group differences were large enough to be highly significant from a practical point of view: Cohen's d effect size measures ranged from 0.98 to 1.47 (large to very large effect size) for differences between supporters and moderates; from 0.82 to 1.32 (large to very large effect size) for differences between opposers and moderates; and from 1.89 to 3.76 (very large to extremely large effect size) for differences between supporters and opposers. The only exceptions occurred with respect to the salient beliefs that '*hunting results in wild animals being killed by hunters*' and that '*hunters take pleasure and enjoyment in killing wild animals*': in the case of the former belief, it can be seen that Tukey post-hoc test only found a statistically significant difference in belief strength (b_i) between moderates and opposers, but found no difference between moderates and supporters as well as between supporters and opposers; in the case of the latter belief, no statistically significant difference in belief strength (b_i) were found between supporters and moderates, but both of these groups were found to differ significantly from opposers. In the case of both these exceptions, the between-group differences were found to be of only small to moderate practical significance (Cohen's d range from 0.44 to 0.76 ~ small to moderate effect size). Overall

then, the results show that very large differences exist between supporters, moderates, and opposers as far as their belief strength (b_i) of nearly all the salient beliefs are concerned. With respect to outcome evaluations (e_i), on the other hand, the result in Table 4.6 show that Tukey post-hoc tests found somewhat less statistically significant differences between the outcome evaluations (e_i) of supporters, moderates, and opposers with respect to a number of the salient beliefs listed. Furthermore, the statistically significant differences that were found to exist were in many cases of only small to moderate practical significance, with few between-group differences that were of large practical significance. Overall then, the findings that was discussed in this paragraph provides further evidence for the expectation that the substantial differences in the mean $b \times e$ products between supporters, moderates, and opposers may be attributed primarily to their divergent belief strength (b_i) and, to a much lesser degree, to their outcome evaluations (e_i). The fact that little practically meaningful differences were found to exist between supporters', moderates' and opposers' evaluations of the listed outcomes of hunting again raises the expectation that it would be difficult to influence or change public attitudes towards hunting by attempting to modify people's evaluations of the outcomes they associate with hunting (e_i). In sum, these findings provides further strong support for the expectation that attempts to change attitudes towards hunting would be more successful if it is aimed at influencing people's perceived likelihoods of the outcomes they associate with hunting (b_i), rather than attempting to influence people's favourable or unfavourable evaluations of the outcomes they associate with hunting (e_i).

TABLE 4.4. Mean belief-evaluation product for behavioural beliefs about hunting: differences between three attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	<i>b × e</i> products					
	Strongly Approve (<i>n</i> = 40)		Moderates (Approve, Neither, Disapprove) (<i>n</i> = 226)		Strongly Disapprove (<i>n</i> = 61)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	1.70 ^a	(1.54)	-0.51 ^b	(1.71)	-2.97 ^c	(1.37)
– Results in wild animals being killed by hunters.	1.65 ^a	(1.58)	-0.09 ^b	(1.48)	-2.52 ^c	(1.80)
+ Contributes to conservation of wild animals.	3.00 ^a	(1.50)	0.12 ^b	(2.07)	-2.13 ^c	(2.01)
– Cruel and inhumane treatment of wild animals.	1.53 ^a	(1.84)	-0.87 ^b	(2.03)	-3.02 ^c	(1.52)
– Leads to unethical hunting practices.	1.50 ^a	(1.97)	-0.68 ^b	(2.13)	-2.95 ^c	(1.76)
– Causes pain and suffering to wild animals.	0.75 ^a	(1.60)	-1.35 ^b	(1.94)	-3.31 ^c	(1.30)
+ Experience nature and the outdoors.	3.30 ^a	(1.04)	0.35 ^b	(2.18)	-1.33 ^c	(2.39)
– Hunters kill animals unnecessarily.	1.60 ^a	(1.98)	-0.50 ^b	(2.04)	-2.39 ^c	(1.88)
– Endangerment and extinction of wild animal species.	1.40 ^a	(2.19)	-0.68 ^b	(2.24)	-2.72 ^c	(1.81)
+ Managing wild animals to prevent over-population.	3.30 ^a	(1.14)	1.02 ^b	(1.34)	0.18 ^c	(1.32)
+ Hold economic benefits for the country.	3.30 ^a	(1.20)	1.23 ^b	(1.44)	0.38 ^c	(1.58)
– Hunters take pleasure and enjoyment in killing.	1.10 ^a	(1.61)	-0.46 ^b	(1.51)	-1.95 ^c	(2.35)
Sum of belief-evaluation products ($\sum b_i e_i$)	24.13^a	(10.29)	-2.42^b	(15.34)	-24.74^c	(12.24)

Note: Belief-evaluation product (*b × e*) scores can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.5. Mean belief strength for behavioural beliefs about hunting: differences between three attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	Belief strength (b_i)					
	Strongly Approve ($n = 40$)		Moderates (Approve, Neither, Disapprove) ($n = 226$)		Strongly Disapprove ($n = 61$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.15 ^a	(0.80)	0.31 ^b	(1.02)	1.57 ^c	(0.67)
– Results in wild animals being killed by hunters.	1.30 ^{a,b}	(0.69)	1.23 ^a	(0.77)	1.57 ^b	(0.83)
+ Contributes to conservation of wild animals.	1.55 ^a	(0.75)	0.04 ^b	(1.19)	-1.15 ^c	(1.08)
– Cruel and inhumane treatment of wild animals.	-0.85 ^a	(0.92)	0.46 ^b	(1.12)	1.52 ^c	(0.81)
– Leads to unethical hunting practices.	-0.78 ^a	(1.05)	0.38 ^b	(1.16)	1.51 ^c	(0.87)
– Causes pain and suffering to wild animals.	-0.58 ^a	(0.93)	0.79 ^b	(1.06)	1.74 ^c	(0.60)
+ Experience nature and the outdoors.	1.75 ^a	(0.44)	0.11 ^b	(1.25)	-1.00 ^c	(1.17)
– Hunters kill animals unnecessarily.	-0.90 ^a	(1.06)	0.29 ^b	(1.15)	1.28 ^c	(0.93)
– Endangerment and extinction of wild animal species.	-0.75 ^a	(1.15)	0.42 ^b	(1.20)	1.36 ^c	(0.93)
+ Managing wild animals to prevent over-population.	1.70 ^a	(0.52)	0.62 ^b	(0.95)	-0.39 ^c	(1.20)
+ Hold economic benefits for the country.	1.85 ^a	(0.36)	0.94 ^b	(0.91)	0.00 ^c	(1.22)
– Hunters take pleasure and enjoyment in killing.	0.15 ^a	(1.27)	0.37 ^a	(1.09)	1.08 ^b	(1.19)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.6. Mean outcome evaluation for behavioural beliefs about hunting: differences between three attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	Outcome evaluation (e_i)					
	Strongly Approve ($n = 40$)		Moderates (Approve, Neither, Disapprove) ($n = 226$)		Strongly Disapprove ($n = 61$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.30 ^a	(0.85)	-1.42 ^a	(0.69)	-1.82 ^b	(0.39)
– Results in wild animals being killed by hunters.	0.95 ^a	(0.99)	-0.10 ^b	(0.97)	-1.44 ^c	(0.83)
+ Contributes to conservation of wild animals.	1.93 ^a	(0.27)	1.54 ^b	(0.67)	1.56 ^b	(0.83)
– Cruel and inhumane treatment of wild animals.	-1.83	(0.50)	-1.73	(0.56)	-1.92	(0.28)
– Leads to unethical hunting practices.	-1.63 ^a	(0.84)	-1.64 ^a	(0.65)	-1.95 ^b	(0.22)
– Causes pain and suffering to wild animals.	-1.20 ^a	(0.72)	-1.63 ^b	(0.59)	-1.90 ^c	(0.30)
+ Experience nature and the outdoors.	1.88 ^a	(0.33)	1.51 ^b	(0.74)	1.43 ^b	(0.96)
– Hunters kill animals unnecessarily.	-1.75 ^{a,b}	(0.44)	-1.57 ^a	(0.69)	-1.90 ^b	(0.35)
– Endangerment and extinction of wild animal species.	-1.85 ^{a,b}	(0.36)	-1.70 ^a	(0.59)	-1.93 ^b	(0.25)
+ Managing wild animals to prevent over-population.	1.93 ^a	(0.27)	1.05 ^b	(0.77)	0.43 ^c	(0.94)
+ Hold economic benefits for the country.	1.75 ^a	(0.49)	1.14 ^b	(0.65)	0.90 ^c	(0.89)
– Hunters take pleasure and enjoyment in killing.	0.35 ^a	(1.19)	-0.78 ^b	(0.99)	-1.75 ^c	(0.57)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

So far, the discussions were focused on providing a broad overview of the results pertaining to the three attitudinal sub-groups. In order to obtain a deeper understanding of the cognitive foundation on which supporters, moderates, and opposers based their attitudes towards hunting, it is necessary to conduct an integrated investigation into their belief strength (b_i) and outcome evaluations (e_i) that ultimately determined the impact ($b \times e$ products) every salient belief had on their respective attitudes towards hunting. The overall findings that emanated from such a detailed analysis of the mean $b \times e$ products, belief strength (b_i), and outcome evaluation (e_i) of supporters, moderates, and opposers will now be discussed (Table 4.4, Table 4.5 and Table 4.6 respectively). Note that, for the sake of simplicity, each of the three attitudinal sub-groups will be considered under separate headings.

4.3.3.1 Supporters' attitudes towards hunting and their causal determinants

In order to understand the cognitive foundation on which supporters based their attitudes towards hunting, it is firstly necessary to establish which of the listed salient beliefs act as causal determinants of their attitudes. It should be recalled that when people do not associate a particular outcome with hunting, it is essentially absent from their cognitive processes which ultimately determine their attitudes towards hunting. With this in mind, the belief strength (b_i) values in Table 4.5 show that supporters did not associate all the salient beliefs in the modal set with hunting. Instead, supporters only believed it to be extremely likely that hunting '*holds economic benefits for the country*'

($\bar{x} = +1.85$), '*is a way to experience nature and the outdoors*' ($\bar{x} = +1.75$), '*is a way of managing the number of wild animals in an area to prevent over-population*' ($\bar{x} = +1.70$), and that hunting '*contributes to conservation of wild animals*' ($\bar{x} = +1.55$). Evidently, the outcome evaluations (e_i) displayed in Table 4.6 show that supporters judged all of these salient beliefs to be extremely favourable outcomes of hunting (\bar{x} for the four beliefs ranged from +1.75 to +1.93). When the belief strength measures (b_i) and outcome evaluations (e_i) for each of these four salient beliefs were multiplied, their respective $b \times e$ products (Table 4.4) showed that they each had a very positive impact on supporters' attitudes towards hunting (\bar{x} for the four salient beliefs' $b \times e$ products ranged from +3.00 to +3.30). In addition to these four salient beliefs, it is evident that supporters also perceived it to be quite likely that '*hunting results in wild animals being killed by hunters*' ($\bar{x} = +1.30$) and only slightly likely that '*hunters take pleasure and enjoyment in killing wild animals*' ($\bar{x} = +0.15$) (Table 4.5). Supporters judged these two salient beliefs as somewhat favourable outcomes of hunting ($\bar{x} = +0.95$ and +0.35, respectively) (Table 4.6). As a result, the mean $b \times e$ products (Table 4.4) for these two salient beliefs indicated that they also contributed to the attitudes of supporters in a positive manner (\bar{x} for the two salient beliefs' $b \times e$ products amounted to +1.65 to +1.10, respectively). Together, these six salient beliefs were the most significant causal determinants of supporters' attitudes towards hunting. The results in Table 4.5 further show that the remainder of the beliefs were all viewed as fairly unlikely outcomes of hunting by supporters, suggesting that those beliefs were essentially absent from the cognitive foundation on which supporters based their attitudes towards hunting. As a

result, these beliefs did not seem to have played any role as causal determinants of supporters' attitudes towards hunting.

Overall then, the results suggest that supporters mainly associated hunting with outcomes they perceived to be favourable and, consequently, these positively valued salient beliefs accounted for the most fundamental causal determinants of their attitudes towards hunting. Supporters were, however, fairly adamant that hunting did not result in any outcomes they regarded as unfavourable. Consequently, little can be done to further strengthen supporters' already favourable attitudes towards hunting.

The results that were discussed above are assumed to portray the typical cognitive foundation on which supporters based their attitudes towards hunting and, thus, provide a benchmark against which the causal determinants that underlie the attitudes of moderates and opposers can be compared. This assisted the researcher in identifying opportunities to influence attitudes towards hunting and broaden the base of public acceptance of hunting.

4.3.3.2 Opposers' attitudes towards hunting and their causal determinants

From the belief strength (b_i) values displayed in Table 4.5, it is evident that opposers were very certain that hunting '*causes pain and suffering to wild animal populations*' ($\bar{x} = +1.74$), '*is disruptive and harmful to wild animal populations*' ($\bar{x} = +1.57$), '*results in wild animals being killed by hunters*' ($\bar{x} = +1.57$), '*results in the cruel and inhumane treatment of wild animals*' ($\bar{x} = +1.52$), '*leads to unethical hunting practices*' ($\bar{x} = +1.51$), '*leads to the endangerment and extinction of wild animal species*' ($\bar{x} = +1.36$), and that '*hunters often kill animals unnecessarily without having a good reason or useful purpose for doing so*' ($\bar{x} = +1.28$). In addition, opposers also believed that '*hunters take pleasure and enjoyment in killing wild animals*' ($\bar{x} = +1.08$). Thus, according to the results these eight salient beliefs account for the most important causal determinants of opposers' attitudes towards hunting, while the remainder of the listed beliefs were essentially absent from the cognitive foundation on which opposers based their attitudes towards hunting. Looking at the outcome evaluations (e_i) displayed in Table 4.6, it is evident that opposers believed that all eight of the salient beliefs on which they based their attitudes towards hunting result in extremely unfavourable outcomes (\bar{x} for the four beliefs ranged from -1.44 to -1.95). As a result, the mean $b \times e$ products (Table 4.4) for each of those eight salient beliefs indicate that they had a very negative impact on opposers' attitudes towards hunting (\bar{x} for the eight salient beliefs' $b \times e$ products ranged from -1.95 to -3.31). Overall, these findings suggest that opposers mainly associated hunting with outcomes they

perceived to be unfavourable and that these negatively valued salient beliefs accounted for the most fundamental causal determinants of their attitudes towards hunting. Generally speaking, it may be said that opposers perceived hunting to result in many inherently negative outcomes, but in little or no positive outcomes.

With respect to influencing the attitudes of opposers, a number of noteworthy findings emerged from the abovementioned results. It should be recalled that, according to the postulations of the theory of reasoned action, a desired change in a particular attitude could be brought about by either altering some of the existing salient beliefs on which the targeted attitude is based or by introducing new salient beliefs into the underlying belief structure (see section 2.5.2 of chapter 2). At first glance, it appears that there may be many opportunities to change opposers' attitudes towards hunting by addressing the numerous existing negative salient beliefs on which their attitudes are based. To the contrary, however, the results show that opposers' belief strength (b_i) towards the negative salient beliefs deviated significantly from neutral, suggesting that they hold their negative valued salient beliefs with great conviction and certainty. This raises the expectation that it would be extremely difficult to change such strongly held negative salient beliefs. This expectation is also supported by the contemporary understanding of the psychology of strong attitudes (section 2.2.5 of chapter 2). The results further show that opposers' attitudes involved mostly negative salient beliefs and virtually no positive salient beliefs, suggesting that there were very little conflict or ambivalence in the cognitive foundation on which their attitudes

were based. The literature on attitudinal ambivalence in section 2.2.4 of chapter 2 suggested that, compared to ambivalent attitudes, non-ambivalent attitudes are more resistant to persuasive appeals, are less likely to change over time, and are more likely to bias a person's processing of attitude-relevant information. Therefore, this finding also suggests that it would be very difficult to influence or change the attitudes of opposers. Clearly then, the results show that attempts to effectuate a positive change in the attitudes of opposers by changing some of the existing salient beliefs on which their attitudes are based would, in all likelihood, be ineffective.

As far as changing opposers' attitudes towards hunting by introducing new salient beliefs into the underlying belief structure is concerned, the results found that positive salient beliefs about hunting were largely absent from the cognitive foundation on which opposers based their attitudes. Thus, it might appear that there may be many opportunities to change opposers' attitudes by introducing positive salient beliefs about hunting into their underlying belief structure. To the contrary, however, from the results it may be deduced that this approach will be largely ineffective for a number of reasons. In the first place, the literature on the psychology of strong attitudes in section 2.2.5 of chapter 2 suggested that strong attitudes have a profound influence on how people process and evaluate attitude-relevant information. This makes strong attitudes very difficult to influence and highly resistant to change. Since opposers strongly disapprove of hunting, they would be very likely to process information about this issue in a biased manner by directing their attention to arguments that are consistent with their existing attitude, by automatically

rejecting the credibility of information that supports the need for hunting or point out the positive outcomes of hunting, and by accepting information consistent with their existing negative attitude towards hunting. Consequently, opposers will not easily accept any information that aims to introduce new salient beliefs about the positive outcomes of hunting into their underlying belief structure.

A second issue that may arise when attempting to change opposers' attitudes towards hunting by introducing new positive salient beliefs into the underlying belief structure has to do with the phenomenon of cognitive dissonance (see section 2.2.6 of chapter 2). When a persuasive message provides opposers with new information that is aimed at raising their awareness of the positive outcomes of hunting, it may cause some inconsistencies in their underlying salient beliefs structure and result in cognitive dissonance. To name one example, if a persuasive message were to be successful at introducing the belief that '*hunting contributes to the conservation of wild animals*' into the belief structure of opposers, this belief is likely to be in dissonance with their existing and strongly held salient belief that '*hunting is disruptive and harmful to wild animal populations*'. Since cognitive dissonance is psychologically uncomfortable and result in feelings of discord, opposers will be motivated to take steps to reduce their psychologically inconsistent cognitions. They can do this by either changing those existing salient beliefs that are in conflict with their newly formed beliefs, or by rejecting the newly introduced information pertaining to the positive outcomes of hunting. Since the results show that opposers hold their existing negative salient beliefs about hunting with great

conviction and certainty, it is very unlikely that they will change their existing beliefs in order to reduce cognitive dissonance. Thus, instead, opposers will in all likelihood simply reject any information that is inconsistent with their existing strongly held negative salient beliefs. From the latter discussion it could thus be inferred that even if persuasive messages were to be successful at getting opposers to form new positive salient beliefs about hunting, this newly formed positive salient belief will only persist if it is not in conflict with any of their existing negative beliefs about hunting.

The results in Table 4.5 enable one to identify possible opportunities to introduce positive salient beliefs into opposers' underlying belief structure. It shows that opposers' belief strength (b_i) towards the positive beliefs that '*hunting contributes to the conservation of wild animals*' ($\bar{x} = -1.15$) and that '*hunting is a way to experience nature and the outdoors*' ($\bar{x} = -1.00$) deviated significantly from neutral in a negative direction. This suggests that opposers strongly believed that hunting does not result in these two positive outcomes. Consequently, it would be very difficult to convince opposers that hunting result in these two positive outcomes. In contrast, the results further show that opposers' belief strengths (b_i) towards the two positive beliefs that '*hunting is a way of managing wild animals to prevent over-population*' ($\bar{x} = -0.39$) and that '*hunting holds economic benefits for the country*' ($\bar{x} = 0.00$) were much closer to the neutral point. Note, however, that opposers had only slightly favourable evaluations (e_i) towards these two positive outcomes ($\bar{x} = +0.43$ and $+0.90$, respectively) (Table 4.6). Thus, even if these two positive

beliefs were to be successfully introduced into the salient beliefs structure of opposers, it will only have a relatively small positive impact on the attitudes of opposers ($b \times e$ products) and thus will result in little or no significant change in their attitudes towards hunting. In addition, it is also important to realise that changing or adding one or two beliefs may not be sufficient to produce a change in attitude. Only when there is a substantial shift in the summative indices of behavioural beliefs will it result in a change in attitude.

Overall then, the results that were discussed in this section suggest that it would be extremely difficult to change opposers' attitudes towards hunting. These findings are also consistent with previous research, which also found that staunch opponents to hunting are very resistant to changing their attitudes (Campbell & MacKay, 2003; Herzog, 1993; Shaw, 1977).

4.3.3.3 Moderates' attitudes towards hunting and their causal determinants

In a similar fashion, it is possible to examine the cognitive foundation on which moderates based their attitudes towards hunting. Again, Table 4.4, Table 4.5, and Table 4.6 facilitate the examination of the main causal determinants of moderates' attitudes towards hunting. The belief strength (b_i) values in Table 4.5 show that, on average, moderates associated hunting with virtually all of the salient beliefs listed in the modal set (\bar{x} for all the salient beliefs ranged from +0.04 to +1.23). Thus, all of those salient beliefs are causal

determinants of moderates' attitudes towards hunting. It is, however, worth noting that moderates' belief strength (b_i) towards the majority of the salient beliefs listed in Table 4.5 deviated relatively little from neutral in a positive direction, indicating that most of these salient beliefs were only weakly held by moderates. Looking at the outcome evaluations (e_i) displayed in Table 4.6, it is evident that moderates had favourable evaluations of the positive salient outcomes (\bar{x} for the four positive salient beliefs ranged from +1.05 to +1.54) and unfavourable evaluations of the inherently negative salient outcomes (\bar{x} for the eight negative salient beliefs ranged from -0.10 to -1.73). When the belief strength measures (b_i) and outcome evaluations (e_i) for each individual salient belief were multiplied, their respective $b \times e$ products (Table 4.4) showed that the salient beliefs generally had relatively weak impacts on moderates' attitudes towards hunting (\bar{x} for all the salient beliefs' $b \times e$ products ranged from -1.35 to +1.23). This finding makes sense because it is reasonable to expect that the causal determinants of an impartial attitude would be based on salient beliefs that contribute to the attitude in a fairly moderate fashion.

A number of noteworthy aspects that hold important implications for understanding and changing the attitudes of moderates may be inferred from the results presented in Table 4.5. Firstly, it is clear that most of the beliefs strength (b_i) values deviated relatively little from neutral, indicating that moderates did not hold their salient beliefs with great certainty or conviction. The fact that moderates' salient beliefs about hunting are weakly held raises

the expectation that moderates would not be very resistant to persuasive interventions that targets their existing salient beliefs about hunting. It also shows that there would be ample room for changes to occur in moderates' belief strength (b_i). Furthermore, the standard deviations associated with the belief strength (b_i) of moderates were in most instances relatively high compared to that of supporters and opposers (Table 4.5). It suggests that moderates were largely divergent with respect to their perceived likelihoods that hunting will result in the various positive and negative salient outcomes. This finding provides further support for the expectation that it would be possible to change many of the salient beliefs on which moderates' attitudes towards hunting are based. The only obvious exception to the abovementioned generalisations has to do with moderates' salient belief that '*hunting results in wild animals being killed by hunters*'. The results show that moderates believed this particular salient belief to be a fairly likely outcome of hunting ($\bar{x} = +1.23$) and that there were relatively little variance amongst moderates with respect to how strongly they held this particular belief ($s = +0.77$). This finding makes sense, because this particular salient belief is, in fact, the most direct and obvious outcome of hunting. Thus, there would be no sense in trying to influence moderates' perceived likelihoods with respect to this particular belief.

In the second place, the results in Table 4.5 show that, in contrast to supporters and opposers (who's attitudes were almost exclusively based on positive salient beliefs and negative salient beliefs, respectively), moderates'

attitudes were simultaneously based on many positive and many negative salient beliefs. This coexistence of positive and negative reactions to hunting suggests that moderates have fairly ambivalent attitudes towards hunting. The literature review on ambivalent attitudes (see section 2.2.5 of chapter 2) suggest that, compared to non-ambivalent attitudes, ambivalent attitudes are said to be more likely to change over time, to be less resistant to persuasive appeals, and to be less likely to bias processing of attitude-relevant information (Armitage & Conner, 2000, pp.1421 – 1430). This further suggests that moderates would be fairly susceptible to persuasive messages that aim to change their attitudes towards hunting.

By now it should be evident that efforts to strengthen public support for hunting would be most effective if they resonate with the segment of the public with moderate attitudes towards hunting. The remainder of this section is thus aimed at investigating the implications that the results hold for improving the social legitimacy of hunting. Towards this aim, the results pertaining to the belief strength (b_i) of moderates hold important implications for effectuating a desired change in the existing salient beliefs on which moderates based their attitudes towards hunting. One way of changing the existing salient beliefs on which moderates based their attitudes towards hunting is by raising their perceived likelihood in those positive salient outcomes they already associate with hunting. In this regard, the results in Table 4.5 show that moderates' belief strength (b_i) were very close to being neutral for the two positive salient beliefs that '*hunting contributes to the conservation of wild animals*' ($\bar{x} =$

+0.04) and that '*hunting is a way to experience nature and the outdoors*' ($\bar{x} = +0.11$). In addition, moderates believed it to be only somewhat likely that '*hunting is a way of managing the number of wild animals in an area to prevent over-population*' ($\bar{x} = +0.62$) and that '*hunting holds economic benefits for the country*' ($\bar{x} = +0.94$). Evidently, these four positive salient beliefs about hunting are currently only weakly held by moderates. This suggests that there is ample room for strengthening moderates' perceived likelihoods that hunting results in these positive outcomes. To establish which of these four salient beliefs hold the most promising potential for being strengthened further, supporters' belief strength (b_i) were used as a benchmark to compare that belief strengths (b_i) of moderates against. Tukey-post hoc tests were used to identify statistically significant differences in the belief strength (b_i) of supporters and moderates, while Cohen's d effect size measures were used to establish the practical significance of those differences. It was found that extremely meaningful differences existed between moderates and supporters with respect to their perceived likelihood that '*hunting is a way to experience nature and the outdoors*' ($p < 0.05$; Cohen's $d = 1.40 \sim$ very large effect size), that '*hunting contributes to conservation of wild animals*' ($p < 0.05$; Cohen's $d = 1.33 \sim$ very large effect size), that '*hunting is a way of managing the number of wild animals in an area to prevent over-population*' ($p < 0.05$; Cohen's $d = 1.19 \sim$ very large effect size) and that '*hunting holds economic benefits for the country*' ($p < 0.05$; Cohen's $d = 1.06 \sim$ very large effect size). Overall then, the results suggest that there is ample room and promising opportunities to strengthen

moderates' perceived likelihood with respect to all four of these positive salient outcomes.

Another way of changing the existing salient beliefs on which moderates based their attitudes towards hunting would be by decreasing moderates' belief strength (b_i) with respect to those negative salient outcomes they already associate with hunting. To establish which of the negative salient beliefs in the modal set hold the most promising potential in this regard, the belief strength (b_i) measures of supporters were used as a benchmark to compare moderates against. Tukey-post hoc tests were used to identify statistically significant differences in the belief strength (b_i) of supporters and moderates, while Cohen's d effect size measures were used to establish how meaningful those differences are from a practical point of view. The results are displayed in Table 4.5 and show that very meaningful differences existed between moderates and supporters with respect to their perceived likelihood that hunting '*is disruptive and harmful to wild animal populations*' ($p < 0.05$; Cohen's $d = 1.47 \sim$ very large effect size), '*causes pain and suffering to wild animals*' ($p < 0.05$; Cohen's $d = 1.31 \sim$ very large effect size), and that hunting '*results in the cruel and inhumane treatment of wild animals*' ($p < 0.05$; Cohen's $d = 1.20 \sim$ very large effect size). Furthermore, very meaningful differences existed between moderates and supporters with respect to their perceived likelihood that '*hunters often kill animals unnecessarily without having a good reason or useful purpose for doing so*' ($p < 0.05$; Cohen's $d = 1.05 \sim$ large effect size), that '*hunting leads to*

unethical hunting practices' ($p < 0.05$; Cohen's $d = 1.01 \sim$ large effect size), and that '*hunting leads to the endangerment and extinction of wild animal species*' ($p < 0.05$; Cohen's $d = 0.98 \sim$ large effect size). These findings suggest that the six negative beliefs mentioned above may hold very promising implications for improving the social legitimacy of hunting. Looking at the average belief strength (b_i) values for these six salient beliefs (Table 4.5), it is evident that moderates believed it to be slightly likely that hunting would result in these particular outcomes (\bar{x} for the six negative salient beliefs ranged from +0.29 to +0.79). The results suggest that there is ample room and promising opportunities to decrease moderates' perceived likelihood with respect to these six negative salient outcomes. In contrast, however, the result in Table 4.5 further show that no significant differences were found to exist between moderates and supporters with respect to their perceived likelihood that '*hunting results in wild animals being killed by hunters*' ($p = 0.59$) and that '*hunters take pleasure and enjoyment in killing wild animals*' ($p = 0.26$). This suggests that there is little room for decreasing moderates' belief strength (b_i) with respect to these two negative salient outcomes of hunting. Overall then, while these two particular salient beliefs are of little value as far as changing attitudes towards hunting is concerned, there is ample room and promising opportunities to decrease moderates' perceived likelihood with respect to the aforementioned six negative salient outcomes.

In addition to changing attitudes by modifying the strength with which people associate hunting with various outcomes (b_i), the theory of reasoned action

postulates that it may also be possible to effectuate a change in attitudes by modifying how people evaluate those outcomes they associate with hunting (e_i). In this regard, it should by now be clear that all indications suggest that it would be more difficult to change the outcome evaluations (e_i) of a belief than to change the strength with which a belief is held (b_i). The results in Table 4.5 and Table 4.6 again confirm this finding as far as the moderate attitudinal subgroup is concerned. From the standard deviations that accompany the belief strength (b_i) and the outcome evaluations (e_i) of moderates, it is evident that much less variance existed in their outcome evaluations (e_i) than in their belief strength (b_i). This indicates that moderates agreed to a large extent in their positive and negative evaluations of the various outcomes, but that they had fairly divergent opinions with regards to how likely they thought it is that hunting results in the various outcomes. Consistent with previous findings, this provides support for the expectation that it would be much more difficult to change moderates' outcome evaluations (e_i) than it would be to change the strength with which their beliefs are held (b_i). Nevertheless, the results displayed in Table 4.6 suggest that it may be possible to slightly improve the outcome evaluations (e_i) of moderates with respect to a few of their positive salient beliefs. In particular, the results show that moderates' evaluations towards '*managing wild animals to prevent over-population*' were much less favourable ($\bar{x} = +1.05$) than that of supporters ($\bar{x} = +1.93$) ($p < 0.05$; Cohen's $d = 1.21 \sim$ very large effect size). It suggests that moderates may be somewhat incognisant about the importance of managing wild animals to prevent over-population. This points out that an opportunity exists to improve moderates' attitudes towards hunting by making them aware of the

importance of managing wild animals to prevent over-population. Similarly, compared to supporters ($\bar{x} = +1.75$), moderates were found to also have less favourable evaluations towards '*hunting benefiting the economy of the country*' ($\bar{x} = +1.14$) ($p < 0.05$; Cohen's $d = 0.97 \sim$ large effect size). This suggests that a possibility may exist to raise moderates' evaluations towards the economic contributions of hunting. This could, perhaps, be achieved by emphasising the direct positive impacts that hunting have on the lives of people as a result of the contributions it makes to the country's economy (e.g., job creation). In addition, it was found that moderates had slightly less favourable evaluations towards the outcome of '*contributing to the conservation of wild animals*' ($\bar{x} = +1.54$) than did supporters ($\bar{x} = +1.93$) ($p < 0.05$; Cohen's $d = 0.61 \sim$ moderate effect size). It suggests that it may be possible to raise moderates' awareness of the importance of contributing to the conservation of wild animals in order to further strengthen the positive impact that this salient belief has on their attitude towards hunting. Lastly, moderates' evaluations towards '*experiencing nature and the outdoors*' ($\bar{x} = +1.51$) were slightly less favourable than that of supporters ($\bar{x} = +1.88$) ($p < 0.05$; Cohen's $d = 0.52 \sim$ moderate effect size). Thus, it may be possible to get moderates to adopt slightly more favourable evaluations towards experiencing nature and the outdoors. This could perhaps be accomplished by exposing moderates to persuasive messages or experiences that highlights the enjoyable aspects of spending time in nature and the outdoors. Since moderates already hold fairly positive evaluations (e_i) towards these four salient outcomes, there is reason to expect that moderates will easily accept information that is aimed at further raising their positive evaluations (e_i)

towards those outcomes. However, it should be realised that since their outcome evaluations (e_i) of these salient beliefs are already fairly positive, there is only little room for further raising their positive evaluations of these outcomes. Thus, although it would be possible to effectively raise the outcome evaluations (e_i) of these four positive salient beliefs, it should be realised that it does not have the potential to result in any large or significant changes in the overall positive impact that these beliefs have on moderates' attitudes towards hunting.

In addition to effectuating a desired change in an attitude by changing some of the existing salient beliefs on which the targeted attitude is based, it is also possible to introduce new salient beliefs into the underlying salient belief structure. Because moderates hold impartial attitudes towards hunting, they are expected to process new information about hunting in a fairly balanced manner. Furthermore, because moderates' existing salient beliefs about hunting are generally weakly held, there is little risk of causing cognitive dissonance (see section 2.2.6 of chapter 2) when introducing new beliefs about hunting into their cognitive foundations. Overall then, all indications are that it may be very effective to change the attitudes of moderates by introducing new positive beliefs about hunting into their underlying salient belief structure. To name a few examples, persuasive interventions could be designed to convey the message that game meat is healthy and that hunting is a way of obtaining game meat, that hunting is an enjoyable way of getting exercise and increasing your fitness and health, that hunting can promote environmental awareness by teaching people about nature and the outdoors,

that hunting is a way to connect and learn about wildlife and nature, that hunters have a sincere interest in conserving wild animals, etc.

4.3.4 Influences of background factors on attitudes towards hunting and its underlying salient beliefs

This section is aimed at solving sub-problem 1.3.5 of this study. Towards this aim, this section provides an understanding of how various background factors (demographical and social differences) shape the way in which hunting is perceived by the public. This was done by comparing the salient beliefs on which participants from various demographical and social backgrounds based their attitudes towards hunting and pointing out the fundamental differences in this regard. It should be noted that the background factors will be discussed in order of importance, starting with those background factors that were found to have the largest influence on attitudes towards hunting, through to those background factors that had the smallest influence.

4.3.4.1 The effect of direct exposure on attitudes towards hunting and its causal determinants

Participants in the primary survey were asked to indicate how often they go hunting. Based on their responses pertaining to their hunting behaviour, the

sample participants were divided into three groups (Table 4.7 to Table 4.10). The first group consisted of participants who have never gone hunting before (never). The second group consisted of a combination of participants, ranging from those who have gone hunting only once before through to those participants who seldom go hunting (once in 2 years or less). The third group consisted of participants who go hunting frequently (once a year or more). Note that since the objective of this section is to investigate the effect that direct exposure to hunting has on attitudes towards hunting and its causal determinants, it would be most logical and effective to compare the attitudes and salient beliefs of those participants in the first (non-hunting participants) and the third (hunting participants) groups. Thus, the result pertaining to the second (seldom) group will not form part of this discussion, but for the sake of completeness it is nevertheless included in the Tables that will follow. To enhance the flow of the discussions that follow, the first group will be referred to as non-hunting participants, while the third group will be referred to as hunting participants.

To establish whether or not the direct exposure to hunting had any significant effect on attitudes towards hunting, the mean attitudes scores (A_B) of non-hunting and hunting participants were compared using t -test analysis. It was found that these two groups differed significantly ($t = 10.04$, $p < 0.01$), with non-hunting participants showing slight disapproval of hunting ($\bar{x} = -0.53$) and hunting participants showing strong approval of hunting ($\bar{x} = +1.49$). Further analysis with Cohen's d test revealed that this observed difference in attitude

was very large and highly significant from a practical point of view (Cohen's $d = 1.84 \sim$ extremely large effect size). It is noteworthy that, of all the background factors that were included in this study, direct exposure to hunting was found to have by far the most significant influence on participants' attitudes towards hunting.

To gain a better understanding of why non-hunting and hunting participants differed substantially with respect to their attitudes towards hunting, it is necessary to examine the fundamental differences that exist in the cognitive foundations on which they based their respective attitudes. Towards this aim, the results in Table 4.7 show that in the case of non-hunting participants as well as hunting participants, the sum of their belief-evaluation products ($\sum b_i e_i$) correlated strongly with their respective direct attitude scores (A_B) ($r = 0.75$ and $r = 0.58$, respectively, at $p < 0.01$). This suggests that the modal set of salient beliefs accurately account for the attitudes of both groups. Closer inspection of the correlations between the $b \times e$ products of each individual salient belief and the direct attitude measure (A_B) reveal that all of the beliefs in the modal set were significantly related to non-hunting participants' attitudes towards hunting (r ranged from 0.37 to 0.67 at $p < 0.01$). In the case of hunting participants, however, the results show that not all of the salient beliefs accounted for their attitudes towards hunting, suggesting that only some of the beliefs in the modal set were important causal determinants of their attitudes towards hunting. Specifically, only the beliefs that '*hunting holds economic benefits for the country*', that '*hunting is a way of experiencing*

nature and the outdoors', that *'hunting is a way of managing wild animals to prevent over-population'*, and that *'hunting contributes to the conservation of wild animals'* were significantly related to hunting participants' attitudes towards hunting (r ranged from 0.56 to 0.58 at $p < 0.01$).

To further examine the fundamental differences in the cognitive foundations on which non-hunting and hunting participants based their respective attitudes, it is necessary to identify the particular salient beliefs with the biggest difference regarding their impact ($b \times e$ products) on the respective attitudes of the two behavioural groups. Towards this aim, the mean $b \times e$ products of every individual salient belief were compared across the three behavioural groups by making use of a series of Tukey post-hoc tests. The results of this comparative analysis are displayed in Table 4.8 and indicate that statistically significant differences existed between non-hunting and hunting participants with respect to the $b \times e$ products of each salient belief. Further analysis with Cohen's d tests revealed that all of these between-group differences were extremely large and thus very meaningful from a practical point of view (Cohen's d ranged from 1.01 to 1.82 ~ very large effect size). This finding suggests that the manner in which every salient belief impacted on attitudes towards hunting differed substantially between non-hunting and hunting participants. In sum then, the results suggest that all of the salient beliefs in the modal set were implicated in the fundamental differences that exist in the cognitive foundations on which non-hunting and hunting participants based their respective attitudes towards hunting. Therefore, it is

necessary to investigate all of the salient beliefs in the modal set in more depth.

To fully understand the reason for the observed differences in the impact that every salient belief had on the attitudes of the two behavioural groups, it is necessary to compare the belief strength (b_i) and outcome evaluations (e_i) that constitute the $b \times e$ products of every individual salient belief in the modal set. Towards this aim, a series of Tukey post-hoc tests were used to identify between-group differences with respect to the belief strength (b_i) and outcome evaluations (e_i) of every salient belief in the modal set. All of the statistically significant between-group differences that were identified are indicated in Table 4.9 and Table 10 respectively, and will be discussed throughout the remainder of this section.

As far as belief strength (b_i) is concerned, the results from the comparative analysis (Table 4.9) showed that non-hunting and hunting participants differed substantially with respect to nearly all of the salient beliefs in the modal set. The only exception occurred with respect to the salient belief that '*hunting results in wild animals being killed by hunters*', in which case participants from both behavioural groups were unanimous in their perceived likelihood that hunting results in this particular outcome. With respect to all of the remaining salient beliefs, statistically significant differences were found to exist between the belief strength (b_i) of the non-hunting and the hunting participants. Further analysis with Cohen's d tests found that nearly all of these differences

were very large and extremely meaningful from a practical point of view (Cohen's d ranged from 0.51 to 1.89 ~ moderate to very large effect size). Specifically, it was found that hunting participants strongly believed that '*hunting contributes to the conservation of wild animals*' ($\bar{x} = +1.69$) while non-hunting participants did not regard this as a likely outcome of hunting ($\bar{x} = -0.41$) ($p < 0.05$, Cohen's $d = 1.83$ ~ very large effect size). Similarly, hunting participants strongly believed that '*hunting is a way to experience nature and the outdoors*' ($\bar{x} = +1.74$) while non-hunting participants regard this as an unlikely outcome of hunting ($\bar{x} = -0.35$) ($p < 0.05$, Cohen's $d = 1.77$ ~ very large effect size). Conversely, hunting participants did not believe that '*hunting leads to unethical hunting practices*' ($\bar{x} = -1.06$), while non-hunting participants believed this to be an extremely likely outcome of hunting ($\bar{x} = +0.86$) ($p < 0.05$, Cohen's $d = 1.89$ ~ very large effect size). Similarly, hunting participants did not perceive hunting to '*cause pain and suffering to wild animals*' ($\bar{x} = -0.46$) or that '*hunters would kill animals unnecessarily*' ($\bar{x} = -0.97$), while non-hunting participants believed this to be quite likely ($\bar{x} = +1.14$ and $\bar{x} = +0.73$ respectively) ($p < 0.05$, Cohen's $d = 1.65$ and 1.65 respectively ~ very large effect size). In addition, hunting participants also did not believe that '*hunting leads to the endangerment and extinction of wild animal species*' ($\bar{x} = -1.00$), that '*hunting is disruptive and harmful to wild animal population*' ($\bar{x} = -0.89$) or that '*hunting results in the cruel and inhumane treatment of wild animals*' ($\bar{x} = -0.66$), while non-hunting participants believed this to be a somewhat likely outcome of hunting ($\bar{x} = +0.79$, $\bar{x} = +0.75$ and $\bar{x} = +0.84$ respectively) ($p < 0.05$, Cohen's $d = 1.64$, 1.59 and 1.41 respectively ~ very large effect size). Furthermore, compared

to hunting participants, non-hunting participants were much less likely to believe that '*hunting is a way of managing wild animals to prevent over-population*' ($\bar{x} = +1.49$ and $\bar{x} = +0.34$ respectively, $p < 0.05$, Cohen's $d = 1.10 \sim$ very large effect size); and that '*hunting holds economic benefits for the country*' ($\bar{x} = +1.74$ and $\bar{x} = +0.67$ respectively, $p < 0.05$, Cohen's $d = 1.08 \sim$ very large effect size). Moreover, compared to hunting participants, non-hunting participants were slightly more likely to believe that '*hunters take pleasure and enjoyment in killing wild animals*' ($\bar{x} = +0.03$ and $\bar{x} = +0.62$ respectively, $p < 0.05$, Cohen's $d = 0.51 \sim$ moderate effect size). Overall, these findings seem to suggest that hunting participants perceived it to be much more likely that hunting would result in favourable outcomes and much less likely that hunting would result in unfavourable outcomes.

As far as outcome evaluations (e_i) are concerned, the results in Table 4.10 show that non-hunting and hunting participants differed in their judgements with respect to only some of the salient outcomes. These statistically significant between-group differences are indicated in Table 10. It should be noted, however, that not all of these statistically significant differences were large enough to be meaningful from a practical point of view and thus accounted for very little of the differences in the cognitive foundations on which the two behavioural groups based their respective attitudes towards hunting. Only with respect to four of the salient outcomes in the modal set did practically meaningful differences exist between the outcome evaluations (e_i) of non-hunting and hunting participants. In the case of the first practically

meaningful difference, hunting participants had fairly positive evaluations towards '*wild animals being killed by hunters*' ($\bar{x} = +0.97$), while non-hunting participants evaluated this outcome as slightly negative ($\bar{x} = -0.57$) ($p < 0.05$, Cohen's $d = 1.54 \sim$ very large effect size). Secondly, hunting participants had neutral to slightly positive evaluations towards '*hunters taking pleasure and enjoyment in killing wild animals*' ($\bar{x} = +0.14$), while non-hunting participants evaluated this outcome as quite negative ($\bar{x} = -1.16$) ($p < 0.05$, Cohen's $d = 1.34 \sim$ very large effect size). With respect to the third practically meaningful difference, hunting participants had much more positive evaluations towards the '*management of wild animal populations to prevent over-population*' ($\bar{x} = +1.80$) than did non-hunting participants ($\bar{x} = +0.81$) ($p < 0.05$, Cohen's $d = 1.19 \sim$ very large effect size). As far as the fourth and final practically meaningful difference is concerned, hunting participants had more positive evaluations towards '*experiencing nature and the outdoors*' ($\bar{x} = +1.89$) than did non-hunting participants ($\bar{x} = +1.44$) ($p < 0.05$, Cohen's $d = 0.57 \sim$ moderate effect size). Since hunting participants were more inclined to have positive evaluations towards these four salient outcomes, it seems that hunting participants better understood what hunting is all about and what the role of hunting is.

Overall the results suggest that direct exposure to hunting was the single variable in this study that had by far the most significant influence on attitudes towards hunting and its underlying causal determinants. The findings suggest that the fundamental differences between the cognitions of the non-hunting

and hunting participants were largely the result of differences in their belief strength (b_i) and, to a much lesser extent, differences in their outcome evaluations (e_i). Compared to participants who have never been directly exposed to hunting, participants who go hunting frequently were more likely to recognise the positive outcomes of hunting, and much less likely to associate hunting with negative outcomes. It thus seems that non-hunting participants were fairly incognisant about matters pertaining to hunting.

It is important to recognise that participants who have never gone hunting before would not have any personal experience about hunting and, as a result, it is unlikely that their attitudes towards hunting are based on observational beliefs. Instead it could be assumed that their attitudes towards hunting are, in all likelihood, based on a combination of informational or inferential beliefs (see section 2.4.8.1 of chapter 2).

TABLE 4.7. Correlations of belief-evaluation product with direct attitude measure: differences between frequencies of participation in hunting.

Behavioural beliefs (<i>Abbreviated</i>)	Correlation $b \times e$ with attitude (A_B)		
	Never	Once in 2 years or less	Once a year or more
	($n = 211$)	($n = 81$)	($n = 35$)
	<i>r</i>	<i>r</i>	<i>r</i>
– Disruptive and harmful to wild animal populations.	0.67**	0.60**	0.31
– Results in wild animals being killed by hunters.	0.67**	0.62**	0.23
+ Contributes to conservation of wild animals.	0.52**	0.69**	0.56**
– Cruel and inhumane treatment of wild animals.	0.60**	0.55**	0.27
– Leads to unethical hunting practices.	0.55**	0.50**	0.22
– Causes pain and suffering to wild animals.	0.57**	0.51**	0.26
+ Experience nature and the outdoors.	0.41**	0.69**	0.57**
– Hunters kill animals unnecessarily.	0.52**	0.44**	0.28
– Endangerment and extinction of wild animal species.	0.43**	0.57**	0.11
+ Managing wild animals to prevent over-population.	0.44**	0.53**	0.57**
+ Hold economic benefits for the country.	0.37**	0.56**	0.58**
– Hunters take pleasure and enjoyment in killing.	0.39**	0.56**	0.21
Sum of belief-evaluation products ($\sum b_i e_i$)	0.75**	0.75**	0.58**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.			

TABLE 4.8. Mean belief-evaluation product for behavioural beliefs about hunting: differences between frequencies of participation in hunting.

Behavioural beliefs (Abbreviated)	<i>b × e</i> products					
	Never		Once in 2 years or less		Once a year or more	
	(n = 211)		(n = 81)		(n = 35)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	-1.29 ^a	(1.87)	-0.07 ^b	(2.02)	1.43 ^c	(1.67)
– Results in wild animals being killed by hunters.	-0.85 ^a	(1.79)	0.25 ^b	(1.96)	1.46 ^c	(1.44)
+ Contributes to conservation of wild animals.	-0.68 ^a	(2.16)	0.64 ^b	(2.29)	3.09 ^c	(1.44)
– Cruel and inhumane treatment of wild animals.	-1.64 ^a	(1.96)	-0.23 ^b	(2.38)	1.31 ^c	(1.89)
– Leads to unethical hunting practices.	-1.56 ^a	(2.06)	-0.10 ^b	(2.42)	1.83 ^c	(1.65)
– Causes pain and suffering to wild animals.	-2.00 ^a	(1.85)	-0.96 ^b	(2.16)	0.71 ^c	(1.81)
+ Experience nature and the outdoors.	-0.41 ^a	(2.23)	1.23 ^b	(2.24)	3.31 ^c	(1.08)
– Hunters kill animals unnecessarily.	-1.28 ^a	(1.99)	0.22 ^b	(2.37)	1.60 ^c	(1.63)
– Endangerment and extinction of wild animal species.	-1.45 ^a	(2.12)	-0.37 ^b	(2.54)	2.11 ^c	(1.43)
+ Managing wild animals to prevent over-population.	0.73 ^a	(1.31)	1.48 ^b	(1.64)	2.83 ^c	(1.54)
+ Hold economic benefits for the country.	0.97 ^a	(1.45)	1.57 ^b	(1.78)	2.94 ^c	(1.43)
– Hunters take pleasure and enjoyment in killing.	-0.94 ^a	(1.91)	-0.16 ^b	(1.64)	0.94 ^c	(1.45)
Sum of belief-evaluation products ($\sum b_i e_i$)	-10.42 ^a	(15.49)	3.49 ^b	(19.33)	23.57 ^c	(11.43)

Note: Belief-evaluation products ($b \times e$) can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences: means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.9. Mean belief strength for behavioural beliefs about hunting: differences between frequencies of participation in hunting.

Behavioural beliefs (<i>Abbreviated</i>)	Belief strength (b_i)					
	Never		Once in 2 years or less		Once a year or more	
	(n = 211)		(n = 81)		(n = 35)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	0.75 ^a	(1.04)	-0.10 ^b	(1.16)	-0.89 ^c	(0.96)
– Results in wild animals being killed by hunters.	1.34	(0.77)	1.22	(0.84)	1.29	(0.71)
+ Contributes to conservation of wild animals.	-0.41 ^a	(1.21)	0.35 ^b	(1.24)	1.69 ^c	(0.63)
– Cruel and inhumane treatment of wild animals.	0.84 ^a	(1.06)	0.11 ^b	(1.27)	-0.66 ^c	(1.08)
– Leads to unethical hunting practices.	0.86 ^a	(1.05)	0.04 ^b	(1.33)	-1.06 ^c	(0.76)
– Causes pain and suffering to wild animals.	1.14 ^a	(0.96)	0.46 ^b	(1.23)	-0.46 ^c	(1.01)
+ Experience nature and the outdoors.	-0.35 ^a	(1.26)	0.58 ^b	(1.28)	1.74 ^c	(0.44)
– Hunters kill animals unnecessarily.	0.73 ^a	(1.06)	-0.17 ^b	(1.29)	-0.97 ^c	(0.82)
– Endangerment and extinction of wild animal species.	0.79 ^a	(1.12)	0.20 ^b	(1.35)	-1.00 ^c	(0.87)
+ Managing wild animals to prevent over-population.	0.34 ^a	(1.08)	0.77 ^b	(1.12)	1.49 ^c	(0.82)
+ Hold economic benefits for the country.	0.67 ^a	(1.05)	1.04 ^b	(1.08)	1.74 ^c	(0.51)
– Hunters take pleasure and enjoyment in killing.	0.62 ^a	(1.14)	0.30 ^{a,b}	(1.17)	0.03 ^b	(1.20)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.10. Mean outcome evaluation for behavioural beliefs about hunting: differences between frequencies of participation in hunting.

Behavioural beliefs (<i>Abbreviated</i>)	Outcome evaluation (e_i)					
	Never		Once in 2 years or less		Once a year or more	
	(n = 211)		(n = 81)		(n = 35)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.54	(0.61)	-1.42	(0.80)	-1.31	(0.80)
– Results in wild animals being killed by hunters.	-0.57 ^a	(1.03)	0.17 ^b	(1.16)	0.97 ^c	(0.79)
+ Contributes to conservation of wild animals.	1.54	(0.73)	1.64	(0.62)	1.80	(0.41)
– Cruel and inhumane treatment of wild animals.	-1.81	(0.46)	-1.75	(0.54)	-1.69	(0.72)
– Leads to unethical hunting practices.	-1.73	(0.58)	-1.67	(0.61)	-1.57	(0.88)
– Causes pain and suffering to wild animals.	-1.69 ^a	(0.54)	-1.54 ^{a,b}	(0.65)	-1.43 ^b	(0.74)
+ Experience nature and the outdoors.	1.44 ^a	(0.84)	1.65 ^{a,b}	(0.59)	1.89 ^b	(0.40)
– Hunters kill animals unnecessarily.	-1.65	(0.62)	-1.68	(0.57)	-1.57	(0.78)
– Endangerment and extinction of wild animal species.	-1.80	(0.43)	-1.75	(0.49)	-1.57	(0.98)
+ Managing wild animals to prevent over-population.	0.81 ^a	(0.88)	1.33 ^b	(0.69)	1.80 ^c	(0.41)
+ Hold economic benefits for the country.	1.44	(0.73)	1.31	(0.63)	1.60	(0.65)
– Hunters take pleasure and enjoyment in killing.	-1.16 ^a	(0.94)	-0.36 ^b	(1.12)	0.14 ^c	(1.12)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.3.4.2 The effect of social ties on attitudes towards hunting and its causal determinants

Participants in the primary survey were divided into two groups based on whether or not they have any close social ties with people who hunt regularly (e.g., family members, friends) (Table 4.11 to Table 4.13). In order to improve the flow of the discussion that follow, these two groups will be referred to as social groups. The mean attitudes scores (A_B) of these two social groups were compared using t -test analysis. Strong evidence was found that a statistically significant difference exists between the mean direct attitude measure (A_B) of these two social groups ($t = 7.48, p < 0.01$). Subsequent analysis with Cohen's d tests further revealed that having close social ties with hunters had an overall large effect on participants' attitudes towards hunting (Cohen's $d = 0.83 \sim$ large effect size). Based on the latter, it was evident that having close social ties with hunters was the background factor that had the second largest effect on participants' attitudes towards hunting. Participants who have close social ties with hunters were much more inclined to approve of hunting ($\bar{x} = +0.40$) compared to participants who had no social ties with hunters ($\bar{x} = -0.62$). This finding may be explained by the notion that attitudes and behavioural norms typically develop within social groups or subcultures. Another possible explanation for this finding is that people with close social ties with hunters have, in all likelihood, been exposed to hunting in either a direct or indirect manner, resulting in them having a more accurate perception of what hunting is about.

Since it was found that having social ties with hunters had a large effect on participants' attitudes towards hunting, one would expect there to be substantial differences in the salient beliefs on which the two social groups based their respective attitudes towards hunting. To investigate this expectation, the salient beliefs on which the two social groups based their respective attitudes towards hunting were compared. The results of this comparative analysis are displayed in Table 4.11, Table 4.12 and Table 4.13 and will be discussed in the remainder of this section.

Table 4.11 shows that the $b \times e$ products of each individual salient belief was strongly related to the direct attitude measure (A_B) in the case of participants who have close social ties with hunters (r ranged from 0.57 to 0.71 at $p < 0.01$) and weakly to strongly related in the case of participants who had no social ties with hunters (r ranged from 0.25 to 0.64 at $p < 0.01$). Evidently, all the correlations were found to be highly significant ($p < 0.01$) and thus accounted for variation in the attitudes of both social groups. This confirms that all the salient beliefs were related to the two social groups' respective attitudes towards hunting. The overall sum of the belief-evaluation products ($\sum b_i e_i$) for each of the two social groups also correlate highly with their respective direct attitude scores (A_B) ($r = 0.82$ and $r = 0.70$ respectively at $p < 0.01$). This provides strong evidence that the total set of salient beliefs accurately account for the fundamental causal determinants on which both social groups based their respective attitudes towards hunting.

Having verified that the salient beliefs under investigation are significantly related to the attitudes of both social groups, it is possible to identify the particular salient beliefs that differ the most in their impact on the attitudes of the two social groups. Towards this aim, the mean $b \times e$ products of every individual salient belief were compared between the two social groups by making use of a series of t -test analysis. The results of this comparative analysis are displayed in Table 4.12. Evidently, statistically significant differences exist between the two social groups with respect to the impact that every individual single salient belief had on their attitudes towards hunting ($p < 0.01$). Analysis with Cohen's d tests further revealed that all of these differences were large enough to be meaningful from a practical point of view (Cohen's d ranged from 0.50 to 0.80 ~ moderate to large effect size). This suggests, firstly, meaningful differences exist between the cognitive foundations on which the two social groups based their attitudes towards hunting and, secondly, that all the salient beliefs in the modal set were implicated in these cognitive differences.

Inspection of the belief strength (b_i) and outcome evaluations (e_i) that constitute the $b \times e$ products of the salient beliefs provides further insight into the reason for the observed differences in the impact that the salient beliefs have on the attitudes of the two social groups (Table 4.13). Using a series of t -tests to compare the two social groups, evidence was found that the two social groups differed significantly in both their belief strength (b_i) and outcome evaluations (e_i) with respect to many salient beliefs. All of the

statistically significant differences are indicated in Table 4.13. Note, however, that the observed differences were in some cases too small to be practically meaningful and thus accounted for very little of the differences in the cognitive foundations on which the two social groups based their respective attitudes towards hunting. These findings are discussed in detail throughout the remainder of this section.

With respect to belief strength (b_i), statistically significant differences existed between the two social groups for nearly all of the salient beliefs (Table 4.13). Only a single exception to the latter occurred: both social groups' perceived likelihoods that '*hunting results in wild animals being killed by hunters*' were essentially identical ($t = 0.08$, $p = 0.93$), with both groups believing that this is a very likely outcome of hunting ($\bar{x} = +1.30$ and $\bar{x} = +1.31$ respectively). However, the two social groups differed significantly in their belief strength (b_i) with respect to all the remainder of the salient beliefs. Cohen's d tests found that nearly all of these differences were large enough to be meaningful from a practical point of view. The only exception occurred with respect to the single salient belief that '*hunters take pleasure and enjoyment in killing wild animals*', in which case the difference between the belief strength (b_i) of the two social groups were only significant from a statistical point of view, but not large enough to be practically meaningful (Cohen's $d = 0.21 \sim$ very small effect size). With this being the only exception, all of the other statistically significant differences in belief strength (b_i) were large enough to be meaningful from a practical point of view (Cohen's d ranged from 0.58 to 0.88 \sim moderate to

large effect size). Specifically, it was found that participants who have close social ties with hunters believed that '*hunting is a way of experiencing nature and the outdoors*' ($\bar{x} = +0.62$) while participants who have no social ties with hunters did not regard this as a likely outcome of hunting ($\bar{x} = -0.50$) ($t = 7.91$, $p < 0.01$, Cohen's $d = 0.88 \sim$ moderate effect size). Similarly, participants who have close social ties with hunters believed that '*hunting contributes to the conservation of wild animals*' ($\bar{x} = +0.46$), while participants who have no social ties with hunters did not regard this as a likely outcome of hunting ($\bar{x} = -0.55$) ($t = 7.30$, $p < 0.01$, Cohen's $d = 0.81 \sim$ moderate effect size). Furthermore, compared to participants who have no social ties with hunters, participants who have close social ties with hunters were less likely to believe that '*hunting is disruptive and harmful to wild animal populations*' ($\bar{x} = +0.87$ and $\bar{x} = -0.06$ respectively, $t = 7.63$, $p < 0.01$, Cohen's $d = 0.85 \sim$ moderate effect size); that '*hunting leads to unethical hunting practices*' ($\bar{x} = +0.91$ and $\bar{x} = +0.06$ respectively, $t = 6.47$, $p < 0.01$, Cohen's $d = 0.72 \sim$ moderate effect size); that '*hunting results in the endangerment and extinction of wild animal species*' ($\bar{x} = +0.89$ and $\bar{x} = +0.08$ respectively, $t = 5.98$, $p < 0.01$, Cohen's $d = 0.66 \sim$ moderate effect size); that '*hunting causes pain and suffering to wild animals*' ($\bar{x} = +1.18$ and $\bar{x} = +0.47$ respectively, $t = 5.74$, $p < 0.01$, Cohen's $d = 0.64 \sim$ moderate effect size); that '*hunters kill animals unnecessarily*' ($\bar{x} = +0.71$ and $\bar{x} = 0.00$, $t = 5.36$, $p < 0.01$, Cohen's $d = 0.60 \sim$ moderate effect size); and that '*hunting results in the cruel and inhumane treatment of wild animals*' ($\bar{x} = +0.87$ and $\bar{x} = +0.19$, $t = 5.20$, $p < 0.01$, Cohen's $d = 0.58 \sim$ moderate effect size). Moreover, compared to participants who have no social ties with hunters, participants who have close

social ties with hunters were much more likely to believe that '*hunting is a way of managing wild animals to prevent over-population*' ($\bar{x} = +0.15$ and $\bar{x} = +0.92$ respectively, $t = 6.49$, $p < 0.01$, Cohen's $d = 0.72 \sim$ moderate effect size); and that '*hunting holds economic benefits for the country*' ($\bar{x} = +0.55$ and $\bar{x} = +1.16$ respectively, $t = 5.40$, $p < 0.01$, Cohen's $d = 0.60 \sim$ moderate effect size). Overall, these findings seem to suggest that participants who have close social ties with hunters perceived it to be more likely that hunting would result in positive outcomes and less likely that hunting would result in negative outcomes.

As far as outcome evaluations (e_i) are concerned, the result in Table 4.13 show that the two social groups differed only in some of their judgements of the salient outcomes. Of those statistically significant differences that did, however, exist between the outcome evaluations (e_i) of the two social groups, only three of these differences proved to be meaningful from a practical point of view. In the case of the first practically meaningful difference, participants who have close social ties with hunters had much more favourable evaluations towards '*managing wild animals to prevent over-population*' ($\bar{x} = +1.30$) than did participants who have no social ties with hunters ($\bar{x} = +0.74$) ($t = 6.61$, $p < 0.01$, Cohen's $d = 0.68 \sim$ moderate effect size). As far as the second practically meaningful difference is concerned, participants who have close social ties with hunters had neutral to slightly positive evaluations towards '*wild animals being killed by hunters*' ($\bar{x} = +0.16$), while participants who have no social ties with hunters evaluated this outcome as negative ($\bar{x} =$

–0.67) ($t = 6.91$, $p < 0.01$, Cohen's $d = 0.77 \sim$ moderate effect size). With respect to the third practically meaningful difference, participants who have close social ties with hunters had much less negative evaluations towards '*hunters taking pleasure and enjoyment in killing wild animals*' ($\bar{x} = -0.52$) than did participants who have no social ties with hunters ($\bar{x} = -1.18$) ($t = 5.60$, $p < 0.01$, Cohen's $d = 0.62 \sim$ moderate effect size). Overall, these findings seem to suggest that participants who have close social ties with hunters better understood the importance of managing wild animal populations, the role of hunting and what hunting is all about.

TABLE 4.11. Correlations of belief-evaluation product with direct attitude measure: differences between social ties with hunters.

Behavioural beliefs (<i>Abbreviated</i>)	Correlation $b \times e$ with attitude (A_B)	
	Social ties ($n = 177$)	No Social ties ($n = 150$)
	r	r
– Disruptive and harmful to wild animal populations.	0.68**	0.64**
– Results in wild animals being killed by hunters.	0.71**	0.60**
+ Contributes to conservation of wild animals.	0.67**	0.51**
– Cruel and inhumane treatment of wild animals.	0.63**	0.61**
– Leads to unethical hunting practices.	0.62**	0.51**
– Causes pain and suffering to wild animals.	0.65**	0.49**
+ Experience nature and the outdoors.	0.67**	0.41**
– Hunters kill animals unnecessarily.	0.61**	0.46**
– Endangerment and extinction of wild animal species.	0.57**	0.45**
+ Managing wild animals to prevent over-population.	0.68**	0.25**
+ Hold economic benefits for the country.	0.58**	0.32**
– Hunters take pleasure and enjoyment in killing.	0.64**	0.26**
Sum of belief-evaluation products ($\sum b_i e_i$)	0.83**	0.69**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.		

TABLE 4.12. Mean belief-evaluation product for behavioural beliefs about hunting: differences between social ties with hunters.

Behavioural beliefs (Abbreviated)	<i>b</i> × <i>e</i> products			
	Social ties (<i>n</i> = 177)		No social ties (<i>n</i> = 150)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	0.00	(2.05)	-1.52**	(1.80)
– Results in wild animals being killed by hunters.	0.21	(1.91)	-0.97**	(1.83)
+ Contributes to conservation of wild animals.	0.88	(2.34)	-0.93**	(2.18)
– Cruel and inhumane treatment of wild animals.	-0.38	(2.44)	-1.68**	(1.87)
– Leads to unethical hunting practices.	-0.14	(2.42)	-1.66**	(2.07)
– Causes pain and suffering to wild animals.	-0.93	(2.19)	-2.08**	(1.83)
+ Experience nature and the outdoors.	1.21	(2.29)	-0.57**	(2.31)
– Hunters kill animals unnecessarily.	0.00	(2.26)	-1.31**	(2.09)
– Endangerment and extinction of wild animal species.	-0.10	(2.39)	-1.63**	(2.22)
+ Managing wild animals to prevent over-population.	1.60	(1.65)	0.60**	(1.27)
+ Hold economic benefits for the country.	1.77	(1.71)	0.81**	(1.40)
– Hunters take pleasure and enjoyment in killing.	-0.13	(1.73)	-1.04**	(1.98)
Sum of belief-evaluation products ($\sum b_i e_i$)	4.86	(28.08)	-17.10**	(21.41)

Note: Belief-evaluation product (*b* × *e*) scores can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

t-test reveals differences significant at **p* ≤ 0.05 and ** *p* ≤ 0.01; all other means are not significantly different.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.13. Mean belief strength and outcome evaluation for behavioural beliefs about hunting: differences between social ties with hunters.

Behavioural beliefs (<i>Abbreviated</i>)	Belief strength (b_i)				Outcome evaluation (e_i)			
	Social ties		No social ties		Social ties		No social ties	
	(n = 177)		(n = 150)		(n = 177)		(n = 150)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-0.06	(1.19)	0.87**	(0.99)	-1.47	(0.71)	-1.50	(0.66)
– Results in wild animals being killed by hunters.	1.30	(0.76)	1.31	(0.81)	0.16	(1.14)	-0.67**	(1.02)
+ Contributes to conservation of wild animals.	0.46	(1.27)	-0.55**	(1.22)	1.69	(0.57)	1.47**	(0.77)
– Cruel and inhumane treatment of wild animals.	0.19	(1.27)	0.87**	(1.06)	-1.84	(0.48)	-1.71*	(0.55)
– Leads to unethical hunting practices.	0.06	(1.29)	0.91**	(1.07)	-1.71	(0.64)	-1.68	(0.62)
– Causes pain and suffering to wild animals.	0.47	(1.21)	1.18**	(0.98)	-1.64	(0.58)	-1.61	(0.62)
+ Experience nature and the outdoors.	0.62	(1.27)	-0.50**	(1.27)	1.62	(0.70)	1.45*	(0.82)
– Hunters kill animals unnecessarily.	0.00	(1.26)	0.71**	(1.13)	-1.66	(0.58)	-1.64	(0.68)
– Endangerment and extinction of wild animal species.	0.08	(1.27)	0.89**	(1.16)	-1.76	(0.58)	-1.77	(0.47)
+ Managing wild animals to prevent over-population.	0.92	(0.99)	0.15**	(1.13)	1.30	(0.76)	0.74**	(0.89)
+ Hold economic benefits for the country.	1.16	(0.93)	0.55**	(1.11)	1.29	(0.70)	1.02**	(0.72)
– Hunters take pleasure and enjoyment in killing.	0.36	(1.14)	0.61*	(1.19)	-0.52	(1.15)	-1.18**	(0.95)

Note: Belief strength (b_i) and outcome evaluation (e_i) scores can range from -2 to +2.

t-test reveals differences significant at * $p \leq 0.05$ and ** $p \leq 0.01$; all other means are not significantly different.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.3.4.3 The effect of gender differences on attitudes towards hunting and its causal determinants

To establish whether or not the gender differences had any significant effect on attitudes towards hunting, the research sample was divided into male participants and female participants (Table 4.14 to Table 4.16) and their respective mean attitudes scores (A_B) were compared using t -test analysis. The results of the primary survey found a significant difference between the mean direct attitude score (A_B) of male and female participants ($t = 5.41, p < 0.01$). On average, male participants were more likely to support hunting than female participants ($\bar{x} = +0.30$ and -0.46 , respectively). Further analysis with Cohen's d test revealed that, in practice, gender had only a moderate effect on participant's attitudes towards hunting (Cohen's $d = 0.60 \sim$ moderate effect size).

To gain a better understanding of why male and female participants differed with respect to their attitudes towards hunting, it is necessary to examine the fundamental differences that exist in the cognitive foundations on which they based their respective attitudes. Thus, to gain an understanding of why males were more likely to support hunting than females, it is necessary to identify the salient beliefs responsible for the observed differences in their respective attitudes towards hunting. Towards this aim, Table 4.14 shows that the sum of the belief-evaluation products ($\sum b_i e_i$) for both male and female participants correlated highly with their respective direct attitude scores (A_B) ($r = 0.83$ and

$r = 0.74$, respectively, at $p < 0.01$). This provides strong evidence that, in the case of both male and female participants, the modal set of listed salient beliefs accurately accounted for their respective attitudes towards hunting. Furthermore, the $b \times e$ products of each individual salient belief was strongly related to the direct attitude measure (A_B) in the case of male participants (r ranged from 0.53 to 0.71 at $p < 0.01$) and moderately to strongly related in the case of female respondents (r ranged from 0.43 to 0.67 at $p < 0.01$). Thus, every individual salient belief accounted for considerable variation in the attitudes of male and female participants and may therefore provide meaningful insight into gender related differences in the cognitive foundation that underlie attitudes towards hunting. It is worth pointing out, however, that compared to male respondents, the beliefs that '*hunting is a way to experience nature and the outdoors*' and that '*hunting is a way of managing wild animals to prevent over-population*' accounted for fairly little variance in the attitudes of female respondents. This suggests that these two particular salient beliefs played a significantly less prominent role in determining female respondents' attitudes towards hunting than it did in determining male respondents' attitudes towards hunting.

Having established that the salient beliefs are all significantly related to the attitudes of male and female participants, Table 4.15 facilitated a gender-based comparison of the $b \times e$ products of the individual salient beliefs. Such a comparative analysis enables one to identify differences in the impact every individual salient belief had on the attitude of male and female participants. A

series of t -tests provided evidence of statistically significant gender differences in the mean $b \times e$ products of all 12 of the salient beliefs in the modal set, indicating that the manner in which all the salient beliefs impacted on attitudes towards hunting differed between male and female participants. Although gender differences in the $b \times e$ products of all the salient beliefs were found to be statistically significant, only a number of these differences were found to be large enough to be meaningful from a practical point of view. This included the salient beliefs that associated hunting with '*experiencing nature and the outdoors*' ($t = 5.21, p < 0.01$, Cohen's $d = 0.58 \sim$ moderate effect size) '*hunters often killing animals unnecessarily*' ($t = 4.57, p < 0.01$, Cohen's $d = 0.51 \sim$ moderate effect size), and '*disrupting and harming wild animal populations*' ($t = 4.41, p < 0.01$, Cohen's $d = 0.50 \sim$ moderate effect size). Some other gender differences in $b \times e$ products that were of some noteworthy practical importance were also identified. These included the salient beliefs that hunting '*contributes to the conservation of wild animals*' ($t = 4.35, p < 0.01$, Cohen's $d = 0.48 \sim$ small to moderate effect size), and '*leads to unethical hunting practices that do not give animals a fair chance of survival*' ($t = 4.34, p < 0.01$, Cohen's $d = 0.48 \sim$ small to moderate effect size). In sum then, the results suggest that these particular five salient beliefs accounted for the most fundamental differences in the cognitive foundations on which male and female participants based their respective attitudes towards hunting. For this reason, these five salient beliefs were investigated further and will be referred to as the **discriminating** salient beliefs in the subsequent discussions on gender differences. Inspection of the belief strength (b_i) and outcome evaluations (e_i) that constitute the $b \times e$ products of

the five discriminating salient beliefs provides an explanation for the observed differences in the impact these beliefs had on the attitudes of male and female participants (Table 4.16).

Evidently, the observed gender differences in the $b \times e$ products could be attributed to differences in both belief strength (b_i) and outcome evaluation (e_i) in the case of those particular discriminating salient beliefs which associated hunting with '*experiencing nature and the outdoors*', with '*disrupting and harming wild animal populations*', and with '*unethical hunting practices that do not give animals a fair chance of survival*' (Table 4.16). As far as the belief strength (b_i) of these particular three discriminating salient beliefs are concerned, it was found that: female participants did not believe that hunting would result in the positive outcome of '*experiencing nature and the outdoors*' ($\bar{x} = -0.23$), while male participants perceived it to be a likely outcome of hunting ($\bar{x} = +0.41$) ($t = 5.66, p < 0.01$, Cohen's $d = 0.63 \sim$ moderate effect size); female participants were much more likely to believe that hunting is '*disruptive and harmful to wild animals*' ($\bar{x} = +0.68$) than were male participants ($\bar{x} = +0.07$) ($t = 4.77, p < 0.01$, Cohen's $d = 0.53 \sim$ moderate effect size); and that female participants were more likely to associated hunting with '*unethical hunting practices that do not give animals a fair chance of survival*' ($\bar{x} = +0.76$), than were male participants ($\bar{x} = +0.16$) ($t = 4.40; p < 0.01$; Cohen's $d = 0.49 \sim$ small to moderate effect size). Although, the gender differences in the outcome evaluations (e_i) of all three of these beliefs were also found to be significant from a statistical point of view

($p < 0.05$), the differences were not practically meaningful (Cohen's d ranged from 0.25 to 0.39 ~ very small effect size) and thus accounted for very little of the observed gender differences in the $b \times e$ products of these three discriminating salient beliefs.

In the case of the remaining two discriminating salient beliefs, namely that '*hunters often kill animals unnecessarily*' and that '*hunting contributes to the conservation of wild animals*', the results in Table 4.16 suggest that the observed gender differences in their $b \times e$ products occurred as a result of meaningful differences in belief strength (b_i) only. No gender differences were found to exist in outcome evaluations (e_i) in the case of these two discriminating salient beliefs. Inspection of the belief strength (b_i) of these two discriminating salient beliefs reveal that: female participants were much more likely to believe that '*hunters often kill animals unnecessarily without having a good reason or useful purpose for doing so*' ($\bar{x} = +0.65$) than were male participants ($\bar{x} = +0.02$) ($t = 4.69, p < 0.01$, Cohen's $d = 0.52$ ~ moderate effect size); and that female participants did not believe that hunting would result in the positive outcome of '*contributing to the conservation of wild animals*' ($\bar{x} = -0.33$), while male participants perceived it to be a somewhat likely outcome of hunting ($\bar{x} = +0.31$) ($t = 4.40; p < 0.01$, Cohen's $d = 0.49$ ~ small to moderate effect size).

In sum then, the results of the primary survey suggest that male and female participants held significantly different attitudes towards hunting and that these

attitude differences may be attributed to differences that exist in the cognitive foundations on which their respective attitudes were based. It is evident that all five of the abovementioned discriminating salient beliefs contained fundamental gender differences in their belief strength (b_i), while differences in outcome evaluations (e_i) existed much less frequently. Overall, the results thus suggest that the belief strength (b_i) of the five discriminating salient beliefs accounted for the most fundamental differences in the cognitive foundations on which male and female participants based their respective attitudes towards hunting.

It is perhaps worth noting that the results in Table 4.16 also show some evidence of statistically significant gender differences in the belief strength (b_i) and outcome evaluations (e_i) of many salient beliefs other than the five most discriminating salient beliefs that have been discussed so far. However, Cohen's d tests found that nearly all of those gender differences were of very little practical significance. The only exceptions occurred with respect to the two salient beliefs that '*hunters take pleasure and enjoyment in killing wild animals*' and '*hunting results in wild animals being killed by hunters*', in which case practically meaningful gender differences occurred in the outcome evaluations (e_i) of both of these beliefs ($t = 5.29, p < 0.01$, Cohen's $d = 0.59 \sim$ moderate effect size; and $t = 4.49, p < 0.01$, Cohen's $d = 0.50 \sim$ moderate effect size, respectively). It can be seen that female participants had much more negative evaluations towards the outcomes of these two salient beliefs ($\bar{x} = -1.15$ and $\bar{x} = -0.51$, respectively) than did male participants ($\bar{x} = -0.52$

and $\bar{x} = +0.05$, respectively). Neither of these two observed gender differences in outcome evaluations (e_i) resulted in any practically meaningful difference in the overall impact ($b \times e$ products) that these two beliefs had on the attitude of male and female participants (Cohen's $d = 0.34$ and $0.41 \sim$ small effect size). Therefore, both of these salient beliefs account for little meaningful differences in the cognitive foundations on which male and female participants based their attitudes towards hunting.

TABLE 4.14. Correlations of belief-evaluation product with direct attitude measure:
differences between genders.

Behavioural beliefs (<i>Abbreviated</i>)	Correlation $b \times e$ with attitude (A_B)	
	Male	Female
	($n = 169$)	($n = 158$)
	<i>r</i>	<i>r</i>
– Disruptive and harmful to wild animal populations.	0.71**	0.67**
– Results in wild animals being killed by hunters.	0.71**	0.65**
+ Contributes to conservation of wild animals.	0.70**	0.56**
– Cruel and inhumane treatment of wild animals.	0.66**	0.61**
– Leads to unethical hunting practices.	0.67**	0.51**
– Causes pain and suffering to wild animals.	0.62**	0.59**
+ Experience nature and the outdoors.	0.70**	0.45**
– Hunters kill animals unnecessarily.	0.59**	0.52**
– Endangerment and extinction of wild animal species.	0.56**	0.54**
+ Managing wild animals to prevent over-population.	0.64**	0.45**
+ Hold economic benefits for the country.	0.55**	0.44**
– Hunters take pleasure and enjoyment in killing.	0.53**	0.43**
Sum of belief-evaluation products ($\sum b_i e_i$)	0.83**	0.74**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.		

TABLE 4.15. Mean belief-evaluation product for behavioural beliefs about hunting: differences between genders.

Behavioural beliefs (<i>Abbreviated</i>)	<i>b × e</i> products			
	Male (<i>n</i> = 169)		Female (<i>n</i> = 158)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	-0.22	(2.09)	-1.21**	(1.95)
– Results in wild animals being killed by hunters.	0.09	(2.00)	-0.78**	(1.81)
+ Contributes to conservation of wild animals.	0.60	(2.48)	-0.54**	(2.25)
– Cruel and inhumane treatment of wild animals.	-0.51	(2.26)	-1.47**	(2.21)
– Leads to unethical hunting practices.	-0.30	(2.49)	-1.41**	(2.13)
– Causes pain and suffering to wild animals.	-1.06	(2.10)	-1.88**	(2.04)
+ Experience nature and the outdoors.	0.93	(2.50)	-0.18**	(2.30)
– Hunters kill animals unnecessarily.	-0.06	(2.32)	-1.18**	(2.09)
– Endangerment and extinction of wild animal species.	-0.32	(2.60)	-1.32**	(2.13)
+ Managing wild animals to prevent over-population.	1.35	(1.68)	0.92**	(1.41)
+ Hold economic benefits for the country.	1.69	(1.75)	0.94**	(1.45)
– Hunters take pleasure and enjoyment in killing.	-0.24	(1.89)	-0.88**	(1.86)
Sum of belief-evaluation products ($\sum b_i e_i$)	1.95	(20.16)	-8.99**	(17.17)

Note: Belief-evaluation product ($b \times e$) scores can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

t-test reveals differences significant at * $p \leq 0.05$ and ** $p \leq 0.01$; all other means are not significantly different.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.16. Mean belief strength and outcome evaluation for behavioural beliefs about hunting: differences between genders.

Behavioural beliefs (Abbreviated)	Belief strength (b_i)				Outcome evaluation (e_i)			
	Male		Female		Male		Female	
	(n = 169)		(n = 158)		(n = 169)		(n = 158)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	0.07	(1.24)	0.68**	(1.07)	-1.40	(0.77)	-1.58*	(0.58)
– Results in wild animals being killed by hunters.	1.28	(0.78)	1.32	(0.78)	0.05	(1.19)	-0.51**	(1.06)
+ Contributes to conservation of wild animals.	0.31	(1.36)	-0.33**	(1.24)	1.63	(0.64)	1.55	(0.72)
– Cruel and inhumane treatment of wild animals.	0.26	(1.25)	0.75**	(1.14)	-1.72	(0.57)	-1.85*	(0.44)
– Leads to unethical hunting practices.	0.20	(1.42)	0.89**	(1.18)	-1.78	(0.54)	-1.87	(0.42)
– Causes pain and suffering to wild animals.	0.59	(1.20)	1.03**	(1.07)	-1.50	(0.68)	-1.76**	(0.46)
+ Experience nature and the outdoors.	0.41	(1.41)	-0.23**	(1.29)	1.63	(0.63)	1.44*	(0.87)
– Hunters kill animals unnecessarily.	0.02	(1.28)	0.65**	(1.13)	-1.62	(0.66)	-1.69	(0.59)
– Endangerment and extinction of wild animal species.	0.19	(1.35)	0.73**	(1.14)	-1.73	(0.62)	-1.80	(0.40)
+ Managing wild animals to prevent over-population.	0.68	(1.13)	0.44*	(1.11)	1.22	(0.81)	0.85**	(0.88)
+ Hold economic benefits for the country.	1.03	(1.05)	0.72**	(1.05)	1.30	(0.74)	1.03**	(0.67)
– Hunters take pleasure and enjoyment in killing.	0.40	(1.21)	0.56	(1.13)	-0.52	(1.19)	-1.15**	(0.92)

Note: Belief strength (b_i) and outcome evaluation (e_i) scores can range from -2 to +2.

t-test reveals differences significant at * $p \leq 0.05$ and ** $p \leq 0.01$; all other means are not significantly different.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.3.4.4 The effect of ethnical differences on attitudes towards hunting and its causal determinants

To investigate the effect of ethnicity on attitudes towards hunting, participants in the primary surveys were divided into four sub-groups based on their ethnicity, namely blacks, coloureds, whites and, finally, Indians or Asians. Note, however, that due to the limited sample size of the Indian or Asian ethnic group ($n = 9$), this ethnic group was excluded from all comparative analysis of the various ethnic groups. The attitudes of the remaining three ethnic groups were compared using an ANOVA test, which found evidence that statistically significant differences exist between the mean direct attitude measure (A_B) for the various ethnic groups ($F = 11.18$, $p < 0.01$). This suggests that the various ethnic groups differed in their attitudes towards hunting. Between-group analysis with Tukey post-hoc tests found strong evidence that no statistically significant difference exist between black and coloured participants' attitudes towards hunting ($p = 0.94$). However, statistically significant differences were found to exist between black and white participants ($p < 0.05$) as well as between coloured and white participants ($p < 0.05$). Specifically, the result showed that white participants had slightly more positive attitudes towards hunting ($\bar{x} = +0.24$) than both black and coloured participants ($\bar{x} = -0.46$ and $\bar{x} = -0.44$, respectively), with Cohen's d tests indicating that, in practice, these ethnic differences had a moderate effect on participant's attitudes towards hunting (Cohen's $d = 0.53$ and $0.53 \sim$ moderate effect size, respectively). Consistent with this finding, further

investigations into the cognitive foundations underlying the attitudes of the various ethnic groups revealed that the salient beliefs which determined the attitudes of white participants were somewhat different from that of black and coloured participants. The results of these comparative investigations are presented in Table 4.17, to Table 4.20 and will be briefly discussed below.

The results displayed in Table 4.17 show that every individual salient belief in the modal set correlated significantly with the direct attitude measures (A_B) in the case of black participants (r ranged from 0.25 to 0.59 at $p < 0.05$) and in the case of white participants (r ranged from 0.59 to 0.77 at $p < 0.05$), confirming that all the beliefs in the modal set accurately account for the attitudes of these two ethnic groups. In the case of coloured participants, however, it can be seen that not all of the salient beliefs in the modal set correlated significantly with their direct attitude measures (A_B). In particular, no significant correlations was found to exist between their attitude towards hunting and the three particular salient beliefs that hunting '*contributes towards the conservation of wild animals*', '*is a way of experiencing nature and the outdoors*', and '*leads to the endangerment and extinction of wild animal populations*'. This suggests that these three beliefs did not account for any variance in the attitudes of participants from the coloured ethnic group. The remaining nine salient beliefs were, nevertheless, found to correlate significantly with coloured participants' attitudes towards hunting (r ranged from 0.31 to 0.59 at $p < 0.05$). In totality, the results in Table 4.23 found that the overall sum of the belief-evaluation products ($\sum b_i e_i$) of the black, coloured,

and white ethnic groups correlated highly with their respective direct attitude scores (A_B) ($r = 0.73$, $r = 0.65$, and $r = 0.84$ respectively at $p < 0.01$). This provides strong evidence that, in the case of all three ethnic groups, the modal set of salient beliefs account for the fundamental causal determinants on which their respective attitudes towards hunting are based.

Having verified that the modal set of salient beliefs are significantly related to the attitudes of all three ethnic groups, it is possible to identify the particular salient beliefs that differ the most in their impact on the respective attitudes of black, coloured, and white participants. Towards this aim, the $b \times e$ products of every individual salient belief were compared across all three ethnic groups. A series of Tukey post-hoc tests were employed to identify between-group differences with respect to the mean $b \times e$ products of each salient belief in the modal set. The results of the comparative analysis are displayed in Table 4.18 and indicate all the statistically significant between-group differences. It shows that not a single statistically significant difference existed between black and coloured participants with respect to the impact that every individual salient belief had on their respective attitudes. This is also reflected in their respective $\sum b_i e_i$ indices, which shows that the set of salient beliefs had virtually an identical summative impact on the attitudes of black participants and coloured participants ($\sum b_i e_i = -9.94$ and $\sum b_i e_i = -9.51$ with extremely strong evidence of $p = 0.87$ that no between-group difference existed between black and coloured participants). This suggests that there were no differences in the cognitive foundations on which black and coloured

participants based their respective attitudes towards hunting. The results in Table 4.18 show that between-group differences did, however, exist between white and black participants and well as between white and coloured participants with respect to most of the salient beliefs listed. While those between-group differences were all statistically significant, only a number of these differences proved large enough to be meaningful from a practical point of view. This included the salient beliefs that hunting '*is a way of managing wild animals to prevent over-population*' ($p < 0.05$, Cohen's $d = 0.82$ and 0.78 , respectively ~ large effect size), '*contributes to the conservation of wild animals*' ($p < 0.05$, Cohen's $d = 0.61$ and Cohen's $d = 0.67$, respectively ~ moderate effect size), '*results in the endangerment and extinction of wild animal species*' ($p < 0.05$, Cohen's $d = 0.70$ and 0.56 , respectively ~ moderate effect size), '*is disruptive and harmful to wild animal populations*' ($p < 0.05$, Cohen's $d = 0.60$ and 0.53 , respectively ~ moderate effect size) and the salient belief that hunting '*is a way to experience nature and the outdoors*' ($p < 0.05$, Cohen's $d = 0.52$ and 0.49 , respectively ~ moderate effect size). In sum then, the results show that these five salient beliefs accounted for the most fundamental differences in the cognitive foundations on which white participants based their attitudes towards hunting, when compared to that of black and coloured participants. For this reason, these five salient beliefs were analysed further and will be referred to as the **discriminating** salient beliefs in the subsequent discussions on ethnic differences.

From the results displayed in Table 4.19 and Table 4.20, it is evident that the ethnic differences in the $b \times e$ products of the five discriminating salient beliefs may be attributed to differences in both belief strength (b_i) and outcome evaluations (e_i). Although all the between-group differences were statistically significant, only some of these differences were large enough to be practically meaningful and will therefore form part of this discussion. In the case of all five discriminating salient beliefs, the practically meaningful differences in belief strength (b_i) and outcome evaluations (e_i) occurred only between white and black participants and between white and coloured participants. With respect to the first discriminating salient belief, the results showed that white participants believed that '*hunting is a way of managing wild animals to prevent over-population*' ($\bar{x} = 0.96$), whereas both black participants ($\bar{x} = -0.14$) and coloured participants ($\bar{x} = 0.35$) were much less likely to believe that this is the case ($p < 0.05$, Cohen's $d = 1.09$ and 0.66 , respectively \sim large and moderate effect size). In addition, the outcome of '*managing wild animals to prevent over-population*' was judged to be very favourable by white participants ($\bar{x} = 1.27$), but much less favourable by both black participants ($\bar{x} = 0.67$) and coloured participants ($\bar{x} = 0.88$) ($p < 0.05$, Cohen's $d = 0.73$ and 0.52 , respectively \sim moderate effect size). In the case of the second discriminating salient belief, it was found that white participants believed it to be somewhat likely that '*hunting contributes to the conservation of wild animals*' ($\bar{x} = 0.38$), whereas both black participants ($\bar{x} = -0.49$) and coloured participants ($\bar{x} = -0.56$) did not perceive this to be a likely outcome of hunting ($p < 0.05$, Cohen's $d = 0.67$ and 0.72 , respectively \sim moderate effect size). Also, the outcome of '*contributing to the conservation wild animals*' was

evaluated far more favourably by white participants ($\bar{x} = 1.77$) in comparison with the evaluations of black participants ($\bar{x} = 1.25$) and that of coloured participants ($\bar{x} = 1.40$) ($p < 0.05$, Cohen's $d = 0.79$ and 0.72 , respectively \sim moderate effect size). As far as the third discriminating salient belief is concerned, the results showed that white participants perceived it to be much less likely that '*hunting will result in the endangerment and extinction of wild animal species*' ($\bar{x} = 0.08$) compared to both black participants ($\bar{x} = 1.00$) and coloured participants ($\bar{x} = 0.84$), who thought this to be a very likely consequence of hunting ($p < 0.05$, Cohen's $d = 0.74$ and 0.61 , respectively \sim moderate effect size). White participants had slightly more negative evaluations of '*endangering wild animals and driving them to extinction*' ($\bar{x} = -1.87$) than did both black participants ($\bar{x} = -1.56$) and coloured participants ($\bar{x} = -1.63$) ($p < 0.05$, Cohen's $d = 0.59$ and 0.55 , respectively \sim moderate effect size). In the case of the fourth discriminating salient belief, white participants were much less likely to believe that '*hunting is disruptive and harmful to wild animal populations*' ($\bar{x} = 0.02$) compared to both black participants ($\bar{x} = 0.82$) and coloured participants ($\bar{x} = 0.81$), who thought this to be a very likely consequence of hunting ($p < 0.05$, Cohen's $d = 0.69$ and 0.69 , respectively \sim moderate effect size). With respect to the fifth and final discriminating salient belief, it was found that white participants perceived hunting to be '*a way of experiencing and enjoying nature and the outdoors*' ($\bar{x} = 0.43$), while both black participants ($\bar{x} = -0.39$) and coloured participants ($\bar{x} = -0.12$) did not perceive this to be the case ($p < 0.05$, Cohen's $d = 0.60$ and 0.50 , respectively \sim moderate effect size). In sum then, it is evident that all five of the discriminating salient beliefs contained fundamental ethnic

differences in their belief strength (b_i) and that only three of the discriminating salient beliefs contained differences in their outcome evaluations (e_i). Furthermore, these differences existed primarily between white and black participants as well as between white and coloured participants. Together, the five discriminating salient beliefs accounted for the most fundamental differences in the cognitive foundations on which these ethnic groups based their respective attitudes towards hunting.

It is perhaps worth pointing out that the results in Table 4.21 and Table 4.22 also indicates that statistically significant ethnic differences existed in the belief strength (b_i) and outcome evaluations (e_i) of a number of salient beliefs other than the five most discriminating salient beliefs that have been discussed so far. Many of these ethnic differences were, however, found to be of very little practical significance. The only instances where these differences were large enough to be practically meaningful will be briefly pointed out. As far white and black participants were concerned, practically meaningful differences also existed between their perceived likelihoods (b_i) that hunting '*holds economic benefits for the country*' and '*leads to unethical hunting practices*' ($p < 0.05$, Cohen's $d = 0.63$ and 0.55 , respectively ~ moderate effect size); as well as between their outcome evaluations (e_i) regarding '*the cruel and inhumane treatment of wild animals*' and '*wild animals being killed by hunters*' ($p < 0.05$, Cohen's $d = 0.68$ and 0.54 , respectively ~ moderate effect size). In the case of white and coloured participants, however, practically meaningful differences also existed between their

perceived likelihoods (b_i) that '*hunting leads to unethical hunting practices*', '*hunters kill animals unnecessarily*' and '*hunting results in wild animals being killed by hunters*' ($p < 0.01$, Cohen's $d = 0.59, 0.54$ and 0.50 , respectively ~ moderate effect size); as well as between their outcome evaluations (e_i) regarding '*wild animals being killed by hunters*' ($p < 0.01$, Cohen's $d = 0.50$ ~ moderate effect size). Despite all the practically significant differences mentioned in this paragraph, none of these differences were ultimately substantial enough to cause any significant shift in the overall impact ($b \times e$ products) that these beliefs had on the attitude of the various ethnic groups. Therefore, these salient beliefs account for little meaningful differences in the cognitive foundations on which the various ethnic groups based their attitudes towards hunting.

TABLE 4.17. Correlations of belief-evaluation product with direct attitude measure: differences between various ethnic groups.

Behavioural beliefs (Abbreviated)	Correlation $b \times e$ with attitude (A_B)		
	Black ($n = 105$)	Coloured ($n = 73$)	White ($n = 140$)
	r	r	r
– Disruptive and harmful to wild animal populations.	0.57**	0.58**	0.74**
– Results in wild animals being killed by hunters.	0.59**	0.39**	0.77**
+ Contributes to conservation of wild animals.	0.53**	0.25	0.71**
– Cruel and inhumane treatment of wild animals.	0.56**	0.56**	0.68**
– Leads to unethical hunting practices.	0.53**	0.59**	0.65**
– Causes pain and suffering to wild animals.	0.46**	0.57**	0.69**
+ Experience nature and the outdoors.	0.55**	0.29	0.64**
– Hunters kill animals unnecessarily.	0.41**	0.51**	0.66**
– Endangerment and extinction of wild animal species.	0.46**	0.28	0.61**
+ Managing wild animals to prevent over-population.	0.29**	0.40**	0.65**
+ Hold economic benefits for the country.	0.38**	0.31*	0.59**
– Hunters take pleasure and enjoyment in killing.	0.25*	0.44**	0.68**
Sum of belief-evaluation products ($\sum b_i e_i$)	0.73**	0.65**	0.84**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.			

TABLE 4.18. Mean belief-evaluation product for behavioural beliefs about hunting: differences between various ethnic groups.

Behavioural beliefs (Abbreviated)	<i>b × e</i> products					
	Black (<i>n</i> = 105)		Coloured (<i>n</i> = 73)		White (<i>n</i> = 140)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	-1.41 ^a	(1.86)	-1.26 ^a	(1.50)	-0.17 ^b	(2.16)
– Results in wild animals being killed by hunters.	-0.69 ^a	(1.85)	-0.74 ^{a,b}	(1.66)	-0.02 ^b	(2.02)
+ Contributes to conservation of wild animals.	-0.76 ^a	(2.09)	-0.91 ^a	(1.49)	0.71 ^b	(2.56)
– Cruel and inhumane treatment of wild animals.	-1.41 ^a	(2.12)	-1.49 ^{a,b}	(1.78)	-0.61 ^b	(2.42)
– Leads to unethical hunting practices.	-1.39 ^a	(2.29)	-1.49 ^a	(1.87)	-0.38 ^b	(2.46)
– Causes pain and suffering to wild animals.	-2.05 ^a	(2.11)	-1.40 ^{a,b}	(1.66)	-1.17 ^b	(2.18)
+ Experience nature and the outdoors.	-0.29 ^a	(2.12)	-0.05 ^a	(1.76)	0.92 ^b	(2.59)
– Hunters kill animals unnecessarily.	-0.82 ^{a,b}	(2.16)	-1.21 ^a	(1.85)	-0.28 ^b	(2.37)
– Endangerment and extinction of wild animal species.	-1.80 ^a	(2.17)	-1.47 ^a	(1.93)	-0.13 ^b	(2.47)
+ Managing wild animals to prevent over-population.	0.39 ^a	(1.46)	0.49 ^a	(1.08)	1.63 ^b	(1.54)
+ Hold economic benefits for the country.	0.88 ^a	(1.71)	0.98 ^a	(1.28)	1.66 ^b	(1.62)
– Hunters take pleasure and enjoyment in killing.	-0.58	(2.08)	-0.98	(1.79)	-0.40	(1.76)
Sum of belief-evaluation products ($\sum b_i e_i$)	-9.94 ^a	(15.41)	-9.51 ^a	(13.08)	1.73 ^b	(20.98)

Note: Belief-evaluation products (*b × e*) can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences: means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.19. Mean belief strength for behavioural beliefs about hunting: differences between various ethnic groups.

Behavioural beliefs (<i>Abbreviated</i>)	Belief strength (b_i)					
	Black ($n = 105$)		Coloured ($n = 73$)		White ($n = 140$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	0.82 ^a	(1.11)	0.81 ^a	(0.88)	0.02 ^b	(1.19)
– Results in wild animals being killed by hunters.	1.12 ^a	(0.89)	1.07 ^a	(0.83)	1.43 ^b	(0.70)
+ Contributes to conservation of wild animals.	-0.49 ^a	(1.20)	-0.56 ^a	(1.03)	0.38 ^b	(1.35)
– Cruel and inhumane treatment of wild animals.	0.79 ^a	(1.23)	0.79 ^a	(0.94)	0.27 ^b	(1.26)
– Leads to unethical hunting practices.	0.84 ^a	(1.21)	0.88 ^a	(0.98)	0.15 ^b	(1.28)
– Causes pain and suffering to wild animals.	1.15 ^a	(1.14)	0.95 ^{a,b}	(0.90)	0.58 ^b	(1.20)
+ Experience nature and the outdoors.	-0.39 ^a	(1.29)	-0.12 ^a	(1.05)	0.43 ^b	(1.41)
– Hunters kill animals unnecessarily.	0.51 ^a	(1.27)	0.77 ^a	(1.00)	0.11 ^b	(1.26)
– Endangerment and extinction of wild animal species.	1.00 ^a	(1.18)	0.84 ^a	(1.07)	0.08 ^b	(1.27)
+ Managing wild animals to prevent over-population.	-0.14 ^a	(1.18)	0.35 ^b	(0.95)	0.96 ^c	(0.92)
+ Hold economic benefits for the country.	0.47 ^a	(1.17)	0.77 ^{a,b}	(0.90)	1.12 ^b	(0.97)
– Hunters take pleasure and enjoyment in killing.	0.45	(1.30)	0.67	(1.08)	0.42	(1.11)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.20. Mean outcome evaluation for behavioural beliefs about hunting: differences between various ethnic groups.

Behavioural beliefs (Abbreviated)	Outcome evaluation (e_i)					
	Black ($n = 105$)		Coloured ($n = 73$)		White ($n = 140$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.31 ^a	(0.71)	-1.42 ^{a,b}	(0.63)	-1.57 ^b	(0.68)
– Results in wild animals being killed by hunters.	-0.58 ^a	(1.12)	-0.53 ^a	(1.03)	0.04 ^b	(1.15)
+ Contributes to conservation of wild animals.	1.25 ^a	(0.91)	1.40 ^a	(0.54)	1.77 ^b	(0.51)
– Cruel and inhumane treatment of wild animals.	-1.54 ^a	(0.68)	-1.74 ^{a,b}	(0.49)	-1.88 ^b	(0.39)
– Leads to unethical hunting practices.	-1.46 ^a	(0.82)	-1.67 ^{a,b}	(0.47)	-1.79 ^b	(0.54)
– Causes pain and suffering to wild animals.	-1.64	(0.59)	-1.47	(0.59)	-1.65	(0.60)
+ Experience nature and the outdoors.	1.36 ^a	(0.80)	1.33 ^a	(0.92)	1.65 ^b	(0.70)
– Hunters kill animals unnecessarily.	-1.41 ^a	(0.85)	-1.49 ^a	(0.63)	-1.78 ^b	(0.46)
– Endangerment and extinction of wild animal species.	-1.56 ^a	(0.70)	-1.63 ^a	(0.49)	-1.87 ^b	(0.42)
+ Managing wild animals to prevent over-population.	0.67 ^a	(0.97)	0.88 ^a	(0.73)	1.27 ^b	(0.75)
+ Hold economic benefits for the country.	1.15	(0.84)	1.21	(0.56)	1.16	(0.71)
– Hunters take pleasure and enjoyment in killing.	-1.01 ^a	(1.04)	-1.02 ^{a,b}	(1.06)	-0.66 ^b	(1.13)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.3.4.5 The effect of educational differences on attitudes towards hunting and its causal determinants

To investigate the effects of education on attitudes towards hunting, participants were divided into four sub-groups based on their level of academic qualification, namely participants with grade 12 or less, a national diploma, a degree and, finally, participants with a post-graduate qualification. An ANOVA test was used to compare the mean direct attitude (A_B) scores of the four education groups and found insufficient evidence to conclude with certainty that there was any significant difference between the attitude of the various education groups ($F = 2.51$, $p = 0.06$). The mean direct attitude measure (A_B) also indicated that participants with grade 12 or less ($\bar{x} = -0.25$), a national diploma ($\bar{x} = 0.28$), a degree ($\bar{x} = -0.02$), and a post-graduate qualification ($\bar{x} = -0.13$) all held fairly neutral attitudes towards hunting. Therefore, it seems that participants at different levels of academic qualification had fairly similar attitudes towards hunting. As a consequence, further investigations into the cognitive foundations underlying the attitudes of the various education groups also showed very little differences in the salient beliefs that determine their attitudes. The results of this investigation are presented in Table 4.21 to Table 4.24 and will be discussed below.

The results displayed in Table 4.21 shows that every individual salient belief accounted for a considerable amount of variation in the attitudes of all four education groups (r ranged from 0.36 to 0.79 across all education groups). In

addition, the overall sum of the belief-evaluation products ($\sum b_i e_i$) in the case of the grade 12 or less, the national diploma, the degree, and the post-graduate education groups all correlated highly with their respective direct attitude scores (A_B) ($r = 0.77$, $r = 0.82$, $r = 0.86$ and $r = 0.84$ at $p < 0.01$, respectively). Overall, these results provide strong evidence that, in its totality, the set of salient beliefs accurately account for the fundamental salient beliefs on which the different education groups based their attitudes towards hunting and that every individual salient belief was an important causal determinant of their attitudes.

Table 4.22 displays the $b \times e$ products of every individual salient belief for each of the four educational groups and indicates the relative influence that every salient belief had on the attitudes of the various groups. Statistical analysis with a series of Tukey post-hoc tests found evidence of significant differences between some of the educational groups with respect to their mean $b \times e$ products for only five of the 12 salient beliefs in the modal set. The between-group differences for these five salient beliefs are indicated in Table 4.22. However, only in the case of the two salient beliefs that '*hunting holds economic benefits for the country*' and that '*hunters kill animals unnecessarily*' were the between-group differences large enough to be practically meaningful ($p < 0.05$; Cohen's $d = 0.52$ to 0.50 respectively ~ moderate effect size). In the case of the first mentioned salient belief, it can be seen that differences in $b \times e$ products existed only between participants with grade 12 or less and participants with post-graduate qualifications. In the

case of the salient belief mentioned secondly, differences were found only between participants with national diplomas and participants with degrees. The impact that each of these two salient beliefs exerted on the attitudes of the implicated education groups can be seen in Table 4.22.

Further investigations revealed that, in the case of both of the abovementioned salient beliefs, the observed educational differences in their $b \times e$ products were a result of differences in their belief strength (b_i), while no practically meaningful differences in their outcome evaluations (e_i) were found to exist (Table 4.23 and Table 4.24 respectively). The results show that participants with post-graduate qualifications were slightly more likely to believe that hunting '*benefits the economy of the country*' ($\bar{x} = 1.12$) than were participants with grade 12 or less ($\bar{x} = 0.70$) ($p < 0.05$; Cohen's $d = 0.50 \sim$ moderate effect size); and that participants with degrees were slightly more likely to believe that '*hunters kill animals unnecessarily*' ($\bar{x} = 0.66$) than were participants with national diplomas ($\bar{x} = 0.01$) ($p < 0.05$; Cohen's $d = 0.53 \sim$ moderate effect size). The results suggest that this was the only practically meaningful differences that existed in the cognitive foundations on which the various educational groups base their attitudes towards hunting. Although the results in Table 4.23 and Table 4.24 also found evidence that statistically significant differences exist in the belief strength (b_i) and outcome evaluations (e_i) of some of the other salient beliefs in the modal set, those differences were found to be small and of very little practical significance (Cohen's d ranged from 0.39 to 0.45 \sim small effect size).

In sum then, the results suggest that participants at different levels of education essentially based their attitudes towards hunting on a very similar set of salient beliefs and that there were only slight differences in the cognitive foundations underlying their respective attitudes towards hunting. Only with respect to participants' perceived likelihood that '*hunting benefits the economy of the country*' and that '*hunters kill animals unnecessarily*' were meaningful differences found between only some of the educational groups. These differences were, however, not substantial enough to result in any decisive differences in the attitudes of the various education groups.

TABLE 4.21. Correlations of belief-evaluation product with direct attitude measure: differences between various levels of education.

Behavioural beliefs (<i>Abbreviated</i>)	Correlation $b \times e$ with attitude (A_B)			
	Grade 12 or less ($n = 130$)	National diploma ($n = 72$)	Degree ($n = 56$)	Post- graduate ($n = 69$)
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
– Disruptive and harmful to wild animal populations.	0.68**	0.72**	0.74**	0.75**
– Results in wild animals being killed by hunters.	0.60**	0.72**	0.79**	0.78**
+ Contributes to conservation of wild animals.	0.57**	0.68**	0.74**	0.76**
– Cruel and inhumane treatment of wild animals.	0.59**	0.71**	0.68**	0.69**
– Leads to unethical hunting practices.	0.60**	0.63**	0.69**	0.67**
– Causes pain and suffering to wild animals.	0.54**	0.65**	0.64**	0.75**
+ Experience nature and the outdoors.	0.61**	0.62**	0.61**	0.65**
– Hunters kill animals unnecessarily.	0.49**	0.69**	0.57**	0.73**
– Endangerment and extinction of wild animal species.	0.50**	0.73**	0.67**	0.50**
+ Managing wild animals to prevent over-population.	0.62**	0.51**	0.60**	0.56**
+ Hold economic benefits for the country.	0.47**	0.62**	0.49**	0.56**
– Hunters take pleasure and enjoyment in killing.	0.36**	0.63**	0.53**	0.58**
Sum of belief-evaluation products ($\sum b_i e_i$)	0.77**	0.82**	0.86**	0.84**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.				

TABLE 4.22. Mean belief-evaluation product for behavioural beliefs about hunting: differences between various levels of education.

Behavioural beliefs (Abbreviated)	<i>b</i> × <i>e</i> products							
	Grade 12 or less		National diploma		Degree		Post-graduate	
	(n = 130)		(n = 72)		(n = 56)		(n = 69)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	-0.85	(1.86)	-0.47	(2.37)	-0.91	(2.15)	-0.48	(2.11)
– Results in wild animals being killed by hunters.	-0.50	(1.69)	-0.22	(2.06)	-0.36	(2.21)	-0.12	(2.11)
+ Contributes to conservation of wild animals.	-0.23	(2.17)	0.33	(2.53)	-0.38	(2.71)	0.64	(2.49)
– Cruel and inhumane treatment of wild animals.	-1.11	(2.15)	-0.51	(2.48)	-1.48	(2.25)	-0.81	(2.28)
– Leads to unethical hunting practices.	-0.86	(2.31)	-0.56	(2.54)	-1.41	(2.31)	-0.61	(2.40)
– Causes pain and suffering to wild animals.	-1.55 ^{a,b}	(1.98)	-0.92 ^a	(2.38)	-1.98 ^b	(1.99)	-1.42 ^{a,b}	(2.05)
+ Experience nature and the outdoors.	-0.09 ^a	(2.36)	0.65 ^{a,b}	(2.50)	0.50 ^{a,b}	(2.53)	0.96 ^b	(2.45)
– Hunters kill animals unnecessarily.	-0.51 ^{a,b}	(2.14)	-0.10 ^a	(2.52)	-1.30 ^b	(2.24)	-0.72 ^{a,b}	(2.18)
– Endangerment and extinction of wild animal species.	-0.96	(2.33)	-0.72	(2.69)	-1.09	(2.33)	-0.36	(2.43)
+ Managing wild animals to prevent over-population.	0.75 ^a	(1.55)	1.31 ^{a,b}	(1.74)	1.45 ^b	(1.57)	1.45 ^b	(1.28)
+ Hold economic benefits for the country.	0.95 ^a	(1.62)	1.54 ^{a,b}	(1.75)	1.34 ^{a,b}	(1.67)	1.81 ^b	(1.44)
– Hunters take pleasure and enjoyment in killing.	-0.71	(1.82)	-0.22	(2.00)	-0.52	(2.06)	-0.61	(1.80)
Sum of belief-evaluation products ($\sum b_i e_i$)	-5.66	(17.17)	0.38	(22.31)	-6.14	(19.68)	-0.55	(19.91)

Note: Belief-evaluation products (*b* × *e*) can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences: means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.23. Mean belief strength for behavioural beliefs about hunting: differences between various levels of education.

Behavioural beliefs (Abbreviated)	Belief strength (b_i)							
	Grade 12 or less ($n = 130$)		National diploma ($n = 72$)		Degree ($n = 56$)		Post-graduate ($n = 69$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	0.51	(1.13)	0.25	(1.34)	0.43	(1.19)	0.17	(1.16)
– Results in wild animals being killed by hunters.	1.12 ^a	(0.85)	1.28 ^{a,b}	(0.65)	1.55 ^b	(0.63)	1.46 ^b	(0.80)
+ Contributes to conservation of wild animals.	-0.18 ^a	(1.28)	0.14 ^{a,b}	(1.40)	-0.18 ^{a,b}	(1.40)	0.35 ^b	(1.29)
– Cruel and inhumane treatment of wild animals.	0.55	(1.21)	0.33	(1.33)	0.73	(1.18)	0.39	(1.17)
– Leads to unethical hunting practices.	0.50	(1.26)	0.32	(1.34)	0.71	(1.19)	0.28	(1.25)
– Causes pain and suffering to wild animals.	0.88 ^{a,b}	(1.10)	0.50 ^a	(1.32)	1.04 ^b	(1.04)	0.75 ^{a,b}	(1.13)
+ Experience nature and the outdoors.	-0.14 ^a	(1.33)	0.26 ^{a,b}	(1.41)	0.05 ^{a,b}	(1.48)	0.43 ^b	(1.31)
– Hunters kill animals unnecessarily.	0.36 ^{a,b}	(1.19)	0.01 ^a	(1.39)	0.66 ^b	(1.20)	0.32 ^{a,b}	(1.18)
– Endangerment and extinction of wild animal species.	0.55	(1.25)	0.39	(1.42)	0.63	(1.20)	0.17	(1.24)
+ Managing wild animals to prevent over-population.	0.29 ^a	(1.16)	0.67 ^{a,b}	(1.14)	0.75 ^b	(1.19)	0.83 ^b	(0.86)
+ Hold economic benefits for the country.	0.70 ^a	(1.09)	1.04 ^{a,b}	(1.08)	0.79 ^{a,b}	(1.16)	1.12 ^b	(0.85)
– Hunters take pleasure and enjoyment in killing.	0.46	(1.16)	0.64	(1.14)	0.38	(1.27)	0.41	(1.14)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.24. Mean outcome evaluation for behavioural beliefs about hunting: differences between various levels of education.

Behavioural beliefs (Abbreviated)	Outcome evaluation (e_i)							
	Grade 12 or less ($n = 130$)		National diploma ($n = 72$)		Degree ($n = 56$)		Post-graduate ($n = 69$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.38	(0.69)	-1.49	(0.71)	-1.55	(0.71)	-1.62	(0.62)
– Results in wild animals being killed by hunters.	-0.45	(1.07)	-0.01	(1.26)	-0.23	(1.16)	-0.01	(1.16)
+ Contributes to conservation of wild animals.	1.38 ^a	(0.79)	1.60 ^{a,b}	(0.64)	1.80 ^b	(0.48)	1.80 ^b	(0.50)
– Cruel and inhumane treatment of wild animals.	-1.70 ^a	(0.55)	-1.67 ^a	(0.69)	-1.93 ^b	(0.26)	-1.93 ^b	(0.26)
– Leads to unethical hunting practices.	-1.62	(0.67)	-1.65	(0.73)	-1.80	(0.55)	-1.80	(0.44)
– Causes pain and suffering to wild animals.	-1.55	(0.68)	-1.61	(0.62)	-1.75	(0.48)	-1.70	(0.46)
+ Experience nature and the outdoors.	1.56	(0.70)	1.54	(0.75)	1.34	(0.96)	1.67	(0.68)
– Hunters kill animals unnecessarily.	-1.56	(0.74)	-1.67	(0.61)	-1.79	(0.49)	-1.70	(0.49)
– Endangerment and extinction of wild animal species.	-1.69	(0.53)	-1.74	(0.60)	-1.88	(0.33)	-1.83	(0.57)
+ Managing wild animals to prevent over-population.	0.86	(0.87)	1.17	(0.87)	1.14	(0.80)	1.17	(0.86)
+ Hold economic benefits for the country.	1.12	(0.65)	1.40	(0.64)	1.00	(0.93)	1.14	(0.69)
– Hunters take pleasure and enjoyment in killing.	-0.98 ^a	(1.05)	-0.50 ^b	(1.23)	-0.93 ^{a,b}	(1.04)	-0.78 ^{a,b}	(1.10)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.3.4.6 The effect of age differences on attitudes towards hunting and its causal determinants

To investigate the effects of age on attitudes towards hunting, participants in the primary survey were divided into five broad sub-groups based on their age. The age groups consisted of participants ranging from 18 to 24 years of age; from 25 to 34 years of age, 35 to 44 years of age, and 45 to 54 years of age; and, finally, participants ranging from 55 years of age and older. Statistical analysis with an ANOVA test found no evidence of differences between the mean direct attitude measure (A_B) of the various age groups ($F = 1.83, p = 0.12$), suggesting that participants from the various age groups held essentially similar attitudes towards hunting. The mean direct attitude measure (A_B) also indicated that participants in the 18 to 24 year age group ($\bar{x} = -0.25$), the 25 to 34 year age group ($\bar{x} = 0.13$), the 35 to 44 year age group ($\bar{x} = 0.24$), the 45 to 54 years age group ($\bar{x} = 0.14$), and the 55 years and older age group ($\bar{x} = -0.18$) all held fairly neutral attitudes towards hunting. Because age did not seem to have any significant effect on attitudes towards hunting, one would therefore expect the various age groups to also have very similar cognitive foundations on which their attitudes are based. The results of the primary survey supported this expectation and found only a few small differences in the salient beliefs that underlie the attitudes of the various age groups. The results of the comparative analysis are displayed in Table 4.25 to Table 4.28 and will be discussed briefly below.

The results displayed in Table 4.25 shows that the $b \times e$ products for nearly all of the individual salient beliefs correlated strongly with the direct attitude measure (A_B) in the case of every age group. With the exception of only two salient beliefs (see Table 4.25), the results provide strong evidence that virtually all of the salient beliefs in the modal set played a significant role in determining the attitudes of the various age groups (r ranged from 0.36 to 0.81 at $p < 0.05$ across all the age groups). As can be seen, the sum of the belief-evaluation products ($\sum b_i e_i$) pertaining to each of the five age groups correlated highly with their respective direct attitude scores (A_B) (r ranged from 0.74 to 0.85 at $p < 0.01$ across the five age groups). This provides strong evidence that, in the case of all five age groups, the set of modal salient beliefs accurately accounted for the fundamental causal determinants of their respective attitudes towards hunting.

Table 4.26 displays the results of an investigation into the impact ($b \times e$ products) that every individual salient belief had on the respective attitudes of the various age groups. Overall, the results suggest that the cognitive foundation on which the various age groups based their attitudes towards hunting is essentially very similar. A series of ANOVA tests did not find any evidence of differences based on age in the mean $b \times e$ products for 10 of the 12 salient beliefs listed, indicating that there were little differences with respect to the manner in which the various salient beliefs impacted on the attitudes of the various age groups. The only two exceptions occurred with respect to the salient beliefs that *'hunting is disruptive and harmful to wild animal*

populations' ($F = 5.98, p < 0.01$) and that '*hunting contributes to the conservation of wild animals*' ($F = 3.43, p < 0.01$). These two salient beliefs were found to exert significantly different impacts on the attitudes of the various age groups. The observed differences in the mean $b \times e$ products for each of the two beliefs will now be discussed separately.

As shown in Table 4.26, Tukey post-hoc tests revealed multiple between-group differences in the mean $b \times e$ products with respect to the salient belief that '*hunting is disruptive and harmful to wild animal populations*' ($p < 0.05$, Cohen's d ranged from 0.52 to 0.62 for between-group differences ~ moderate effect size). Overall, this belief seemed to have had a fairly negative impact on the attitudes of participants in both the youngest ($\bar{x} = -1.18$) and the oldest ($\bar{x} = -1.11$) age groups, but an essentially neutral impact on the attitudes of all the age groups in-between (\bar{x} ranging from -0.11 to 0.03). The results displayed in Table 4.27 and Table 4.28, provides insight into the belief strength (b_i) and outcome evaluations (e_i) which constituted the $b \times e$ products of this particular salient belief. Tukey post-hoc tests found no evidence of differences in the outcome evaluation (e_i) of this particular salient belief for the different age groups, but did find some meaningful differences in belief strength (b_i) between the various age groups ($p < 0.05$; Cohen's d ranged from 0.56 to 0.61 for between group differences ~ moderate effect size). The results show that participants in both the youngest ($\bar{x} = 0.66$) and the oldest ($\bar{x} = 0.68$) age groups believed that '*hunting is disruptive and harmful to wild animal populations*', while the other age groups were much

less likely to believe that this is the case (\bar{x} ranging from -0.03 to 0.00). Clearly then, the age differences in the $b \times e$ products of this particular salient belief may be attributed to differences in the belief strength (b_i) of the various age groups.

As far as the mean $b \times e$ products of the salient belief that '*hunting contributes to the conservation of wild animals*' is concerned, Tukey post-hoc tests found a meaningful difference between the 18 to 24 year old age group and the 45 to 54 year old age group ($p < 0.05$, Cohen's $d = 0.56 \sim$ moderate effect size) (Table 4.26). Overall, this particular salient belief seemed to have had a slightly negative impact on the attitudes of participants in the 18 to 24 year old age group ($\bar{x} = -0.41$), but a fairly positive impact on the attitudes of the 45 to 54 year old age group ($\bar{x} = 0.94$). Looking at the belief strength (b_i) and outcome evaluations (e_i) that constitute the $b \times e$ products of this particular salient belief (Table 4.27 and Table 4.28, respectively), it is evident that the observed differences between the two age groups is a result of differences in their belief strength (b_i) only ($p < 0.05$, Cohen's $d = 0.58 \sim$ moderate effect size). The results show that while participants from the 18 to 24 year old age group perceived it to be slightly unlikely that '*hunting contributes to the conservation of wild animals*' ($\bar{x} = -0.27$), participants from the 45 to 54 year old age group perceived this to be a somewhat likely outcome of hunting ($\bar{x} = 0.50$).

Looking at the results in Table 4.27 and Table 4.28, it is evident that Tukey post-hoc tests also found evidence of age differences in belief strength (b_i) with respect to the salient beliefs that '*hunting results in the cruel and inhumane treatment of wild animals*' and that '*hunters take pleasure and enjoyment in killing wild animals*', as well as in the outcome evaluations (e_i) with respect to the '*killing of wild animals by hunters*'. However, in both instances, the observed differences between the age groups were not large enough to create a substantive shift in the impact that their respective $b \times e$ products exerted on their attitudes. As a result, these two salient beliefs were not responsible for any meaningful differences in the cognitive foundations on which the various age groups based their attitudes towards hunting.

In sum then, the results of the primary survey suggest that age differences did not have any significant influence on participants' attitudes towards hunting and that participants in all five of the age groups based their attitudes towards hunting on a fairly uniform cognitive foundation. The few age-related differences in the underlying salient beliefs that were, however, observed, was not sufficient to produce any substantial shift in the summative indices of behavioural beliefs ($\sum b_i e_i$) and therefore did not result in any observable attitude differences between the various age groups.

TABLE 4.25. Correlations of belief-evaluation product with direct attitude measure: differences between various age groups.

Behavioural beliefs (<i>Abbreviated</i>)	Correlation $b \times e$ with attitude (A_B)				
	18 – 24 years ($n = 158$)	25 – 34 years ($n = 72$)	35 – 44 years ($n = 33$)	45 – 54 years ($n = 36$)	55 years & older ($n = 28$)
	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>
– Disruptive and harmful to wild animal populations.	0.71**	0.73**	0.61**	0.80**	0.56**
– Results in wild animals being killed by hunters.	0.71**	0.63**	0.61**	0.74**	0.83**
+ Contributes to conservation of wild animals.	0.67**	0.66**	0.56**	0.77**	0.54**
– Cruel and inhumane treatment of wild animals.	0.71**	0.50**	0.37*	0.70**	0.81**
– Leads to unethical hunting practices.	0.68**	0.57**	0.46**	0.56**	0.65**
– Causes pain and suffering to wild animals.	0.66**	0.49**	0.57**	0.71**	0.62**
+ Experience nature and the outdoors.	0.61**	0.65**	0.44**	0.74**	0.54**
– Hunters kill animals unnecessarily.	0.61**	0.49**	0.42*	0.77**	0.74**
– Endangerment and extinction of wild animal species.	0.68**	0.43**	0.36*	0.66**	0.31
+ Managing wild animals to prevent over-population.	0.54**	0.56**	0.58**	0.68**	0.69**
+ Hold economic benefits for the country.	0.51**	0.58**	0.55**	0.61**	0.46**
– Hunters take pleasure and enjoyment in killing.	0.48**	0.59**	0.54**	0.30	0.69**
Sum of belief-evaluation products ($\sum b_i e_i$)	0.84**	0.75**	0.74**	0.85**	0.78**
Correlations significant at: * $p \leq 0.05$ and ** $p \leq 0.01$; all other correlations are not significant.					

TABLE 4.26. Mean belief-evaluation product for behavioural beliefs about hunting: differences between various age groups.

Behavioural beliefs (Abbreviated)	<i>b × e</i> products									
	18 – 24 years (<i>n</i> = 158)		25 – 34 years (<i>n</i> = 72)		35 – 44 years (<i>n</i> = 33)		45 – 54 years (<i>n</i> = 36)		55 years & older (<i>n</i> = 28)	
	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>	\bar{x}	<i>s</i>
– Disruptive and harmful to wild animal populations.	-1.18 ^a	(2.01)	-0.10 ^b	(2.16)	0.03 ^b	(1.61)	-0.11 ^b	(2.11)	-1.11 ^a	(2.06)
– Results in wild animals being killed by hunters.	-0.58	(1.97)	0.15	(1.90)	-0.09	(1.42)	-0.53	(2.14)	-0.21	(2.20)
+ Contributes to conservation of wild animals.	-0.41 ^a	(2.49)	0.38 ^{a,b}	(2.39)	0.58 ^{a,b}	(2.03)	0.94 ^b	(2.10)	0.07 ^{a,b}	(2.64)
– Cruel and inhumane treatment of wild animals.	-1.39	(2.33)	-0.61	(2.22)	-0.27	(2.13)	-0.39	(2.21)	-1.18	(2.06)
– Leads to unethical hunting practices.	-1.18	(2.43)	-0.49	(2.45)	-0.52	(2.22)	-0.50	(2.18)	-0.61	(2.30)
– Causes pain and suffering to wild animals.	-1.74	(2.17)	-1.14	(2.22)	-1.03	(1.55)	-0.92	(2.12)	-1.86	(1.82)
+ Experience nature and the outdoors.	0.12	(2.48)	0.60	(2.41)	0.79	(2.15)	0.86	(2.59)	0.36	(2.67)
– Hunters kill animals unnecessarily.	-0.74	(2.26)	-0.60	(2.42)	-0.21	(2.15)	-0.25	(2.17)	-0.71	(2.31)
– Endangerment and extinction of wild animal species.	-1.23	(2.41)	-0.43	(2.53)	-0.33	(2.10)	-0.31	(2.52)	-0.57	(2.35)
+ Managing wild animals to prevent over-population.	0.99	(1.69)	1.19	(1.51)	1.58	(1.44)	1.31	(1.49)	1.14	(1.24)
+ Hold economic benefits for the country.	1.18	(1.75)	1.35	(1.44)	1.48	(1.79)	1.67	(1.59)	1.50	(1.48)
– Hunters take pleasure and enjoyment in killing.	-0.66	(2.05)	-0.49	(1.85)	-0.36	(1.67)	-0.17	(1.65)	-0.79	(1.69)
Sum of belief-evaluation products ($\sum b_i e_i$)	-6.83	(19.85)	-0.18	(19.46)	1.64	(14.89)	1.61	(19.75)	-3.96	(19.69)

Note: Note: Belief-evaluation product ($b \times e$) scores can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences: means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's *d* effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.27. Mean belief strength for behavioural beliefs about hunting: differences between various age groups.

Behavioural beliefs (Abbreviated)	Belief strength (b_i)									
	18 – 24 years ($n = 158$)		25 – 34 years ($n = 72$)		35 – 44 years ($n = 33$)		45 – 54 years ($n = 36$)		55 years & older ($n = 28$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	0.66 ^a	(1.17)	-0.03 ^b	(1.22)	-0.03 ^b	(0.92)	0.00 ^b	(1.20)	0.68 ^a	(1.09)
– Results in wild animals being killed by hunters.	1.35	(0.72)	1.22	(0.88)	1.12	(0.70)	1.28	(0.81)	1.46	(0.88)
+ Contributes to conservation of wild animals.	-0.27 ^a	(1.36)	0.19 ^{a,b}	(1.32)	0.30 ^{a,b}	(1.19)	0.50 ^b	(1.23)	0.00 ^{a,b}	(1.36)
– Cruel and inhumane treatment of wild animals.	0.73 ^a	(1.26)	0.29 ^{a,b}	(1.20)	0.09 ^b	(1.10)	0.17 ^{a,b}	(1.16)	0.64 ^{a,b}	(1.06)
– Leads to unethical hunting practices.	0.64	(1.29)	0.24	(1.31)	0.30	(1.13)	0.25	(1.18)	0.36	(1.19)
– Causes pain and suffering to wild animals.	0.96	(1.17)	0.65	(1.21)	0.58	(0.87)	0.42	(1.25)	1.00	(0.98)
+ Experience nature and the outdoors.	-0.09	(1.41)	0.24	(1.34)	0.36	(1.27)	0.44	(1.40)	0.11	(1.40)
– Hunters kill animals unnecessarily.	0.39	(1.28)	0.31	(1.30)	0.15	(1.12)	0.17	(1.18)	0.43	(1.20)
– Endangerment and extinction of wild animal species.	0.65	(1.26)	0.32	(1.33)	0.18	(1.18)	0.11	(1.30)	0.39	(1.26)
+ Managing wild animals to prevent over-population.	0.37	(1.23)	0.63	(1.12)	0.91	(0.88)	0.75	(0.97)	0.86	(0.71)
+ Hold economic benefits for the country.	0.75	(1.13)	1.04	(0.93)	0.85	(1.25)	1.00	(0.89)	1.07	(0.90)
– Hunters take pleasure and enjoyment in killing.	0.59 ^a	(1.19)	0.58 ^{a,b}	(1.14)	0.36 ^{a,b}	(1.06)	-0.06 ^b	(1.19)	0.32 ^{a,b}	(1.06)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.28. Mean outcome evaluation for behavioural beliefs about hunting: differences between various age groups.

Behavioural beliefs (Abbreviated)	Outcome evaluation (e_i)									
	18 – 24 years ($n = 158$)		25 – 34 years ($n = 72$)		35 – 44 years ($n = 33$)		45 – 54 years ($n = 36$)		55 years & older ($n = 28$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.42	(0.73)	-1.44	(0.71)	-1.55	(0.56)	-1.61	(0.60)	-1.71	(0.53)
– Results in wild animals being killed by hunters.	-0.41 ^a	(1.19)	0.10 ^b	(1.08)	0.00 ^{a,b}	(0.94)	-0.17 ^{a,b}	(1.21)	-0.32 ^{a,b}	(1.22)
+ Contributes to conservation of wild animals.	1.51	(0.80)	1.72	(0.45)	1.61	(0.56)	1.50	(0.70)	1.82	(0.39)
– Cruel and inhumane treatment of wild animals.	-1.72	(0.59)	-1.81	(0.49)	-1.88	(0.33)	-1.81	(0.47)	-1.93	(0.26)
– Leads to unethical hunting practices.	-1.63	(0.74)	-1.71	(0.54)	-1.88	(0.33)	-1.69	(0.58)	-1.82	(0.39)
– Causes pain and suffering to wild animals.	-1.66	(0.59)	-1.56	(0.65)	-1.61	(0.56)	-1.56	(0.65)	-1.71	(0.46)
+ Experience nature and the outdoors.	1.53	(0.81)	1.56	(0.71)	1.39	(0.86)	1.56	(0.69)	1.75	(0.52)
– Hunters kill animals unnecessarily.	-1.57	(0.73)	-1.69	(0.60)	-1.82	(0.39)	-1.67	(0.48)	-1.79	(0.42)
– Endangerment and extinction of wild animal species.	-1.76	(0.56)	-1.75	(0.60)	-1.76	(0.44)	-1.81	(0.40)	-1.75	(0.44)
+ Managing wild animals to prevent over-population.	0.94	(0.93)	1.04	(0.86)	1.39	(0.66)	1.17	(0.77)	1.04	(0.69)
+ Hold economic benefits for the country.	1.15	(0.80)	1.11	(0.59)	1.33	(0.69)	1.17	(0.74)	1.21	(0.57)
– Hunters take pleasure and enjoyment in killing.	-0.89	(1.11)	-0.64	(1.15)	-0.82	(0.88)	-0.67	(1.12)	-1.11	(1.20)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

4.4 SUMMARY

In this chapter the results of both the formative survey and the primary survey were discussed.

The formative survey identified the salient behavioural beliefs about hunting that are readily held by members of the public. In total, 31 salient beliefs about hunting were emitted by the research sample, 18 of which linked hunting to negative outcomes and 13 of which linked hunting to positive outcomes (Table 4.2). A modal set of salient beliefs about hunting for members of the public were then selected based on a pre-determined decision rule that gave preference to the most frequently emitted salient beliefs. This resulted in a modal set of 14 salient beliefs about hunting being identified.

The subsequent primary survey verified that 12 of the formerly identified 14 salient beliefs contribute strongly to the expectancy-value model's ($\sum b_i e_i$) accurate prediction of the direct attitude measure (A_B) (0.82 at $p < 0.01$). This verified that the modal set of 12 salient beliefs accurately reflect the information on which participants based their attitudes towards hunting. Consequently, these salient beliefs were used for the purposes of investigating the causal determinants of participants' attitudes towards hunting.

After verifying that the set of 12 salient beliefs accurately accounts for the causal determinants of attitudes towards hunting, the primary survey's results for the entire research sample was discussed. The result confirmed that the sample consisted not only of a divergent range of attitudes and salient beliefs pertaining to hunting, but also that the sample contained a balanced set of attitudes and salient beliefs pertaining to hunting. These characteristics of the research sample enhanced the objectivity and adequacy of the sample for investigating the salient beliefs that inform people's attitudes towards hunting. The results for the entire research sample also produced compelling evidence that strategies to improve public acceptance of hunting would, in all likelihood, be most effective if it is focused primarily on influencing the strength with which various beliefs about hunting are held (b_i), rather than on influencing people's outcome evaluations (e_i).

Following the broad discussion of the results that emerged from the entire aggregated research sample, a more detailed analyses and discussion of the results then followed by dividing the research sample into three broad attitudinal sub-groups, namely supporters, moderates, and opposers. A detailed understanding of the salient beliefs that form the cognitive foundations on which the different attitudes towards hunting are based emerged from the analyses. It was found that large, fundamental differences exist between the cognitive foundations on which supporters, moderates, and opposers based their attitudes towards hunting and that all 12 of the salient beliefs were responsible for these differences. Some beliefs were found to be more influential than others as far as changing attitudes towards hunting is

concerned. The results also provided further support for the expectation that attempts to change attitudes towards hunting would be more successful if it is aimed at influencing people's perceived likelihoods of the outcomes they associate with hunting (b_i), rather than attempting to influence their favourable or unfavourable evaluations of those perceived outcomes (e_i).

Following the broad overview of the differences between the attitudinal sub-groups, the results pertaining to each of the three attitudinal sub-groups were then discussed. As far as supporters are concerned, the results showed that little can be done to further strengthen supporters' already favourable attitudes towards hunting. Opposers, on the other hand, associated hunting with extremely unfavourable outcomes and held these beliefs with great conviction and certainty. The results further produced compelling evidence that attempts to effectuate a positive change in the attitudes of people who are strongly opposed to hunting would, in all likelihood, be unsuccessful simply because of the inherent nature and cognitive characteristics of strong attitudes. Detailed investigations into the cognitive foundation on which moderates based their attitudes towards hunting were also undertaken. Overall, the results found that strategies to broaden the base of public acceptance of hunting would be most effective if it is directed at the segment of the public with moderate attitudes towards hunting. The results further provided detailed information on how the existing salient beliefs of moderates should be targeted in order to improve public acceptance of hunting. In addition, the results suggested that moderates would be fairly receptive to new information about hunting and that a desired change in attitude may thus be effectuated by introducing new

positive beliefs about hunting into the cognitive foundations on which moderate attitudes are based.

The focus of this chapter then turned to consider how the various background factors (demographical and social differences) shape the way in which hunting is perceived by the public. The results showed that being acquainted with hunting – either through hunting participation or having social relationships with hunters – have the most profound influence on people's attitudes towards hunting and the cognitive foundations on which their attitudes are based. Demographical variables were, however, found to have a much less significant influence on members of the public's attitudes towards hunting.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This study investigated the causal determinants of different attitudes towards hunting amongst the public in South Africa and considered the influences of a number of social and demographical background factors. This information may provide a basis for inferring how the go about broadening the base of public acceptance of hunting.

In this chapter, the most important aspects of every chapter of this study are summarised in broad terms. Thereafter, an exposition of the conclusions and recommendations that may be drawn from the research findings is provided. The conclusions and recommendations section focuses on drawing conclusions regarding the implications that the research findings hold for improving the social legitimacy of hunting, as well as on making recommendations that may guide the future development of effective strategies to improve the social legitimacy of hunting. This addresses the last sub-problem of the study.

5.2 SUMMARY OF THE RESEARCH

In this section, the most important aspects of each chapter are summarised. The summary deals firstly with the introductory chapter of the study, secondly with the literature study on the psychology of attitudes, thirdly with the theory of reasoned action as a conceptual framework for this study, fourthly with the study's research design and methodology, and lastly with the main research findings of this study.

5.2.1 Introduction and problem statement

The first chapter of the study focused on setting the scene and explaining the main problem and sub-problems of the study.

It was explained that hunting is the primary economic driving force behind the game industry. The game and hunting industry contributes significantly to the country's economy, as well as to the conservation and effective management of wildlife. Despite the importance of the hunting industry, government remains concerned with what is socially acceptable to its citizens and what is not.

A number of broad shifts across society at large and lobbying against hunting by animal-rights movements have given rise to legitimate concerns regarding the social acceptability of hunting. It is increasingly being recognised that the organised hunting industry needs to take steps to actively maintain the social legitimacy of hunting. In order to formulate concrete persuasive rationales and strategies to maintain the social legitimacy of hunting in the future, an essential first step would be to attain an understanding of the basis of the public's various attitudes towards hunting and to formulate future strategies accordingly. Towards this aim, the main objectives of this study were to attain a clear understanding of the causal determinants of different attitudes towards hunting and to explore the implications it holds for improving the social legitimacy of hunting. This required the development of a suitable conceptual framework for the study, and the identification and investigation of the main causal determinants of different attitudes. The research findings can then be used as a basis to draw inferences that may guide the future development of strategies to improve the social legitimacy of hunting.

5.2.2 Literature study on the psychology of attitudes

A literature study was undertaken to introduce and explain some general concepts in contemporary social psychology that are of relevance to this particular study. More specifically, the literature study commenced by defining the term attitude and by providing a broad overview pertaining to the measurement of attitudes in contemporary social psychology. In short, it was

explained that attitudes are evaluative in nature and that it reflects the degree of favourableness or unfavourableness with which a person responds to a certain object or behaviour.

The literature indicated that the structure of attitude is important because it explains how the attitude is formed and it holds important implications for changing the attitude. Attitude structure has to do with the way in which the major cognitive components of attitudes are organised. The literature revealed that beliefs are commonly regarded as the causal determinants or the primary cognitive components of attitudes. The expectancy-value model was introduced as the most popular and influential model of attitude formation and structure. The expectancy-value approach to attitude structure provides an explanation of how beliefs are combined to form attitudes. Simply put, the expectancy-value model postulates that a person's attitude towards a certain behaviour is a combination of what a person believes the consequences or outcomes of the behaviour are and how that person feels about those outcomes. The expectancy-value model is able to provide insight about the underlying structure and cognitive foundation of peoples' attitudes.

It was explained that attitudes are based on any combination of instrumental and experiential beliefs. While instrumental beliefs capture the cognitive aspects of an attitude, the experiential beliefs capture the affective aspect of an attitude. Together, a person's instrumental and experiential beliefs about a

behaviour form a general positive or negative evaluative summary which reflects the person's attitude towards the behaviour.

A single attitude may simultaneously be based on many positive and many negative beliefs. This coexistence of positive and negative beliefs about an object or behaviour is known as attitudinal ambivalence. Attitudinal ambivalence is thus a state of conflict that exists when an individual simultaneously possess positive and negative evaluations of a single attitude object or behaviour. The literature revealed that attitudinal ambivalence is an important property of attitudes as far as influencing and changing attitudes are concerned. Ambivalent attitudes are more likely to change over time, are less resistant to persuasive appeals, are less likely to bias processing of attitude-relevant information, and are less likely to influence or guide behaviour.

The literature review then focused on the psychology of strong attitudes and its implications for attitude change. Strong attitudes are generally held with great conviction or certainty. A variety of characteristics of strong attitudes were discussed and a number of elements that differentiate strong attitudes from weak ones were pointed out. Overall, the literature showed that strong attitudes possess a number of properties that make it very enduring and particularly resistant to change. Furthermore, people with strong attitudes will tend to process new information in a way that is consistent with their existing strong attitudes. This makes it extremely difficult to influence strong attitudes.

The phenomenon of cognitive dissonance was introduced and its relevance to this study was explained. It was pointed out that cognitive dissonance is a negative, unpleasant state that occurs whenever a person holds two cognitions (or beliefs) that are psychologically inconsistent. Cognitive dissonance is psychologically uncomfortable and results in feelings of discord. This, in turn, motivates people to take steps to reduce their psychologically inconsistent cognitions – often by either adopting new attitudes or by rejecting the information that are in dissonance with their existing cognitions. The stronger a person's existing cognitions are held, the more likely it is that they would simply reject any new information that is in conflict with their existing cognitions. This has important implications for formulating persuasive messages or strategies to change attitudes towards hunting.

After discussing the general concepts pertaining to the psychology of attitudes, the suitability of standard attitude scales for investigating attitudes and their causal determinants were considered. It was found that while standard attitude scaling techniques may provide reliable indicators of an attitude, they cannot provide a valid basis for investigating the underlying belief structure that forms the cognitive foundation on which an attitude is based. Therefore, the literature study focused on identifying a systematic and empirically valid approach for conducting this study. After carefully considering all the possible approaches, the theory of reasoned action was finally identified as the most valid and adequate approach to conduct this study.

5.2.3 The theory of reasoned action as a conceptual framework

Fishbein and Ajzen's theory of reasoned action was deemed to be a particularly suitable approach to conduct this study, firstly because it was completely in line with the research purpose of this study; secondly because it is the most frequently applied and widely recognised attitude theory in the area of human dimensions of wildlife and natural resources; thirdly because its methods are described clearly; and fourthly because it is well tested and supported by empirical evidence across a broad variety of attitudinal and behavioural domains, including that of human dimensions of wildlife and natural resources.

After providing a broad outline of the theory of reasoned action, the theory was aligned with the particular research purpose of this study. The attitudinal construct of the theory of reasoned action – which relied on the expectancy-value model – provided a suitable conceptual model for the study. According to this model, a person's overall attitude towards a behaviour is determined by the person's salient behavioural beliefs about the behaviour, where each belief links the behaviour with certain positive and negative outcomes. It is possible to distinguish between behavioural beliefs of two kinds: beliefs about the positive and negative consequences of the behaviour (instrumental beliefs); and beliefs about positive or negative feelings and affect derived from the behaviour (experiential beliefs). According to the expectancy-value model, the perceived probability that a behaviour will produce certain

instrumental or experiential outcomes (the strength of the belief) contributes to a person's overall attitude in direct proportion to their evaluation of each outcome (the outcome evaluation). The basic structure of the model was expressed algebraically by the equation displayed below, where A is the attitude towards performing behaviour B ; b_i is the strength of the belief that performing behaviour B leads to outcome i ; e_i is the evaluation of outcome i ; and n is the number of salient or accessible outcomes.

$$A_B \propto \sum_{i=1}^n b_i e_i$$

The theory of reasoned action prescribes standard procedures that need to be followed during any application of the reasoned action approach. In order to ensure that strict compatibility amongst the attitude and belief measures are maintained, as well as to make sure that there is an uniform understanding amongst participants of the behaviour under investigation, the reasoned action approach firstly requires that the behaviour of interest be clearly defined. Consistent with the prescribed procedures, the behaviour of interest in this study was defined as the 'legal hunting of wild animals', where the term 'legal' is the context element, 'hunting' the action element, and 'wild animals' the target element of the behaviour of interest. Following this, it is necessary to identify salient behavioural beliefs about hunting that are commonly held by members of the research population. To achieve this, the theory of reasoned action prescribes the use of open-ended questions which elicit participants' perceived positive and negative consequences (or advantages and

disadvantages) they believe will occur as a result of performing the behaviour in question. By applying content analysis to the open-ended responses, a set of salient beliefs must then be selected that reflect the most readily held salient beliefs in the research population (a set of modal salient beliefs). Based on the chosen modal set of salient beliefs, a series of quantitative beliefs measures are then formulated. These belief measures are used to obtain measures of the various components of the expectancy-value model's attitude construct ($A_B \propto \sum b_i e_i$) – namely a measure of attitude towards the behaviour (A_B), as well as a measure of belief strength (b_i) and outcome evaluation (e_i) for each of the salient beliefs in the modal set. The reasoned action model offers a simple model to explain the causal determinants of any attitude and to understand the relationship between an attitude and its underlying salient beliefs.

The psychological processes whereby beliefs are formed were then reviewed. In short, the beliefs people hold originate from information people acquire from a variety of sources, whether it be on the basis of direct observation (observational beliefs), by accepting information which is provided by outside sources (informational beliefs), or through inference processes that relies on other beliefs (inferential beliefs). A multitude of social, demographical and individual differences influence the experiences people have, the sources of information which they are exposed to, and also the way in which they interpret and remember information. From the perspective of the theory of reasoned action, these differences are recognised as background factors. By including background factors during an application of the reasoned action

model, the researcher may gain insight about the influences that various background factors have on the underlying belief structure that serve as the cognitive foundation for an attitude.

The theory of reasoned action offers an effective and appealing approach to changing attitudes. Its central idea is that peoples' salient beliefs provide the informational foundation for their attitudes. Therefore, if people are exposed to new information – and this new information is accepted – then existing beliefs may change or new beliefs may be formed, resulting in corresponding changes in their attitudes. A vast body of research provides strong evidence that persuasive interventions designed on the reasoned action approach are indeed capable of effectuating a desired change in beliefs and to have corresponding effects on attitudes. Thus, the reasoned action approach offers a good basis for developing persuasive communications and interventions to effectuate a desired change in people's attitudes. It not only provides guidance with regards to the particular existing salient beliefs that need to be changed in order to effectuate a desired change in an attitude, but it also identifies potential opportunities to introduce new salient beliefs to peoples' underlying belief structure that would result in a desired change in an attitude.

It was noted that the main reasons why persuasive communications or attitude change interventions fail to produce a desired change in a targeted attitude, is because often they do not address appropriate beliefs. The reasoned action model provides guidance with regards to identifying the

underlying beliefs that, if changed, are most likely to have the desired impact on the attitude of interest. It shows which beliefs discriminate the most between individuals with different attitudes towards a certain behaviour; the stronger the association between the belief and attitude, the more likely it is that changing the particular belief will result in corresponding changes in the given attitude. It also shows which salient beliefs have the most room for change to occur and whether this change should occur in the particular belief's strength (b_i), its outcome evaluation (e_i), or in both aspects of a belief to produce the desired change. In addition, the reasoned action model not only provides guidance with regards to changing some of the existing beliefs, but it also provides a good basis for discerning the absence of potentially influential beliefs amongst a significant proportion of the research population. This assists in identifying opportunities to change attitudes by establish new beliefs.

A number of general considerations that should be kept in mind when selecting beliefs to target in an attempt to change attitudes were discussed. In the first place, it was also pointed out that beliefs based on personal experience (observational beliefs) are often much more difficult to change than beliefs that are based on second-hand information (informational beliefs) or beliefs inferred from other available information (inferential beliefs). In this regard, selecting salient beliefs to change would involve subjective judgements as to the extent to which it will be feasible to change a particular belief under consideration. Secondly, attitude change interventions are most effective if it is designed to change multiple beliefs rather than only one or two

beliefs. Only when there is a substantial shift in the summative indices of behavioural beliefs ($\sum b_i e_i$) will a meaningful change occur in the targeted attitude. Finally, one should remember that by changing an existing salient belief or by making a new belief salient, unintended changes in other salient beliefs may occur or new unintended beliefs could become salient (impact effects) that could counteract the effects of any changes in the targeted belief.

5.2.4 Research design and methodology

Following the literature review and the outline of the study's conceptual framework, the most suitable research design and methodologies for conducting the research was identified and discussed in detail.

The research design of this study was twofold and consisted of a literature component and an empirical component. The literature component consisted of a literature study to firstly build a theoretical base for the study, to secondly establish a conceptual framework for conducting the study's empirical research, and lastly to offer useful perspectives on methodological issues related to the empirical component of the study. A number of background variables that influence attitudes towards hunting were identified in the literature and incorporated into the empirical component of the study, namely gender, age, ethnicity, education, exposure to hunting and social ties. The empirical component, on the other hand, provided the primary information that

was required to investigate the different attitudes towards hunting and their causal determinants within the conceptual framework of the theory of reasoned action.

The methodological design of the study's empirical component was based on the standard procedures prescribed by the theory of reasoned action. Two consecutive Web-surveys – which were methodologically interrelated – were used to collect the primary information amongst a sample of the public, namely a formative survey and a primary survey. The formative survey was used to elicit salient behavioural beliefs about hunting that are readily held by members of the public, as well as to validate the study's direct attitude measure. Based on the modal set of salient beliefs about hunting that were identified, a series of quantitative beliefs measures were constructed and included in the primary survey of the study. The validated direct attitude measure was also incorporated into the primary survey of the study. The primary survey was administered to a sample of the general public and obtained measures of belief strength (b_i) and outcome evaluations (e_i) for each of the identified salient beliefs, a valid direct measure of participants' related attitude towards hunting (A_B), as well as information regarding a number of relevant background variables. The primary survey produced the primary information that was needed to investigate the causal determinants of different attitudes towards hunting and the influences of various background factors. The research findings of the study were then used as the basis for making conclusions and recommendations that may guide the development of future strategies to improving the social legitimacy of hunting.

5.2.5 Main research findings

The most important findings that may guide the development of future strategies to improve the social legitimacy of hunting are summarised in this section. The summary of the research results is divided into two sections, dealing firstly with the main findings of the formative survey and secondly with the main findings of the primary survey.

5.2.5.1 Main research findings of the formative survey

During the formative survey phase of the research, a list of 31 salient beliefs that link hunting to a variety of positive and negative outcomes were emitted at different frequencies by a sample of members of the public. It is noteworthy that participants who supported hunting, those with neutral attitudes towards hunting, and those who opposed hunting simultaneously held positive and negative salient beliefs about hunting, which suggest that the public may be somewhat ambivalent about hunting. Closer inspection showed that the degree to which participants supported or opposed hunting generally corresponded with the frequency with which they emitted positive and negative salient beliefs about hunting. Participants who strongly approved of hunting emitted a greater number of positive beliefs and relatively little negative beliefs, while those who strongly disapproved of hunting emitted a greater number of negative beliefs and fairly little positive beliefs. Participants

with neutral attitudes towards hunting, in turn, not only emitted the smallest number of positive and negative beliefs about hunting, but they associated hunting with practically an equal number of positive and negative beliefs. These results suggested, firstly, that people with strongly held attitudes are armed with more arguments with which to resist attempts to change their attitudes; secondly, that neutral attitudes towards hunting are based on a much more impartial set of positive and negative salient beliefs; and thirdly, that those who are not strongly in favour of or opposed to hunting have the most ambivalent attitudes towards hunting.

The 31 salient beliefs identified by the formative research was then used as a basis to identify a set of salient beliefs that reflects the most readily held beliefs on which attitudes towards hunting are primarily based (modal set of salient beliefs). A total of 14 modal salient beliefs were identified which are assumed to portray the primary causal determinants of attitudes towards hunting. Following techniques prescribed by the theory of reasoned action, these modal salient beliefs were then used to develop a series of quantitative beliefs measures that formed part of the primary survey of the study.

5.2.5.2 Main research findings of the primary survey

According to the theory of reasoned action, behavioural beliefs provide the basis for attitudes. The expectancy-value model ($A_B = \sum b_i e_i$) produced

compelling empirical evidence that at least 12 of the salient beliefs in the modal set were strongly related to members of the public's attitudes towards hunting and that the salient belief composite ($\sum b_i e_i$) accurately predicted the direct measure of participants' attitudes towards hunting (A_B) ($r = 0.82$ at $p < 0.01$). Thus, the set of 12 salient beliefs accurately reflected the informational foundation on which members of the public base their attitudes towards hunting and are therefore able to provide considerable insight into the primary causal determinants of the public's attitudes towards hunting. It also suggests that any modification to this set of salient beliefs is likely to have a significant impact on attitudes towards hunting.

Having demonstrated a strong relation between the expectancy-value model's salient belief composite ($\sum b_i e_i$) and the direct attitude measure (A_B), the ability of every individual salient belief to account for variation in participants' attitudes towards hunting were investigated by examining the correlation coefficients between every individual belief's mean $b \times e$ product and the direct measure of attitudes towards hunting (A_B). The stronger the correlation, the more the salient belief in question discriminates between participants with different attitudes towards hunting and the more likely it is that changing the belief will result in corresponding changes in attitudes. It was found that each of the 12 salient beliefs accounted for a large amount of variation in attitudes towards hunting. The salient beliefs were arranged according to the magnitude of their correlations with attitudes towards hunting (A_B) in order to

reflect which beliefs are expected to be most influential as far as changing attitudes towards hunting is concerned (see Table 4.3 in chapter 4).

Having considered which beliefs discriminate the most between individuals with different attitudes towards hunting, a more detailed investigation of the individual beliefs that underlie the attitudes of supporters, moderates, and opposers were undertaken. The results showed that, as expected, large fundamental differences existed in the cognitive foundations on which supporters, moderates, and opposers based their attitudes towards hunting. Specifically, the three attitudinal sub-groups differed mainly in the strength with which they associated hunting with various outcomes (b_i), but generally agreed with respect to their positive and negative evaluations (e_i) of the outcomes associated with hunting. Clearly then, attitudinal differences towards hunting are primarily a result of fundamental differences in belief strength (b_i) – that is, the perceived likelihood that hunting result in various positive or negative outcomes. This provided further support for the expectation that strategies to change attitudes towards hunting would be most successful if it is aimed at influencing people's perceived likelihoods of the outcomes they associate with hunting (b_i), rather than attempting to influence their favourable or unfavourable evaluations of those outcomes (e_i).

Further investigations into the cognitive foundations on which the three attitudinal sub-groups based their attitudes towards hunting were conducted. It was found that supporters believed it to be extremely likely that hunting

leads to very positive outcomes and that they were fairly adamant that hunting did not result in any negative outcomes. The results showed that little could be done to further strengthen supporters' already favourable attitudes towards hunting. Conversely, opposers believed it to be extremely likely that hunting leads to very negative outcomes and they were quite certain that hunting did not result in any positive outcomes. The results revealed that attempts to change some of the existing negatively valued salient beliefs on which their negative attitudes are based would, in all likelihood, be ineffective, firstly because opposers hold their existing salient beliefs with great conviction and certainty; and secondly because there were very little ambivalence in the cognitive foundation on which their negative attitudes are based. On the other hand, the possibility of changing the attitudes of opposers by introducing new salient beliefs into their underlying belief structure was also investigated. The results revealed that this too would be an ineffective approach to changing the attitudes of opposers, mainly because strong attitudes have a profound influence on how people process attitude-relevant information. It was explained that, because opposers have strongly held negative attitudes towards hunting, they are likely to process any new information about hunting in a biased manner, firstly, by directing their attention to arguments that are consistent with their existing attitude; secondly, by automatically rejecting the credibility of information that supports the need for hunting or point out the positive outcomes of hunting; and thirdly by only accepting information that is consistent with their existing negative attitudes towards hunting. The results also suggested that if opposers are presented with new information about the positive outcomes of hunting, it would in all likelihood cause some

inconsistencies in their underlying salient beliefs structure and result in cognitive dissonance. In sum, the results produced compelling evidence that attempts to effectuate a positive change in the attitudes of people who are strongly opposed to hunting would, in all likelihood, be unsuccessful because of the inherent nature and cognitive characteristics of strong attitudes.

In contrast to supporters and opposers, the segment of the public who is not strongly in favour of or against hunting (e.g., those with moderate attitudes towards hunting) based their attitudes on a fairly impartial set of salient beliefs which associate hunting with both positive and negative outcomes. It was found that moderate attitudes are generally fairly ambivalent; that moderates do not hold their salient beliefs with great certainty or conviction; and that moderates varied considerably with respect to how likely they believed it is that hunting results in various positive and negative outcomes. These findings suggested that moderates are less resistant to persuasive appeals, more likely to change their attitudes over time, more likely to process attitude-relevant information in an impartial manner, and more likely to accommodate new information about hunting into their cognitions. Together, these results suggested that there is promising potential for strengthening support for hunting amongst those with moderate attitudes towards hunting. Overall, the findings suggest that strategies to broaden the base of public acceptance of hunting would be most effective if it is directed at the segment of the public with moderate attitudes towards hunting.

Having found that attitude change interventions would be most effective if it targets the segment of the public with moderate attitudes towards hunting, a detailed investigation of the cognitive foundation underlying moderate attitudes towards hunting was undertaken. Generally speaking, the results showed that moderates perceived most of the beliefs to be only slightly likely outcomes of hunting (b_i) and judged it to result in either highly favourable or highly unfavourable outcomes (e_i). Furthermore, moderates differed substantially in their perceptions that hunting will result in the listed outcomes (b_i), but largely agreed in their positive and negative evaluations of the various outcomes (e_i). Together, these findings raised the expectation that, in general, it would be much more effective to change the strength with which moderates hold their beliefs (b_i) than it would be to change their outcome evaluations (e_i). Every individual belief was then examined with the aim of identifying the particular primary beliefs that must be changed in order to effectuate the desired change in moderates' attitudes as well as to determine whether this change should be effectuated in the particular belief's strength (b_i), its outcome evaluation (e_i), or perhaps in both components in order to produce the desired results. The results showed that the attitudes of moderates may be successfully influenced through a variety of beliefs. Specifically, the results showed that decreasing the perceived likelihoods (b_i) that *'hunting is disruptive and harmful to wild animal populations'*; that *'hunting causes pain and suffering to wild animals'*; that *'hunting results in the cruel and inhumane treatment of wild animals'*; that *'hunters often kill animals unnecessary without having a good reason or useful purpose for doing so'*; that *'hunting leads to unethical hunting practices'*; and that *'hunting leads to*

the endangerment and extinction of wild animal species' would substantially reduce the negative impact these beliefs have on the attitudes of moderates. The results also showed that increasing the perceived likelihoods (b_i) that *'hunting leads to the conservation of wild animals'*; that *'hunting is a way to experience nature and the outdoors'*; that *'hunting is a way of managing the number of wild animals in an area to prevent over-population'*; and that *'hunting holds economical benefits for the country'* would result in these beliefs having an extremely strong positive impact on the attitudes of moderates. Furthermore, although it was found that it would be less effective to influence people's outcome evaluations (e_i), the results, nevertheless, revealed that some opportunities – albeit less promising – also exist to slightly raise moderates' already favourable evaluations towards *'managing wild animals to prevent over-population'*; *'hunting benefiting the economy of the country'*; *'conserving wild animals'*; and *'experiencing nature and the outdoors'*. It should, however, be noted that there is only limited room to further raise moderates' positive evaluations of these four beliefs and, therefore, raising the outcome evaluations (e_i) of these beliefs would only have a relatively small impact on the attitudes of moderates.

In addition to influencing some of the existing salient beliefs on which moderates base their attitudes towards hunting, the results also suggest that it might be fairly effective to change the attitudes of moderates by introducing new beliefs about hunting into their cognitions. It was found that moderates would be fairly receptive to new information for a number of reasons. In the first place, since moderates hold impartial attitudes towards hunting, they are

expected to process new information about hunting in a rational and fairly balanced manner. In the second place, since moderates' existing salient beliefs about hunting are generally weakly held, there is little risk of causing cognitive dissonance by introducing new beliefs about hunting into their cognitive foundations.

Finally, the focus of this chapter then turned to consider how the various background factors (social and demographical differences) influences attitudes towards hunting and shape the way in which hunting is perceived by the public. The results produced strong evidence that participation in hunting (direct exposure to hunting) and having social relationships with hunters (indirect exposure to hunting) have by far the most significant influence on members of the public's attitudes towards hunting. It was found that hunters themselves and people who have close social relationships with hunters generally favour hunting, whereas people who have no hunting acquaintances are generally opposed to hunting. Consistent with this finding, the results also showed that being acquainted with hunting – either through hunting participation or having social relationships with hunters – have the most profound influence on peoples' informational base and cognitions that underlie their attitudes towards hunting. The results showed that demographical variables, however, have a much less significant influence on members of the public's attitudes towards hunting. In short, while gender and ethnical differences were found to have some meaningful influence on participants' attitudes and underlying cognitions, educational and age differences seemed to have virtually no meaningful influence.

5.3 CONCLUSIONS AND RECOMMENDATIONS

Conclusions are drawn and recommendations are made on a number of aspects, ranging from the suitability and effectiveness of the theory of reasoned action for understanding attitudes towards hunting, to conclusions and recommendations that arise from the research findings. Thereafter, a number of general remarks that are relevant to the study are made by the researcher.

5.3.1 Theory of reasoned action as a conceptual framework

Overall, the empirical results of this investigation strongly support the effectiveness of the theory of reasoned action as a conceptual framework for investigating and understanding attitudes towards wildlife-related activities such as hunting. In accordance with the theory of reasoned action, behavioural beliefs about hunting (beliefs about the consequences of hunting) were significant determinants of attitudes towards hunting. In fact, the strong correlation between the direct measure of attitude (A_B) and its belief-based aggregates ($\sum b_i e_i$) provides compelling empirical evidence in support of the theory's central assumption that behavioural beliefs form the informational foundation on which attitudes are based.

Overall, the present research demonstrated that the theory of reasoned action offers considerable power in understanding attitudes towards hunting. This successful application of the theory of reasoned action is consistent with other research in which the theory effectively predicted attitudes and behaviours towards a variety of wildlife-related activities.

5.3.2 The findings of the study

The findings of this study add to the understanding of the relationship between behavioural beliefs and attitudes towards hunting by uncovering the informational foundation of those attitudes and by explaining how various background factors influence attitudes towards hunting indirectly through their influences on behavioural beliefs. The study identified 12 behavioural beliefs that play a key role in determining attitudes towards hunting and provide compelling evidence that these beliefs provide a valid basis on which strategies to broaden the base of public acceptance of hunting may be developed.

Detailed investigations of the cognitive foundations on which different attitudes are based revealed that members of the public who are strongly opposed to hunting (opposers) are sincere in their commitment to what they perceive as the welfare and conservation of wild animals. This is reflected in the fact that they seem to be primarily concerned that hunting '*causes pain and suffering to*

wild animals', *'result in the cruel and inhumane treatment of wild animals*', *'is disruptive and harmful to wild animal populations*', and that hunting *'leads to the endangerment and extinction of wild animal species*'. However, these beliefs also suggest that opposers are often misguided and incognisant about hunting and wildlife. They are also seemingly unaware of all the positive outcomes of hunting. Overall, the findings in this study suggest that opposers' attitudes towards hunting are often based on selective and inaccurate information that fail to correspond to reality. The study produced compelling evidence that opposers' attitudes towards hunting are extremely resistant to change. This finding is consistent with existing research and literature on the psychology of strong attitudes.

Attitudinal differences towards hunting are primarily a result of large fundamental differences that exist in members of the public's belief strength (b_i) – that is, their perceived likelihood that hunting results in various positive or negative outcomes. Consequently, strategies to change attitudes towards hunting would be most successful if it is aimed at influencing peoples' perceived likelihoods of the outcomes they associate with hunting (b_i), rather than attempting to influence their favourable or unfavourable evaluations of those outcomes (e_i).

Members of the public – in particular those who are not strongly in favour of or against hunting – are generally incognisant about hunting and matters affecting wildlife. This is reflected in the findings that moderate attitudes are

generally fairly ambivalent; that moderates do not hold their salient beliefs with great certainty or conviction; and that moderates varied considerably with respect to how likely they believed it is that hunting results in various positive and negative outcomes. The results showed that strategies to broaden the base of public acceptance of hunting would be most effective if it is directed at the segment of the public that is not strongly opposed to hunting. Consequently, persuasive messages or interventions would be most effective if it is designed to resonate with the segment of the public with moderate attitudes towards hunting.

The findings of the study provides guidance with regards to the content of persuasive messages in that it specifies the particular primary beliefs that must be addressed by a persuasive message in order to successfully change attitudes. A short summary of the specific primary beliefs that must be addressed by persuasive strategies to broaden the base of public acceptance of hunting are provided in paragraph 6 of section 5.2.5.2 of this chapter. The results suggest that persuasive messages communicating information pertaining to those beliefs are likely to resonate with the moderate segment of the public. Closer inspection of these primary beliefs suggests that two major types of behavioural beliefs are important in determining moderate attitudes towards hunting, namely beliefs about **hunting** and beliefs that has more to do with the **conduct of hunters** than with hunting itself. Both these types of beliefs are explored further in the paragraphs that follow below.

As far as **beliefs about hunting** are concerned, the findings of the study suggest that the segment of the public with moderate attitudes towards hunting should be educated on a number of aspects. Essentially, these **public education programmes** should be developed to, firstly, decrease the perceived likelihoods (b_i) that hunting is detrimental to the **welfare of individual wild animals and leads to animal cruelty** (reflected by beliefs such as '*hunting results in the cruel and inhumane treatment of wild animals*' and '*hunting causes pain and suffering to wild animals*'); and secondly, to decrease the perceived likelihoods (b_i) that hunting has a negative impact on the overall **conservation and wellbeing of wildlife** (reflected by beliefs such as '*hunting leads to the endangerment and extinction of wild animal species*' and '*hunting is disruptive and harmful to wild animal populations*'). In addition, it is also imperative that these public education programmes are designed to: enlighten the moderate segment of the public about the **contributions that hunting makes to the conservation** of wild animals; make them aware of not only the **importance of managing wild animals**, but also explain how **hunting contributes to the effective management of wild animals**; convince them that **hunting is a way to experience nature and the outdoors**; and finally to make them more aware of the **contribution hunting makes to the country's economy**.

As far as **beliefs about the conduct of hunters** are concerned, the findings of the study suggest that a negative image of hunters pervades even the impartial segment of the public. This negative image of hunters are reflected in moderates' beliefs that '*hunters engage in unethical hunting practices that*

do not give animals a fair chance of survival', that *'hunters take pleasure and enjoyment in the killing of wild animals'*, and that *'hunters kill animals unnecessary without having a good reason or useful purpose – such as to get meat – for doing so'*. These beliefs about the conduct of hunters seem to portray an image of hunters as almost sadistic individuals who engage in unethical hunting practices and the senseless killing of wild animals for their own pleasure. It suggests that hunters have no appreciation for wildlife and that they do not value wildlife. It also implies that hunters are not concerned about the welfare, conservation, or wellbeing of wildlife. The findings of the study clearly show that, in addition to educating the public about hunting and wildlife, it is also imperative that action be taken to improve the image of hunters and the hunting fraternity. To do this, the organised hunting industry should actively engage in **public relations campaigns** (image building).

An important finding of the study is that hunters and people who have close social relationships with hunters generally support hunting, whereas people who have no hunting acquaintances are generally opposed to hunting. This suggests that **hunters, working at the community level, must be an integral component of an effective strategy** to improve not only the image of hunters, but also the social legitimacy of hunting. **Hunter education programmes** must be put in place to make hunters fully aware of the profound influence their behaviour have on the social acceptability of hunting, as well as of the cardinal importance of maintaining the social legitimacy of hunting. Hunters must realise that they are a minority group in a society that is increasingly concerned with animal welfare and the conservation of wildlife.

Hunter education programmes must also empower hunters with the necessary knowledge to play an active role at community level to improve the image of hunters. Through their behaviour and interactions with all members of the public, hunters should demonstrate a sincere appreciation for wildlife, that they have the welfare and conservation of wildlife at heart, and that their primary motivation for hunting is not to take pleasure in killing, but rather to enjoy the total hunting experience (e.g. being in nature, the thrill, excitement and challenge of the chase, getting away from the pressures of everyday life, seeing game animals and socialising with friends). In addition, the organised hunting industry needs to encourage hunters to interact with people who have moderate attitudes towards hunting and introduce programmes to create opportunities for members of the youth who are not strongly in favour of or against hunting to **personally experience** hunting. It is, however, important to realise that exposing those with moderate attitudes to hunting would result in them forming lasting observational beliefs (beliefs based on personal experience) that will have a profound influence on their attitudes towards hunting (see section 2.4.8.1 of chapter 2). Therefore, it is imperative that such strategies or interventions be carefully designed to address the specific primary beliefs that need to be changed in order to effectuate a positive change in attitudes towards hunting. Exposing members of the youth who have moderate attitudes towards hunting to hunting experiences that are carefully designed to reinforce positive outcomes of hunting and counteract negative beliefs about hunting, would in all likelihood have a profound and lasting positive impact on their attitudes towards hunting. This is because beliefs based on a person's own observations are much more

powerful and lasting than beliefs based on information that is provided to people through communications (see section 2.4.8.1 of chapter 2).

The researcher is of the opinion that **the hunting fraternity will be able to broaden the base of public acceptance of hunting only from a position of respectability**. If hunters are not respected by the majority of the public, even the best public education programs will not be successful at ultimately improving the social legitimacy of hunting. Only once the majority of the public is convinced that hunters share their basic values of animal welfare and wildlife conservation will hunters gain the respect of the majority of the public. The results of the study show that in order for hunters to be respected by members of the public, the public must be convinced that the hunting fraternity truly has the welfare, wellbeing and best interest of wildlife at heart; that they condemn any unethical hunting practices or acts of animal cruelty; that their actions lead to the effective management and conservation of wildlife; and that hunters' primary motivation for hunting is not to take pleasure in killing, but rather to experience and enjoy nature and the outdoors (a motivation that society would, in all likelihood, be better able to relate to; and a motivation that implies that hunters have an appreciation for nature). To merely advocate the latter about the hunting fraternity during **public relations** and **public education** campaigns alone will not be effective. If the public sense any discord between the information that is conveyed to them about hunters and the way in which hunters actually behave, the public will simply question the credibility of the information and reject it. Therefore, the involvement and cooperation of hunters are vital to the success of any strategy to improve the

image of hunters and, ultimately, the social acceptability of hunting. For this reason, **hunter education programmes** are also vital to the success of strategies to improve the social legitimacy of hunting. In addition, the researcher believes that the organised hunting industry must strive to establish a strong culture amongst the hunting fraternity that condemns unethical hunting practices, acts of animal cruelty, improper hunter conduct, or any act that may damage the image of hunters. In other words, there needs to be a strong culture within the hunting fraternity to actively protect their own image, firstly, by condemning those behaviours of fellow hunters that are damaging to the image of hunters and, secondly, by encouraging behaviours that contribute to positive image-building. Once such a culture is strong enough, more and more individual hunters will be discouraged from engaging in activities that may damage the image of hunters. The organised hunting industry must find ways to establish a strong prevailing culture of image-building amongst the hunting fraternity.

5.3.3 General remarks

The hunting fraternity often has to defend hunting against the emotional onslaught, accusations and half-truths of those who oppose hunting. Although many of the traditional arguments provide legitimate defences of hunting, having to argue from a defensive position puts hunting proponents at a disadvantage. The researcher theorises that the future of hunting in a society that is becoming increasingly concerned with the welfare of wildlife

depends not so much on developing effective pro-hunting defensive strategies, but rather on developing effective strategies to actively improve the social acceptability of hunting. To convince a majority of our society that hunting is a good thing would be extremely difficult. Thus, instead of seeking the public's support for hunting, the organised hunting industry should rather seek the public's understanding and acceptance. **If the organised hunting industry does not find ways of broadening its base of public acceptance, the defence of hunting will continue to demand increasingly more time and resources that could be better utilised in other projects.**

Hunters' primary motivations for hunting seem to play a role in the social acceptability of hunting. Previous research suggest that people are much more likely to accept hunting if it is performed in an ecological context or for subsistence purposes than when it is performed in the context of recreation or sport (trophy hunting). This suggests that the hunting fraternity must attempt to frame their motivation for hunting into a socially acceptable context. The findings of this study provide some clues in this regard. The findings suggest that the public believe that hunters are much more likely to '*take pleasure and enjoyment in killing wild animals*' (which provoke very negative evaluations) than to '*experience nature and the outdoors*' (which provoke very positive evaluations). Clearly, these findings suggest that hunting opposition might be significantly decreased if the public could be convinced that hunters' primary motivation for hunting is to experience nature and the outdoors, and not to take pleasure and enjoyment in killing wild animals. Thus, one possible way of putting hunters' primary reason for hunting into a socially acceptable

context is for the hunting fraternity to portray hunting as a lasting ecological experience whereby one could truly connect with nature and become better acquainted with wildlife (experience nature and the outdoors). The research suggests that the public would be more accepting and understanding of this primary motivation for hunting. This primary motivation for hunting would also reflect hunters' appreciation for wildlife and perhaps convince a significant proportion of the public that hunters share their basic values of appreciating wildlife. This, in turn, may also put the hunting fraternity in a better position to gain the respect of the majority of the public. Thus, hunting opposition may be significantly decreased if the hunting fraternity's primary motivation for hunting was put into the context of experiencing nature and the outdoors (ecological experience).

Since members of the non-hunting public are often incognisant about hunting, they often fail to form an accurate understanding of hunters' principle motivations for hunting. For example, the results showed that members of the public often believe that hunters' direct motivations for hunting lies in '*taking pleasure and enjoyment in killing wild animals*' – a perceived motivation that is regarded as socially unacceptable. However, if the hunting fraternity openly admits to enjoying the total hunting experience and carefully frame their direct motivation for hunting into a socially acceptable context, the likelihood that members of the public will resort to their own biased perceptions to rationalise hunters' motivations for hunting may be significantly reduced.

As a final remark, in face of the social threats facing the organised hunting industry, the minority rights of hunters in a liberal democracy could be protected, firstly, by demonstrating that the management of wildlife through hunting is sound and that hunting does not negatively affect wildlife; secondly, by emphasizing the contributions that hunting makes to the various aspects of the economy; thirdly, by continuing to take credit for positive wildlife management efforts and conservation successes; fourthly, by stressing that the latter is in the interest of all members of the public who cares about wildlife; and, finally, by calling for proof of any direct or tangible harm that hunting causes to society or, specifically, to those who oppose hunting.

5.4 SUGGESTIONS FOR FUTURE RESEARCH

The need for more theory-based research in the discipline of human dimensions of wildlife and natural resources are widely recognised in the existing literature (see chapter 2.3.1 in chapter 2). The researcher is of the opinion that future research in this area should preferably be based on theoretical approaches, rather than on descriptive approaches. This will help to integrate research findings and to build a cumulative body of knowledge on people's attitudes towards wildlife and hunting, which, in turn, will provide a better foundation for investigating peoples' wildlife-related attitudes and behaviours.

Very little research regarding attitudes towards hunting has previously been done in South Africa. As a result, many opportunities for further research flow from this study. Some suggestions about future research pertaining to attitudes towards hunting and improving the social legitimacy of hunting are put forward for consideration.

- Future research could build on the findings of this study by developing and testing persuasive communication strategies, public education campaigns, and public relations campaigns that are aimed at improving the social legitimacy of hunting.
- Studies could be undertaken to find ways for the organised hunting industry to establish a strong culture amongst the hunting fraternity that would, over the long term, improve the negative image that the public has about hunters.
- An important finding of this study is that members of the public need to be acquainted with hunting in order to improve the social legitimacy of hunting, and that hunters working at the community level could play an important role in this regard. Further research could therefore be done to establish the most effective way to achieve this goal.
- A possible limitation of this study lies in the fact that this research was based on a non-probability sample and cannot be seen as representative of any particular segment of the public of South Africa. Therefore, a more extensive study based on a probability sample for a specific geographical area of interest (e.g., city, metropolitan areas, provinces) or for a specific

segment of the public (e.g., urban or rural societies) could be undertaken. This could further expand and refine the current understanding of public attitudes towards hunting and how to improve the social legitimacy of hunting amongst a specific target group of interest.

- A study of a similar nature could be undertaken that focuses specifically on investigating attitudes towards hunting amongst those policy makers and legislators that determine the legal environment in which the organised hunting industry must operate. Research of this nature may yield information that would be of considerable strategic value to the organised hunting industry in the sense that it would assist them in maintaining a favourable legislative environment for the hunting industry.
- Little evidence-based information regarding the social legitimacy of hunting in South Africa is available. Studies could be undertaken to assess the social legitimacy of hunting in South Africa in order to provide an indication of the current state of affairs.
- Factors related to hunting participation, hunter recruitment, as well as hunter retention could be studied. It is recommended that the theory of reasoned action is applied to research of this nature, because it is a reputable theoretical approach to understanding and changing behaviour.
- Studies to identify the fundamental wildlife-related values of the public (particular the moderate segment of the public) may be investigated. This will further expand the current understanding of the social environment in which the hunting must maintain its social legitimacy.

- While this study was focused on the attitudes towards hunting, future studies could also investigate the role that normative influences play in determining the social acceptability of hunting.

5.5 SUMMARY

This chapter concludes the research report. The main aims of this study were, firstly, to attain a clear understanding of the causal determinants of different attitudes towards hunting and, secondly, to explore the implications that the research findings hold for improving the social legitimacy of hunting. To achieve these goals, a detailed literature study was firstly undertaken to establish a sound knowledge base on the psychology of attitudes. Thereafter, the theory of reasoned action was identified as a suitable conceptual framework for the study. The reasoned action approach offered a systematic an empirically valid theoretical approach to investigate the underlying causal determinants of different attitudes towards hunting amongst members of the public. The logic of the reasoned action's conceptual model was reviewed, as well as various methodological considerations that must be considered during any application of the model. Essentially, the theory of reasoned action suggests that a person's salient behavioural beliefs form the informational foundation on which their attitudes are based. Data was collected during an initial formative survey with a view to identify the behavioural beliefs about hunting that are most readily salient amongst members of the public. A total of 12 salient behavioural beliefs about hunting were found to be readily held

by members of the public. Data was then collected on each of these behavioural beliefs during a primary survey in a manner that is consistent with the prescribed procedures of the theory of reasoned action. The reasoned action model provided strong empirical evidence that the identified behavioural beliefs accurately reflected the primary causal determinants on which members of the public base their attitudes towards hunting. Further investigations of these behavioural beliefs provided a clear understanding of the informational foundation on which different attitudes towards hunting are based. Attitudinal differences were also explained by comparing the behavioural beliefs that formed the cognitive foundations on which different attitudes were based. Furthermore, the influences of various background factors were investigated with the view to understand how these variables influence attitudes towards hunting and its causal determinants. The study was concluded by providing specific guidelines and recommendations regarding the development of future strategies to improve the social legitimacy of hunting.

It is believed that the study successfully addressed its main research question and sub-questions. In the final instance it can be said that this study puts forward information that may increase the organised hunting industry's understanding of the social environment in which it operates. An increased understanding of why members of the public hold specific attitudes towards hunting is vital in order to maintain the social legitimacy of hunting.

LIST OF SOURCES

Aaker, D.A. & Day, G.S. 1990. *Marketing research (4th ed.)*. New York: John Wiley & Sons.

Ajzen, I. 1974. Effects of information on interpersonal attraction: Similarity versus affective value. *Journal of Personality and Social Psychology*, 29, pp.374 – 380.

Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, pp.179 – 211.

Ajzen, I. 2011a. *Behavioural beliefs*. [Online] Available at: <http://www.people.umass.edu/aizen/bb.html> [Accessed 22 February 2011].

Ajzen, I. 2011b. *Attitude towards the behaviour*. [Online]. Available at: <http://www.people.umass.edu/aizen/att.html> [Accessed 22 February 2011].

Ajzen, I. 2011c. *Normative beliefs*. [Online]. Available at: <http://people.umass.edu/aizen/nb.html> [Accessed 22 February 2011].

Ajzen, I. 2011d. *Subjective norm*. [Online]. Available at: <http://people.umass.edu/aizen/sn.html> [Accessed 22 February 2011].

Ajzen, I. 2011e. *Control beliefs*. [Online]. Available at: <http://people.umass.edu/aizen/cb.html> [Accessed 22 February 2011].

Ajzen, I. 2011f. *Perceived behavioural control*. [Online]. Available at: <http://people.umass.edu/aizen/pbc.html> [Accessed 22 February 2011].

Ajzen, I. 2011g. *Actual behavioural control*. [Online]. Available at: <http://people.umass.edu/aizen/abc.html> [Accessed 22 February 2011].

Ajzen, I. 2011h. *Frequently asked questions*. [Online]. Available at: <http://www.people.umass.edu/aizen/faq.html> [Accessed 21 December 2011].

Ajzen, I. & Driver, B.L. 1991. Prediction of leisure participation from behavioural, normative, and control beliefs: An application of the theory of planned behaviour. *Leisure Sciences*, 13, pp.185 – 204.

Ajzen, I. & Fishbein, M. 1980. *Understanding attitudes and predicting social behaviour*. Englewood Cliffs, New Jersey: Prentice-Hall.

Albarracín, D., Johnson, B.T., Fishbein, M. & Muellerleile, P.A. 2001. Theories of reasoned action and planned behaviour as models of condom use: A meta-analysis. *Psychological Bulletin*, 127, pp.142 – 161.

Albarracín, D., Johnson, B.T., Zanna, M.P. & Kumkale, G.T. 2005. The measurement of attitudes. In D. Albarracín, B.T. Johnson & M.P. Zanna (Eds.), *Handbook of attitudes* (pp.3 – 19). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Allport, G.W. 1935. Attitudes. In C. Murchison (Ed.), *Handbook of social psychology* (pp.798 – 844). Worcester, Massachusetts: Clark University Press.

Armitage, C.J. & Conner, M. 2000. Attitudinal ambivalence: A test of three key hypotheses. *Personality and Social Psychology Bulletin*, 26 (11), pp.1421 – 1432.

Armitage, C.J. & Conner, M. 2001. Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40, pp.471 – 499.

Bailey, K.D. 1987. *Methods of social research (3rd ed.)*. New York: The Free Press.

Bamberg, S. 2006. Is a residential relocation a good opportunity to change people's travel behaviour?: Results from a theory-driven intervention study. *Environment and Behaviour*, 38, pp.820 – 840.

Barro, S.C., Manfredo, M.J. & Wells, M. 1994. Cueing as a method effect in studies on recreation choice. *Leisure Science*, 16, pp.61 – 71.

Bezuidenhout, G. 2012. Jagbedryf is kos vir bewaring. *Landbouweekblad*, March 30, pp.49 – 51.

Bossenmaier, E.F. 1976. Ecological awareness and sport hunting: A viewpoint. *Wildlife Society Bulletin* 4 (3), pp.127 – 128.

Bothma, J. Du P., Suich, H. & Spenceley, A. 2009. Extensive wildlife production on private land in South Africa. In H. Suich, B. Child & A. Spenceley (Eds.), *Evolution and innovation in wildlife conservation: Parks and game ranches to transfrontier conservation areas* (pp.147 – 161). London: Earthscan Publishers.

Bothma, J. Du P. & Von Bach, S.H. 2009. Economic aspects of extensive wildlife production in southern Africa. In J. Du P., Bothma & J.G. Du Toit (Eds.), *Game ranch management* (5th edition) (pp.83 – 96). Pretoria: Van Schaik Publishers.

Bright, A.D., Manfredi, M.J., Fishbein, M. & Bath, A. 1993. Application of the theory of reasoned action to the National Park Service's controlled burning policy. *Journal of Leisure Research*, 25 (3), pp.263 – 280.

Brubaker, R.G. & Fowler, C. 1990. Encouraging college males to perform testicular self-examination: Evaluation of a persuasive message based on the revised theory of reasoned action. *Journal of Applied Social Psychology*, 20, pp.1411 – 1422.

Campbell, D.T. 1950. The indirect assessment of social attitudes. *Psychological Bulletin*, 47, pp.15 – 38.

Campbell, J.M. & Mackay, K.J. 2003. Attitudinal and normative influences on support for hunting as a wildlife management strategy. *Human Dimensions of Wildlife*, 8, pp.181 – 197.

Campbell, J.M. & Mackay, K.J. 2009. Communicating the role of hunting for wildlife management. *Human Dimensions of Wildlife*, 14, pp.21 – 36.

Carlson, E.R. 1956. Attitude change through modification of attitude structure. *Journal of Abnormal and Social Psychology*, 52, pp.256 – 261.

Chambliss, D.F. & Schutt, R.K. 2010. *Making sense of the social world: methods of investigation (3rd ed.)*. Thousand Oaks, California: Pine Forge Press.

Clark, G.E. 2007. Hunting in context. *Environment*, 49 (5), pp.3 – 4.

Coetzer, W.C. 2010. *Attitudes towards hunting amongst the economically active public in Port Elizabeth*. M.Tech thesis. Port Elizabeth: Nelson Mandela Metropolitan University.

Cronen, V.E. & Conville, R.L. 1975a. Fishbein's conception of belief strength: A theoretical, methodological, and experimental critique. *Speech Monographs*, 42, pp.143 – 150.

Cronen, V.E. & Conville, R.L. 1975b. Summation theory and the predictive power of subjects' own salient beliefs. *Journal of Social Psychology*, 97, pp.47 – 52.

Daigle, J.J., Hrubes, D. & Ajzen, I. 2002. A comparative study of beliefs, attitudes, and values among hunters, wildlife viewers, and other outdoor recreationists. *Human Dimensions of Wildlife*, 7, pp.1 – 19.

Dane, F.C. 1990. *Research methods*. Wadsworth: Brooks/Cole Publishing Company.

Daniel, J. 2012. *Sampling essentials: practical guidelines for making sampling choices*. Thousand Oaks, California: Sage Publications.

DiCamillo, J.A. 1995. Focus groups as a tool for fish and wildlife management: A case study. *Wildlife Society Bulletin*, 23, pp.616 – 620.

Dillman, D.A. 2000. *Mail and Internet Surveys*. New York: John Wiley & Sons.

Duda, M.D. 2002. *The public supports hunting*. [Online]. Available at: <http://www.responsivemanagement.com/download/reports/NAHsupport.pdf> [Accessed 4 February 2012].

Duda, M.D. 2003. *Kids' attitudes towards hunting*. [Online]. Available at: <http://www.responsivemanagement.com/download/reports/NAHKids.pdf> [Accessed 4 February 2012].

Duda, M.D. & Jones, M. 2008. *The North American model of wildlife conservation: Affirming the role, strength and relevance of hunting in the 21st century, public opinion on and attitudes toward hunting*. [Online]. Available at: http://www.responsivemanagement.com/download/reports/NAMWC_Public_Opinion_Hunting.pdf [Accessed 4 February 2009].

Eagly, A.H. & Chaiken, S. 1993. *The psychology of attitudes*. Fort Worth, Texas: Harcourt Brace.

Edward, A.L. 1957. *Techniques of attitude scale construction*. New York: Appleton-Century Crofts Inc.

Eloff, T. 2001. *The economic realities of the game industry in South Africa*. Proceedings of the fifth International Wildlife Ranching Symposium. Pretoria, Wildlife Ranching South Africa.

Emory, C.W. & Cooper, D.R. 1991. *Business research methods*. (4th ed.). Homewood: Irwin.

Fabrigar, L.R., MacDonald, T.K. & Wegener, D.T. 2005. The structure of attitudes. In D. Albarracín, B.T. Johnson & M.P. Zanna (Eds.), *Handbook of attitudes* (pp.3 – 19). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Fazio, R.H. 1995. Attitudes as object-evaluation associations: Determinants, consequences, and correlations of attitude-accessibility. In R.E. Petty & J.A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp.247 – 283). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Fazio, R.H., Chen, J., McDonel, E.C. & Sherman, S.J. 1982. Attitude accessibility, attitude-behaviour consistency, and the strength of the object-evaluation association. *Journal of Personality and Social Psychology*, 47, pp.277 – 286.

Festinger, L. 1957. *A theory of cognitive dissonance*. Stanford: Stanford University Press.

Fink, A. 2003. *How to ask survey questions (2nd ed.)*. Thousand Oaks, California: Sage Publications.

Fishbein, M. 1963. An investigation of the relationship between beliefs about an object and the attitude toward that object. *Human Relations*, 16, pp.233 – 240.

Fishbein, M. 1965. Prediction of interpersonal preference and group member satisfaction from estimated attitudes. *Journal of Personality and Social Psychology*, 1, pp.663 – 667.

Fishbein, M. 1967. A consideration of beliefs and their role in attitude measurement. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp.257 – 266). New York: Wiley.

Fishbein, M. & Ajzen, I. 2010. *Predicting and changing behaviour: The reasoned action approach*. New York: Psychological press.

Fishbein, M., Ajzen, I. & McArdle, J. 1980. Changing the behaviour of alcoholics: Effects of persuasive communication. In I. Ajzen & M. Fishbein (Eds.), *Understanding attitudes and predicting social behaviour* (pp.217 – 242). Englewood Cliffs, New Jersey: Prentice-Hall.

Fishbein, M. & Coombs, F.S. 1974. Basis for decision: An attitudinal analysis of voting behaviour. *Journal of Applied Social Psychology*, 4, pp.95 – 124.

Fleetwood, S. 2013. *Ipsos's recommendations pertaining to question wording and scaling*. [Email]. (Personal communication, 30 August 2013).

Fowler, F.J. 2009. *Survey research methods (4th ed.)*. Thousand Oaks, California: Sage Publications.

Fulton, D.C, Manfredi, M.J. & Lipscomb, J. 1996. Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife*, 1 (2), pp.24 – 47.

Gillham, B. 2007. *Developing a questionnaire (2nd ed.)*. London: Continuum International Publishing Group.

Godin, G. & Kok, G. 1996. The theory of planned behavior: A review of its applications in health-related behaviors. *American Journal of Health Promotion*, 11, pp.87 – 98.

Guttman, L. 1944. A basis for scaling qualitative data. *American Sociological Review*, 9, pp.139 – 150.

Hausenblas, H.A., Carron, A.V. & Mack, D.E. 1997. Application of the theory of reasoned action and planned behaviour to exercise behaviour: A meta-analysis. *Journal of Sport and Exercise Psychology*, 19, pp.36 – 51.

Heberlein, T.A. & Willebrand, T. 1998. *Attitudes toward hunting across time and continents: The United States and Sweden*. [Online]. Available at: <http://www.drs.wisc.edu/documents/articles/heberlein/Attitudes%20Toward%20Hunting.pdf> [Accessed 13 July 2011].

Henry, G.T. 1990. *Practical sampling*. Newbury Park, California: Sage Publications.

Herzog, H.A. 1993. “The movement is my life”: the psychology of animal rights activism. *Journal of Social Issues*, 49 (1), pp.103 – 119.

Holbrook, A.L, Berent, M.K., Krosnick, J.A., Visser, P.S. & Boninger, D.S. 2005. Attitude importance and the accumulation of attitude-relevant knowledge in memory. *Journal of Personality and Social Psychology*, 88, pp.749 – 769.

Holsman, R.H. 2000. Goodwill hunting? Exploring the role of hunters as ecosystem stewards. *Wildlife Society Bulletin*, 28 (4), pp.808 – 816.

Homer, P.M. & Kahle, L.R. 1988. A structural equation test of the value-attitude-behaviour hierarchy. *Journal of Personality and Social Psychology*, 54, pp.638 – 646.

Hrubes, D., Ajzen, I. & Daigle, J. 2001. Predicting hunting intentions and behaviour: An application of the theory of planned behaviour. *Leisure Science*, 23, pp.165 – 178.

Insko, C.A., Blake, R.R., Cialdini, R.B. & Mulaik, S.A. 1970. Attitude towards birth control and cognitive consistency: Theoretical and practical implications of survey data. *Journal of Personality and Social Psychology*, 16, pp.228 – 237.

Jaccard, J.J. & Davidson, A.R. 1972. Towards an understanding of family planning behaviour: An initial investigation. *Journal of Applied Social Psychology*, 2, pp.228 – 235.

Kaplan, S.E. & Ruland, R.G. 1991. Positive Theory, Rationality and Accounting Regulation. *Critical Perspectives on Accounting*, 2 (4), pp.361 – 374.

Kiesler, C.A., Collins, B.E. & Miller, N. 1969. *Attitude change: A critical analysis of theoretical approaches*. New York: John Wiley & Sons.

Knezevic, I. 2009. Hunting and environmentalism: Conflict or misperception. *Human Dimensions of Wildlife*, 14, pp.12 – 20.

Kowalczyk, D. 2003. Education portal: purposes of exploratory, descriptive & explanatory research. [Online]. Available at: <http://education-portal.com/academy/lesson/purposes-of-research-exploratory-descriptive-explanatory.html#lesson> [Accessed 5 June 2014].

Krech, D. & Crutchfield, R.S. 1948. *Theory and problems of social psychology*. New York: McGraw-Hill.

Krosnick, J.A., Boninger, D.S., Chuang, Y.C., Berent, M.K. & Carnot, C.G. 1993. Attitude strength: One construct or many related constructs? *Journal of Personality and Social Psychology*, 65, pp.1132 – 1151.

Krosnick, J.A., Judd, C.M. & Wittenbrink, B. 2005. The measurement of attitudes. In D. Albarracín, B.T. Johnson & M.P. Zanna (Eds.), *Handbook of attitudes and attitude change: Basic principles* (pp.21 – 76). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Kruglanski, A.W. & Stroebe, W. 2005. The influence of beliefs and goals on attitudes: Issues of structure, function, and dynamics. In D. Albarracín, B.T., Johnson & M.P. Zanna (Eds.), *Handbook of attitudes and attitude change: Basic principles* (pp.323 – 368). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Kumar, R. 2011. *Research methodology: a step-by-step guide for beginners* (3rd ed.). Thousand Oaks, California: Sage Publications.

Leedy, P.D. & Ormrod, J.E. 2005. *Practical research: planning and design* (8th ed.). Upper Saddle River, New Jersey: Pearson Education.

Likert, R. 1932. A technique for the measurement of attitudes. *Archives of Psychology*, 140, pp.5 – 53.

Litwin, M.S. 2003. *How to assess and interpret survey psychometrics* (2nd ed.). Thousand Oaks, California: Sage Publications.

Maio, G.R. & Haddock, G. 2009. *The psychology of attitudes and attitude change*. Thousand Oaks, California: Sage Publications.

Malhotra, N.K. & Birks, D.F. 1999. *Marketing research: an applied approach*. London: Prentice Hall.

Mandler, G. 1967. Verbal learning. In T.M. Newcomb (Ed.), *New directions in psychology* (Vol.3, pp.1 – 50). New York: Holt.

Manfredo, M.J. 1992. *Influencing Human Behaviour: theory and application in recreation, tourism, and natural resource management*. Champaign, Illinois: Sagamore Publishing.

Manfredo, M.J. 2008. *Who cares about wildlife?: Social science concepts for exploring human-wildlife relationships and conservation issues*. New York: Springer.

Manfredo, M.J., Fishbein, M., Haas, G. & Watson, A. 1990. Attitudes towards prescribed fire policies. *Journal of Forestry*, 88 (9), pp.19 – 23.

Manfredo, M.J., Yuan, S. & McGuire, F. 1992. The influence of attitude accessibility on attitude-behaviour relationships: Implications for recreation research. *Journal of Leisure Research*, 24 (2), pp.157 – 170.

Manstead, A.S.R. & Parker, D. 1995. Evaluating and extending the theory of planned behaviour. *European Review of Social Psychology*, 6, pp.69 – 95.

McBurney, D.H. & White, T.L. 2007. *Research Methods (7th ed.)*. United States: Thomsan Wadsworth.

McBurney, D.H. & White, T.L. 2010. *Research methods (8th ed.)*. Wadsworth: Cengage Learning.

McCool, S.F. & Braithwaite, A.M. 1992. Persuasive messages and safety hazards in dispersed and natural recreation setting. In Manfredo, M.J., *Influencing human behaviour: theory and applications in recreation, tourism, and natural resource management* (pp.293 – 326). Champaign, Illinois: Sagamore Publishing Inc.

Miller, D.C. 2002. *Handbook of research design and social measurement (6th ed.)*. Thousand Oaks, California: Sage Publications.

Miller, G.A. 1956. The magical number seven, plus or minus two: Some limits on our capacity for processing information. *Psychological Review*, 63, pp.81 – 97.

Mitchell, M.L. & Jolley, J.M. 1992. *Research design explained (2nd ed.)*. New York: Harcourt Brace Javanovich College Publishers.

Mitchell, M.L. & Jolley, J.M. 2010. *Research design explained (7th ed.)*. Wadsworth: Cengage Learning.

Murphy, W.G. & Brubaker, R.G. 1990. Effects of a brief theory-based intervention on the practice of testicular self-examination by high school males. *Journal of School Health*, 60, pp.459 – 462.

Muth, R.M. & Jamison, W.V. 2000. On the destiny of deer camps and duck blinds: The rise of the animal rights movement and the future of wildlife conservation. *Wildlife Society Bulletin*, 28 (4), pp.841 – 851.

Nardi, P.M. 2006. *Doing survey research: a guide to quantitative methods (2nd ed.)*. New York: Pearson Education.

Neuendorf, K.A. 2002. *The content analysis guidebook*. Thousand Oaks, California: Sage Publications.

Neville, C. 2007. *Introduction to research and research methods*. Yorkshire: Bradford University.

Oishi, S.M. 2003. *How to conduct in-person interviews for surveys (2nd ed.)*. Thousand Oaks, California: Sage Publications.

Oppenheim, A.N. 1992. *Questionnaire design, interviewing and attitude measurement*. London: Printer Publishers.

Osgood, C.E., Suci, G.J. & Tannenbaum, P.H. 1957. *The measurement of meaning*. Urbana: University of Illinois Press.

Pate, J., Manfredi, M.J., Bright, A.D. & Tischbein, G. 1996. Coloradoans' attitudes towards reintroducing the grey wolf in Colorado. *Wildlife Society Bulletin*, 24, pp.421 – 428.

Peak, H. 1955. Attitude and motivation. In M.R. Jones (Ed.), *Nebraska symposium on motivation* (Vol.3, pp.149 – 188). Lincoln: University of Nebraska Press.

Perloff, R.M. 2010. *The dynamics of persuasion: Communication and attitudes in the 21st century* (4th ed.). New York: Routledge.

Peterson, M.N. 2004. An approach for demonstrating the social legitimacy of hunting. *Wildlife Society Bulletin*, 32, pp.310 – 321.

Petkova, K.G., Ajzen, I. & Driver, B.L. 1995. Salience of anti-abortion beliefs and commitment to an attitudinal position: On the strength, structure, and predictive validity of anti-abortion attitudes. *Journal of Applied Social Psychology*, 25, pp.463 – 483.

Petrocelli, J.V., Tormala, Z.N. & Rucker, D.D. 2007. Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality and Social Psychology*, 92, pp.30 – 41.

Petty, R.E. & Cacioppo, J.T. 1981. *Attitudes and persuasion: Classic and contemporary approaches*. Dubuque, Iowa: Brown Publications.

Priester, J.R. & Petty, R.E. 1996. The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology*, 71, pp.431 – 449.

Punch, K.F. 2003. *Survey research: the basics*. London: Sage Publications.

Radder, L. & Bech-Larsen, T. 2008. Hunters' motivations and values: A South African perspective. *Human Dimensions of Wildlife*, 13, pp.252 – 262.

Responsive Management. 1995. *Factors related to hunting and fishing participation in the United States, phase V: Final report* (Report prepared for the Western Association of Fish and Wildlife Agencies under a Grant from the U.S. Fish and Wildlife Services, Division of Federal Aid in Sport Fish and Wildlife Restoration, Grant no. 14-48-009-92-1252). Harrisonburg, Virginia: Responsive Management.

Responsive Management. 1996. *Pennsylvania residents' opinions on and attitudes towards nongame wildlife*. Harrisonburg, Virginia: Responsive Management.

Riketta, M. 2000. Discriminative validation of numerical indices of attitude ambivalence. *Current Research in Social Psychology*, 5 (50). [Online]. Available at: <http://www.uiowa.edu/~grpproc/crisp/crisp.5.5.htm> [Accessed February 2013].

Rosenberg, M.J. 1956. Cognitive structure and attitudinal affect. *Journal of Abnormal and Social Psychology*, 53, pp.367 – 372.

Rossi, A.N. & Armstrong, J.B. 1999. Theory of reasoned action vs. theory of planned behaviour: Testing the suitability and sufficiency of a popular behaviour model using hunting intentions. *Human Dimensions of Wildlife*, 4, pp.40 – 56.

Sanderson, C.A. & Jemmott, J.B.I. 1996. Moderation and mediation of HIV-prevention interventions: Relationship status, intentions, and condom use amongst college students. *Journal of Applied Social Psychology*, 26, pp.2076 – 2099.

Schnetler, J., Stoker, D.J., Dickson, B.J., Herbst, D., & Geldenhuys, E. 1989. *Survey methods and practice (Rev. ed.)*. Pretoria: Human Sciences Research Council.

Schutt, R.K. 2004. *Investigating the social world: the process and practice of research (4th ed.)*. Boston: Sage Publications.

Schutt, R.K. 2009. *Investigating the social world: the process and practice of research (6th ed.)*. Los Angeles: Pine Forge Press.

Shaw, D.R. & Gilbert, D. L. 1974. Attitudes of College Students toward Hunting. *Transactions of the North American Wildlife and Natural Resources Conference*, 39, pp.157 – 162.

Shaw, W.W. 1977. A survey of hunting opponents. *Wildlife Society Bulletin*, 5 (1), pp.19 – 24.

Shay, R.E. 1977. A sociological theory related to wildlife management. *Wildlife Society Bulletin*, 5 (3), pp.130 – 131.

Shepard, B.H., Hartwick, J. & Warshaw, P.R. 1988. The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15, pp.325 – 342.

Smith, A.J. & Clark, R.D. 1973. The relationship between attitudes and beliefs. *Journal of Personality and Social Psychology*, 26, pp.321 – 326.

Stiff, J.B. & Mongeau, P.A. 2003. *Persuasive communication* (2nd ed.). New York: The Guilford Press.

Suchman, M.C. 1995. Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20 (3), pp.571 – 610.

Sutton, S., French, D.P., Hennings, S.J., Mitchell, J., Wareham, N.J., Griffin, S., Hardeman, W. & Kinmonth, A.L. 2003. Eliciting salient beliefs in research on the theory of planned behaviour: The effect of question wording. *Current Psychology: Developmental, Learning, Personality and Social*, 22, pp.234 – 251.

Terry, D.J., Hogg, M.A. & White, K.M. 2000. Attitude-behaviour relations: Social identity and group membership. In D.J. Terry & M.A. Hogg (Eds.), *Attitude, behaviour, and social context: The role of norms and group membership* (pp.67 – 93). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Thompson, M.M., Zanna, M.P. & Griffin, D.W. 1995. Let's not be indifferent about (attitudinal) ambivalence. In R.E. Petty & J.A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp.361 – 386). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Thomson, R. 2006. *Managing our wildlife heritage*. Hartbeespoort, South Africa: Magron Publishers.

Thurstone, L.L. 1928. Attitudes can be measured. *American Journal of Sociology*, 33, pp.529 – 554.

Thurstone, L.L. 1931. The measurement of social attitudes. *Journal of Abnormal and Social Psychology*, 26, pp.249 – 269.

Thurstone, L.L. 1946. Comment. *American Journal of Sociology*, 52, pp.39 – 40.

Tilling, M.V. 2004. Some thoughts on legitimacy theory in social and environmental accounting. *Social and Environmental Accounting Journal*, 24 (2), pp.3 – 7.

Trafimow, D. & Finlay, K. 2002. The prediction of attitudes from beliefs and evaluations: The logic of the double negative. *British Journal of Social Psychology*, 41, pp.77 – 86.

Triandis, H.C. 1967. Towards an analysis of the components of interpersonal attitudes. In C.W. Sherif & M. Sherif (Eds.), *Attitudes, ego involvement, and changes* (pp.227 – 270). New York: John Wiley.

Van Niekerk, P. Du P. 2002. Product development as part of a positioning strategy for the hunting industry in the Eastern Cape. D.Tech thesis. Port Elizabeth: Port Elizabeth Technikon.

Whittaker, D., Manfredo, M.J., Fix, P.J., Sinnott, R., Miller, S. & Vaske, J.J. 2001. Understanding beliefs and attitudes about an urban wildlife hunt near Anchorage, Alaska. *Wildlife Society Bulletin*, 29 (4), pp.1114 – 1124.

Wright, B.A., Kaiser, R.A. & Fletcher, J.E. 1988. Hunter access decisions by rural landowners: An east Texas example. *Wildlife Society Bulletin*, 16, pp.152 – 158.

Young, R.A. & Kent, A.T. 1985. Using the theory of reasoned action to improve understanding of recreation behaviour. *Journal of Leisure Research*, 17, pp.90 – 106.

Zinn, H.C., Manfredo, M.J., Vaske, J.J. & Wittmann, K. 1998. Using normative beliefs to determine the acceptability of wildlife management actions. *Society and Natural Resources*, 11, pp.649 – 662.

ANNEXURE A:**Formative survey preamble letter and questionnaire**

Dear NMMU Student / Staff member

You are being asked to participate in a research study. My name is Wentzel Coetzer, and I am an NMMU Agriculture & Game Management DTech student. I am conducting research on people's attitudes towards the legal hunting of wild animals. The purpose of this survey is to collect information about your attitudes, opinions, and beliefs about hunting. This information will be used to construct questions for my study's primary survey.

You are not obliged to take part in any research. You may withdraw from the survey at any time (by simply closing the web-survey) without any fear of reprisal. Your participation is completely voluntary and your identity and personal information will be kept completely confidential at all times. However, the results of the research study may be presented at scientific conferences and/or in specialist publications.

By clicking on the electronic link below, you agree to participate in the survey. Note, however, that you must be at least 18 years of age or older to participate in the survey. No person younger than the age of 18 years should participate in the survey.

***Link to online survey:**

<http://www.eSurveysPro.com/Survey.aspx?id=d84df610-de05-47a5-8214-29a565b52c82>

Data use: Forms part of Wentzel Coetzer's DTech in Agriculture thesis.

The ethical integrity of the study has been approved by the Research Ethics Committee for Humans (REC-H) of the university. The REC-H consists of a group of independent experts that has the responsibility to ensure that the rights and welfare of participants in research are protected and that studies are conducted in an ethical manner. Research studies that involve human participants cannot be conducted without REC-H's approval.

Research Ethics clearance number: (H13-SCI-AGRI-003)

You have the right to query concerns regarding the study at any time: The contact details of the researcher are provided below.

Kind Regards

Wentzel Coetzer

(Principal investigator of study)

Contact: 0725345914

Email: s20411675@nmmu.ac.za



Attitudes towards the legal hunting of wild animals

PLEASE NOTE:

Throughout this questionnaire, the term “***hunting***” refers to the “***legal hunting of wild animals***” and it **does not** refer to any illegal practices such as poaching.

(Poaching refers to the illegal hunting of game or wild animals that is not one’s own or is under official protection).

There are 20 questions in this questionnaire that will take approximately 15 minutes to complete.

☐ Tick the box to proceed with the survey

Exit Survey

Next



SECTION A: Demographical Information

Instructions: Please select the option that best describes your demographical characteristics for each question below or write your answer in the space provided (where applicable).

1. Please indicate your gender.

- ☐ Male
☐ Female

2. Please indicate your age.**3. Please indicate your ethnicity.**

- ☐ Black African
☐ Coloured
☐ White
☐ Indian or Asian
☐ Other (Please specify)

4. Please indicate your level of academic qualification.

- ☐ Less than Grade 12
☐ Grade 12 Certificate (Matric)
☐ National Diploma
☐ Degree
☐ Postgraduate qualification

5. Are you a South African citizen?

- ☐ Yes
☐ No

[Exit Survey](#)[Back](#)[Next](#)

SECTION B: Background Information

Instructions: Please select the option that best describes your situation for each question below.

6. Have you ever been on a hunt before?

- ☐ Yes
- ☐ No

7. Do you have any close social ties with people (e.g., family members, friends) who hunt regularly?

- ☐ Yes
- ☐ No

8. Do you have contacts or ties with farmers or people in rural areas?

- ☐ Yes
- ☐ No

[Exit Survey](#)[Back](#)[Next](#)

SECTION C: Thoughts and feelings about hunting

Instructions: In response to the questions that follow, please write down ALL your thoughts that come immediately to mind. Some of the questions may appear to be similar, but they do address somewhat different issues.

9. What do you like about hunting?

10. What do you dislike about hunting?

11. What do you think would be the advantages or positive consequences of hunting?

12. What do you think would be the disadvantages or negative consequences of hunting?

[Exit Survey](#)[Back](#)[Next](#)

SECTION D: Attitudes and opinions pertaining to hunting

Below are some statements representing different opinions that people might have about hunting. We are interested in knowing your opinions about hunting. Some of the statements may appear to be similar, but they do address somewhat different issues.

Instructions: Please select the option that best represents your opinion for each question below.

13. In general, I think that hunting is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

14. The idea that wild animals are hunted makes me feel:

- ☐ Extremely Happy
- ☐ Happy
- ☐ Neither
- ☐ Sad
- ☐ Extremely Sad

15. In my opinion, hunting is generally:

- ☐ Extremely Beneficial
- ☐ Beneficial
- ☐ Neither
- ☐ Harmful
- ☐ Extremely Harmful

16. To what degree do you like or dislike hunting?

- ☐ Like a Lot
- ☐ Like
- ☐ Neither
- ☐ Dislike
- ☐ Dislike a Lot

17. In general, I think that hunting is:

- ☐ Extremely Positive
- ☐ Positive
- ☐ Neither
- ☐ Negative
- ☐ Extremely Negative

18. The idea that wild animals are hunted is:

- ☐ Extremely Pleasant
- ☐ Pleasant
- ☐ Neither
- ☐ Disturbing
- ☐ Extremely Disturbing

19. Please indicate to what degree do you approve or disapprove of hunting.

- ☐ Strongly Approve
- ☐ Approve
- ☐ Neither
- ☐ Disapprove
- ☐ Strongly Disapprove

[Exit Survey](#)[Back](#)[Next](#)

20. If you wish to receive feedback on the results of this survey, please type your email address in the space provided below.

Thank you for your willingness to participate in the survey.

[Exit Survey](#)[Back](#)[Finished](#)

ANNEXURE B:**Primary survey preamble letter and questionnaire**

Dear NMMU Student / Staff member

You are being asked to participate in a research study. My name is Wentzel Coetzer, and I am an NMMU Agriculture & Game Management DTech student. I am conducting research on people's attitudes towards the legal hunting of wild animals. The purpose of this survey is to measure your attitudes, opinions, and beliefs about hunting. Your participation will be appreciated.

You are not obliged to take part in any research. You may withdraw from the survey at any time (by simply closing the web-survey) without any fear of reprisal. Your participation is completely voluntary and your identity and personal information will be kept completely confidential at all times. However, the results of the research study may be presented at scientific conferences and/or in specialist publications.

By clicking on the electronic link below, you agree to participate in the survey. Note, however, that you must be at least 18 years of age or older to participate in the survey. No person younger than the age of 18 years should participate in the survey.

***Link to online survey:**

<http://www.eSurveysPro.com/Survey.aspx?id=d84df610-de05-47a5-8214-29a565b52c823>

Data use: Forms part of Wentzel Coetzer's DTech in Agriculture thesis.

The ethical integrity of the study has been approved by the Research Ethics Committee for Humans (REC-H) of the university. The REC-H consists of a group of independent experts that has the responsibility to ensure that the rights and welfare of participants in research are protected and that studies are conducted in an ethical manner. Research studies that involve human participants cannot be conducted without REC-H's approval.

Research Ethics clearance number: (H13-SCI-AGRI-003)

You have the right to query concerns regarding the study at any time: The contact details of the researcher are provided below.

Kind Regards

Wentzel Coetzer

(Principal investigator of study)

Contact: 0725345914

Email: s20411675@nmmu.ac.za



Attitudes towards the legal hunting of wild animals

PLEASE NOTE:

Throughout this questionnaire, the term “***hunting***” refers to the “***legal hunting of wild animals***” and it **does not** refer to any illegal practices such as poaching.

(Poaching refers to the illegal hunting of game or wild animals that is not one’s own or is under official protection).

There are 37 questions in this questionnaire that will take approximately 15 minutes to complete.

☐ Tick the box to proceed with the survey

Exit Survey

Next



SECTION A: Demographical Information

Instructions: Please select the option that best describes your demographical characteristics for each question below or write your answer in the space provided (where applicable).

1. Please indicate your gender.

- ☐ Male
☐ Female

2. Please indicate your age.**3. Please indicate your ethnicity.**

- ☐ Black African
☐ Coloured
☐ White
☐ Indian or Asian
☐ Other (Please specify)

4. Please indicate your level of academic qualification.

- ☐ Less than Grade 12
☐ Grade 12 Certificate (Matric)
☐ National Diploma
☐ Degree
☐ Postgraduate qualification

5. Are you a South African citizen?

- ☐ Yes
☐ No

[Exit Survey](#)[Back](#)[Next](#)

SECTION B: Background Information

Instructions: Please select the option that best describes your situation for each question below.

6. Do you have any close social ties with people (e.g., family members, friends) who hunt regularly?

- ☐ Yes
- ☐ No

7. Which one of the following statements best describes your behaviour?

- ☐ I have never gone hunting before
- ☐ I have gone hunting once before
- ☐ I have gone hunting a couple of times before, but not on a regular basis
- ☐ I go hunting less than once in every 2 years
- ☐ I go hunting once in every 2 years
- ☐ I go hunting once a year
- ☐ I go hunting more than once a year

Exit Survey

Back

Next



SECTION C: Attitudes towards hunting

Instructions: Please select the category that best describes your attitude towards hunting.

8. Please indicate to what degree do you approve or disapprove of hunting.

- ☐ Strongly Approve
- ☐ Approve
- ☐ Neither
- ☐ Disapprove
- ☐ Strongly Disapprove

[Exit Survey](#)[Back](#)[Next](#)

SECTION D: Attitudes towards general issues pertaining to wildlife

The following statements represent some consequences people might associate hunting with. Some of the statements may appear to be similar, but they do address somewhat different issues.

If hunting would have the following consequences, how good or bad do you think it is?

Instructions: Please select the opinion that best represents your opinion for each question below.

9. Doing things that will endanger wild animals species and drive them to extinction is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

10. Managing the number of wild animals in an area to prevent over-population is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

11. To get fresh meat or meat products (such as biltong) is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

12. Doing something that will benefit the economy of the country is generally:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

13. To experience nature and the outdoors is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

14. For hunters to take pleasure and enjoyment in killing wild animals is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

15. Unethical hunting practices that do not give wild animals a fair chance of survival is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

16. If hunters kill animals unnecessary without having a good reason or useful purpose (e.g., to get meat) for doing so, it is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

17. For hunters to kill wild animals during a hunt is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

18. Disrupting and harming wild animal populations is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

19. Conserving wild animals is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

20. To wound wild animals during a hunt is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

21. The cruel and inhumane treatment of wild animals is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

22. To cause pain and suffering to wild animals that are hunted is:

- ☐ Extremely Good
- ☐ Good
- ☐ Neither
- ☐ Bad
- ☐ Extremely Bad

[Exit Survey](#)[Back](#)[Next](#)

SECTION E: Opinions about general issues pertaining to wildlife

Below are some statements representing different views that people might have about hunting or the consequences of hunting. Some of the statements may appear to be similar, but they do address somewhat different issues.

How likely or unlikely do you think it is that hunting has the following consequences?

OR

How strongly do you agree or disagree with the following views?

Instructions: Please select the option that best represents your opinion for each question below.

23. Hunting results in the endangerment and extinction of wild animal species.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

24. Hunting is a way of managing the number of wild animals in an area to prevent over-population.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

25. Hunting is a way to get fresh meat or meat products (such as biltong).

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

26. Hunting holds some economical benefits for our country (such as job creation, tourism, income for farmers, etc.).

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

27. Hunting is a way to experience nature and the outdoors.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

28. Hunters take pleasure and enjoyment in killing wild animals.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

29. Hunting leads unethical hunting practices that do not give wild animals a fair chance of survival.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

30. Hunters often kill animals unnecessary without having a good reason or useful purpose (e.g., to get meat) for doing so.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

31. Hunting results in wild animals being killed by hunters.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

32. Hunting is disruptive and harmful to wild animal populations.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

33. Hunting contributes to the conservation of wild animals.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neither
- ☐ Disagree
- ☐ Strongly Disagree

34. Hunting results in wild animals being wounded.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

35. Hunting results in the cruel and inhumane treatment of wild animals.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

36. Hunting causes pain and suffering to wild animals.

- ☐ Extremely Likely
- ☐ Likely
- ☐ Neither
- ☐ Unlikely
- ☐ Extremely Unlikely

[Exit Survey](#)[Back](#)[Next](#)

37. If you wish to receive feedback on the results of this survey, please type your email address in the space provided below.

Thank you for your willingness to participate in the survey.

[Exit Survey](#)

[Back](#)

[Finished](#)



[illegible]

APPENDIX 2: Content analysis grids of participants’ emitted dislikes and negative consequences of hunting.

(Note: to ease reading of the information in Appendix 2, please refer to the electronic copy of the thesis on the CD disc)

NEGATIVE SALIENT BELIEFS ABOUT HUNTING																				
NUMBER OF RESPONDENTS	ATTITUDINAL CATEGORY	SALIENT BELIEF CATEGORIES																		
		Hunting results in the endangerment or extinction of wild animal species.	Hunters takes pleasure and enjoyment in killing wild animals.	Hunting leads to unethical hunting practices that do not give wild animals a fair chance of survival.	Hunters often kill animals unnecessarily without having a good reason or purpose (e.g., to get meat)	Hunting results in wild animals being killed by hunters.	Hunting results in wild animals being wounded.	Hunting results in the cruel and inhumane treatment of wild animals.	Hunting is disruptive and harmful to wild animal populations.	Hunting causes pain and suffering to wild animals.	Hunting leads to various illegal practices (such as poaching, traps, etc.).	People go hunting without possessing the necessary skills, experience or training to make a clean kill	Hunters behave themselves poorly while hunting	Hunting promotes violence	Hunting makes me feel bad (such as upsetting, guilt, sadness, or empathy)	Hunters are disrespectful towards animals	Hunting expose one to the sight of blood and dead animals	Hunters have barbaric rituals and hunting traditions	Hunting is a dangerous activity	Unclassified
1	Strongly Approve	Over hunting (poor management) could have serious impacts on a species.	x	Hunters who acts ruthlessly and unethical and gives the sport of fair chase and ethical hunting a bad name		x	x	x	x		x	x	x	x	x	x	x	x	x	x
2	Strongly Approve	That people hunt animals that we should be conserving. Hunting of animals that we should protect.	x	That people hunt unethically and drug certain animals. People who hunt unethically and drug animals or keep them in confined areas or hunt more than the legal bag limit. / People who go about hunting unethically.	Some people use hunting as an excuse to kill anything that moves. People who want to hunt unnecessary animals such as snail and jacked, as this shows the need to kill, not to harvest sustainably. hunting of species labeled as venison when farmers are ignorant of their breeding and social structures.	x	That people hunt unethically and drug certain animals. People who hunt unethically and drug animals or keep them in confined areas or hunt more than the legal bag limit. / People who go about hunting unethically.	x	x	x	That people with inadequate experience are allowed to hunt and this results in wounded animals that are sometimes not found and put out of their misery. / People who cause distress by chasing animals or wounding them.	x	x	x	x	x	x	x	x	x
3	Strongly Approve	Over hunting of a species on a farm	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	Strongly Approve	x	x	Shooting animals at water holes, shooting from a vehicle	x	x	x	x	x	x	Traps for animals	x	x	x	x	x	x	x	x	Makes animals vehicle shy
5	Strongly Approve	If there is no control in species hunted, it may result in certain species becoming extinct	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	Strongly Approve	x	x	Unethical hunting practices.	Killing animals which can not be consumed or otherwise be used. Killing big cats as part of a sport has never ever made any sort of sense to me. Shooting more animals than one needs.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	Strongly Approve	The possibility of endangering species. Too much hunting could endanger species.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	Approve	Animals extinction.	Unnecessary killing of animals for fun or distraction purposes	x	Unnecessary killing of animals for fun or distraction purposes	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9	Approve	If the hunters are not responsible, some animals can become extinct.	x	x	x	x	x	x	x	x	I don't like when animals are suffering because of an ununiformed or uneducated hunter.	x	x	x	x	x	x	x	x	x
10	Approve	x	x	x	x	x	x	x	x	Can interfere with ecological integrity if done poorly	x	x	x	x	x	x	x	x	x	To strenuous and laborious
11	Approve	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	Approve	x	x	Hunting that is unethical.	x	x	x	x	x	x	Individuals who hunt without the necessary skill	x	x	x	x	x	x	x	x	x
13	Approve	x	x	In most cases the outfitter is unethical. Animals are not given a fair chance. The hunter should be on foot where the hunter does not have any advantage over the animal.	x	x	x	x	x	x	Some hunters get to big for their boots and want to show off - this often leads to accidents. Some hunters provide animals into unnatural circumstances.	x	x	x	x	People think they are better than the animals	x	x	x	x
14	Approve	Hunting cause the exploitation of wildlife, which may lead to certain species being at risk of becoming over hunted.	x	x	x	x	x	x	x	x	Hunters destroy natural areas and make fires where they shouldn't for fun	x	x	x	x	The blood aspect I do not enjoy.	x	x	x	x
15	Approve	Lead to potential extinction of species.	Hunting for pleasure.	Game hunting. Animals having no access to escape routes	Killing for the sake of killing.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16	Approve	x	To take a life for fun is just wrong.	x	x	x	x	x	x	x	Hunting encourages illegal hunting and poaching	x	x	x	x	x	x	x	x	Complicates firearm control
17	Approve	x	Hunting as a sport	x	x	x	x	x	x	Putting animals under stress	x	x	x	x	x	x	x	x	x	x
18	Approve	Exploitation and extinction of species	x	x	Hunting animals that are not an ideal source of food	x	x	x	x	Poor hunting practices (harming animals)	x	x	x	x	x	x	x	x	x	Farmers getting rich while the community suffers
19	Approve	x	x	I don't have a problem with people hunting to survive, but HOW they do it creates an ethical problem for me. When thing start revolving about money people change and they start justifying doing things that are not right. The fact that in many instances the animal is not given a fair chance of survival. Men sit on chairs on the back of a bale or are taken to a place where they wait for animals to be chased in their direction and all they have to do is pull the trigger	x	x	x	x	x	x	x	x	x	x	x	x	The whole thing about the blood. I know of a young boy of ten who was forced to shoot his first impala and then eat the liver and smear himself with its blood. He was transferred for weeks. Come on! Are we living in the dark ages?	x	x	x
20	Approve	If over done, it could end the survival of a type of animal	x	I dislike the manner in which some hunters hunt	Hunting just for the sake of killing and not for a useful purpose	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
21	Neither	Extinction or endangerment of animals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	Neither	Sometimes to many of a specific type of animal is hunted, which drastically decreases their numbers	x	x	x	x	x	x	x	x	The guilt or feeling bad / sad for the poor animal being hunted	x	x	x	x	x	x	x	x	x
23	Neither	Extinction of our animals	x	The ruthlessness of the practice / method of killing in many cases.	x	x	x	x	x	x	Treatment of the animal after the kill, e.g. throwing irumping animal in truck	x	x	x	x	x	x	x	x	x
24	Neither	x	x	Leads to unethical hunting practices	Unnecessary killing of animals	x	x	x	x	The pain the animal feels	Leads to unauthorised hunting	x	x	x	x	x	x	x	x	x
25	Neither	If it is not regulated the animals might become extinct. Extinction or endangerment of certain species	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	Neither	x	When hunting is done as a sport	x	x	x	x	x	Animal cruelty	x	x	x	x	x	x	x	x	x	x	It is labour intensive.
27	Neither	Depletion of animal numbers	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
28	Neither	Risk of extinction of animals.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	It is dangerous.
29	Neither	Extinction of wild animals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
30	Neither	x	The pleasure that some hunters feel when killing a living being	x	x	x	x	x	Wounding of animals	x	The pain that the animal has to go through. Suffering of animals	x	x	x	x	x	x	x	x	x
31	Neither	Certain kind of animals can be extinct. Certain types of wildlife can get extinct.	x	x	x	x	x	x	x	x	Animals that are suffering. The hunter is perhaps not a good hunter. Poor hunters can result in animals suffering.	x	x	x	x	x	x	x	x	x
32	Neither	x	x	x	x	x	x	x	x	x	When there are amateurs that hunt	x	x	x	x	x	x	x	x	x
33	Neither	Endangering species	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
34	Neither	x	x	x	x	x	x	x	If not under strict control, hunting may interfere with gene pools or have an effect on the biological diversity or ecological balance	x	x	x	x	x	x	x	x	x	x	x
35	Neither	x	Hunters are killing for a sport	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
36	Neither	Over use of animals	x	x	x	x	x	x	Over use may damage ecology	x	x	x	x	x	x	x	x	x	x	x
37	Neither	x	x	x	x	x	x	x	Killing a beautiful creature of God is bad	x	Wounding an animal and not feeding it afterwards so that it suffers	x	x	x	x	x	x	x	x	x
38	Neither	x	x	x	x	x	x	x	Death of animals	x	x	x	x	x	x	x	x	x	x	Risk involved. hunting is dangerous
39	Neither	It endangers some of our species and it can also lead to an extinction of some of our species if not controlled	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	It takes a vast amount of your time
40	Neither	x	x	x	There are some people who are "cow boys" and just want to go on a shooting rampage at everything that moves. These same people will often shoot mothers and babies alike, which is unacceptable.	x	x	x	Chasing animals and getting them scared/frightened by beaters or people who chase them on so that hunters can shoot them. Because there is money involved, farmers will often shoot animals that are profitable as opposed to necessary for a balanced ecology, having a negative impact on the vegetation and bringing animals into areas that they are ill suited for.	x	Because there is money involved, it does attract bad elements - such as poachers	x	x	x	x	x	x	x	x	x
41	Disapprove	The only negative consequence of hunting is over exploiting of animals populations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
42	Disapprove	x	x	x	x	x	x	x	x	x	x	x	x	x	x	The sight of blood	x	x	x	Hunting sometimes leads to the wrong animal being killed.
43	Disapprove	Killing endangered species could lead to extinction.	x	x	x	x	x	x	see it as cruel	x	x	x	x	x	It gives people the freedom to act violently.	x	x	x	x	x
44	Disapprove	x	Hunting leads to people enjoying to kill animals in very harsh ways	x	Unnecessary killing of animals that we can not eat, such as rhino, leopard, lion.	x	x	x	Hunting leads to people enjoying to kill animals in very harsh ways	x	x	x	x	x	x	Hunters have no respect or appreciation for animals.	x	x	x	x
45	Disapprove	Extinction of certain species.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
46	Disapprove	Endangering of animals	x	x	x	x	x	x	It is not the most humane way of killing animals for food	x	Pain and stress to animals if not killed correctly	x	x	x	x	x	x	x	x	Expense to country of regulating legal hunting
47	Disapprove	If the more wild animals are hunted, the more they are driven to extinction. Future generations will only be shown pictures of animals that used to exist but don't anymore due to them being hunted down.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
48	Disapprove	x	The fact that hunters consider it a sport. I don't think that people should take pleasure in the killing of animals. Enjoyment should not be taken in killing. It seems sadistic.	x	x	x	x	x	The fact that wild animals have to be killed	x	x	x	x	x	x	x	x	x	x	teaching boys to hunt from a young age might have the wrong psychological effect on them
49	Disapprove	Hunting leads to the exploitation of animal. Hunting endangered animals is terrible.	x	I don't like hunting where the animal is in a very small environment and doesn't have a chance of getting away.	Hunting animals that cannot be eaten is terrible. Hunting leads to the killing of other beings unnecessary.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
50	Disapprove	The hunted animals can become extinct.	x	x	x	x	x	x	The killing method is brutal	x	x	x	x	x	x	x	x	x	x	x
51	Disapprove	Hunting of endangered species	x	Game hunting and unethical hunting is general	Sometimes the animals can be shot badly and have to be chased injured for long distances before being finally killed.	x	x	x	Only animals which are better shot badly and have to be chased injured for long distances before being finally killed.	x	x	x	x	x	x	x	x	x	x	x
52	Disapprove	x	When it is done as a game or sport - for enjoyment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
53	Disapprove	...leading the way of endangering species. Some animals can be heading towards endangerment because they don't have time to mate and give offspring.	x	Many people hunt for fun - that is not the reason. Hunting is considered a sport by some, but should it be?	x	x	x	x	Takes away predators' food. It will disrupt their habitat	x	x	x	x	x	x	x	x	x	x	x
54	Strongly Disapprove	There is extinction of animals in the world. This killing of animals in the name of hunting would cause an extinction of certain animals.	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
55	Strongly Disapprove	In the long run, animals would become extinct.	x	Animals are killed for entertainment purposes.	x	Animals are killed for no reason.	x	x	x	x	x	x	x	x	x	x	x	x	x	x
56	Strongly Disapprove	x	I hate the fact that people think it is fun to kill defenseless animals. / I don't like the fact that people kill animals for sport.	x	x	x	x	x	x	It is painful to the animal	x	x	x	x	x	x	x	x	x	x
57	Strongly Disapprove	When one looks at the past, many animal species suffered and went extinct because of mindless and merciless hunting practices. Hunting should be abolished.	x	It is an unnecessary practice. It should be made legal. What is the purpose of shooting another living being for sport?	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
58	Strongly Disapprove	Animal species become extinct.	It is a disgrace to hunt animals for sport or recreation. Nearly all hunting done today is for recreational purposes and hunters find it fun to shoot animals for their own pure enjoyment. It has become a sort of method to kill animals for fun.	Animals are placed in nature reserves so that it is easier for hunters to track and kill animals.	x	x	x	x	Hunting often leads to barbaric acts such as cutting off rhino horns while the animal is still alive	x	Hunting leads to many animals being taken away from their natural habitats. Hunting takes away food resources from wild predators. Disturbing nature's natural order.	x	x	x	x	x	x	x	x	Teach children that it is OK to shoot animals for sport.
59	Strongly Disapprove	x	x	x	x	x	x	x	People who profess to be good shots and would wound animals	x	It causes untold fear. Have you watched the fear kudus experience when the hunting season starts and guns starts to go off	x	x	x	x	x	x	x	x	x
60	Strongly Disapprove	x	The fact that humans make a sport out of killing and deriding an entire herd of animals	The animals don't stand a chance against the technology used and it is not fair chase.	x	x	x	x	I also worry that animals might be overhunted and not found.	Cruelty to animals. I know hunting is sometimes used to cull a herd, but I am sure there must be a more humane way of doing it	Disrupting an entire herd. The fact that humans make a sport out of killing and deriding an entire herd of animals	x	x	x	x	x	x	x	Some of the traditions practiced amongst hunters are barbaric and revolting. Like eating the raw liver of the animal right on the spot.	

APPENDIX 3:

Summary of the mean $b \times e$ products, belief strength measures (b_i) and outcome evaluations (e_i), for all five attitudinal sub-groups.

TABLE 4.29. Mean belief-evaluation product for behavioural beliefs about hunting: differences between all five attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	$b \times e$ products									
	Strongly Approve ($n = 40$)		Approve ($n = 97$)		Neither ($n = 52$)		Disapprove ($n = 77$)		Strongly Disapprove ($n = 61$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	1.70 ^a	(1.54)	0.45 ^b	(1.61)	-0.83 ^c	(1.25)	-1.51 ^c	(1.44)	-2.97 ^d	(1.37)
– Results in wild animals being killed by hunters.	1.65 ^a	(1.58)	0.74 ^b	(1.16)	-0.04 ^c	(0.86)	-1.18 ^d	(1.49)	-2.52 ^e	(1.80)
+ Contributes to conservation of wild animals.	3.00 ^a	(1.50)	1.24 ^b	(1.74)	-0.29 ^c	(1.72)	-1.01 ^c	(1.97)	-2.13 ^d	(2.01)
– Cruel and inhumane treatment of wild animals.	1.53 ^a	(1.84)	0.21 ^b	(1.98)	-1.08 ^c	(1.62)	-2.09 ^d	(1.56)	-3.02 ^e	(1.52)
– Leads to unethical hunting practices.	1.50 ^a	(1.97)	0.48 ^b	(1.97)	-1.10 ^c	(1.79)	-1.86 ^c	(1.77)	-2.95 ^d	(1.76)
– Causes pain and suffering to wild animals.	0.75 ^a	(1.60)	-0.46 ^b	(1.92)	-1.42 ^c	(1.41)	-2.40 ^d	(1.73)	-3.31 ^e	(1.30)
+ Experience nature and the outdoors.	3.30 ^a	(1.04)	1.59 ^b	(1.75)	-0.12 ^c	(2.17)	-0.91 ^{c,d}	(1.84)	-1.33 ^d	(2.39)
– Hunters kill animals unnecessary.	1.60 ^a	(1.98)	0.54 ^b	(1.77)	-0.73 ^c	(1.79)	-1.66 ^d	(1.84)	-2.39 ^d	(1.88)
– Endangerment and extinction of wild animal species.	1.40 ^a	(2.19)	0.43 ^a	(2.16)	-1.02 ^b	(1.81)	-1.84 ^{b,c}	(1.93)	-2.72 ^c	(1.81)
+ Managing wild animals to prevent over-population.	3.30 ^a	(1.14)	1.64 ^b	(1.36)	0.71 ^c	(1.04)	0.44 ^c	(1.15)	0.18 ^c	(1.32)
+ Hold economical benefits for the country.	3.30 ^a	(1.20)	1.84 ^b	(1.34)	1.13 ^c	(1.41)	0.55 ^{c,d}	(1.25)	0.38 ^d	(1.58)
– Hunters take pleasure and enjoyment in killing.	1.10 ^a	(1.61)	0.16 ^b	(1.01)	-0.63 ^c	(1.40)	-1.13 ^c	(1.79)	-1.95 ^d	(2.35)
Sum of belief-evaluation products ($\sum b_i e_i$)	24.13^a	(10.29)	8.86^b	(12.27)	-5.40^c	(9.57)	-14.61^d	(11.21)	-24.74^e	(12.24)

Note: Belief-evaluation product ($b \times e$) scores can range from -4 to +4, while the sum of belief-evaluation products ($\sum b_i e_i$) can range from -48 to +48.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.30. Mean belief strength for behavioural beliefs about hunting: differences between all five attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	Belief strength (b_i)									
	Strongly Approve ($n = 40$)		Approve ($n = 97$)		Neither ($n = 52$)		Disapprove ($n = 77$)		Strongly Disapprove ($n = 61$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.15 ^a	(0.80)	-0.30 ^b	(0.97)	0.50 ^c	(0.75)	0.95 ^d	(0.78)	1.57 ^e	(0.67)
– Results in wild animals being killed by hunters.	1.30 ^{a,b}	(0.69)	1.22 ^{b,c}	(0.71)	1.00 ^b	(0.86)	1.40 ^{a,c}	(0.75)	1.57 ^a	(0.83)
+ Contributes to conservation of wild animals.	1.55 ^a	(0.75)	0.71 ^b	(0.96)	-0.17 ^c	(1.06)	-0.68 ^d	(1.08)	-1.15 ^d	(1.08)
– Cruel and inhumane treatment of wild animals.	-0.85 ^a	(0.92)	-0.07 ^b	(1.11)	0.48 ^c	(0.98)	1.12 ^d	(0.83)	1.52 ^d	(0.81)
– Leads to unethical hunting practices.	-0.78 ^a	(1.05)	-0.30 ^a	(1.10)	0.71 ^b	(0.91)	1.01 ^b	(0.92)	1.51 ^c	(0.87)
– Causes pain and suffering to wild animals.	-0.58 ^a	(0.93)	0.29 ^b	(1.10)	0.85 ^c	(0.78)	1.38 ^d	(0.86)	1.74 ^d	(0.60)
+ Experience nature and the outdoors.	1.75 ^a	(0.44)	0.89 ^b	(0.95)	-0.13 ^c	(1.24)	-0.70 ^d	(1.01)	-1.00 ^d	(1.17)
– Hunters kill animals unnecessary.	-0.90 ^a	(1.06)	-0.37 ^b	(1.02)	0.52 ^c	(0.96)	0.96 ^{c,d}	(0.95)	1.28 ^d	(0.93)
– Endangerment and extinction of wild animal species.	-0.75 ^a	(1.15)	-0.18 ^b	(1.16)	0.63 ^c	(0.99)	1.01 ^{c,d}	(1.02)	1.36 ^d	(0.93)
+ Managing wild animals to prevent over-population.	1.70 ^a	(0.52)	1.08 ^b	(0.72)	0.56 ^c	(0.75)	0.09 ^d	(1.05)	-0.39 ^e	(1.20)
+ Hold economical benefits for the country.	1.85 ^a	(0.36)	1.35 ^b	(0.66)	0.85 ^c	(0.92)	0.49 ^c	(0.97)	0.00 ^d	(1.22)
– Hunters take pleasure and enjoyment in killing.	0.15 ^a	(1.27)	0.06 ^a	(1.06)	0.38 ^{a,b}	(1.11)	0.74 ^{b,c}	(1.02)	1.08 ^c	(1.19)

Note: Belief strength (b_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.

TABLE 4.31. Mean outcome evaluation for behavioural beliefs about hunting: differences between all five attitudinal sub-groups.

Behavioural beliefs (Abbreviated)	Outcome evaluation (e_i)									
	Strongly Approve ($n = 40$)		Approve ($n = 97$)		Neither ($n = 52$)		Disapprove ($n = 77$)		Strongly Disapprove ($n = 61$)	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
– Disruptive and harmful to wild animal populations.	-1.30 ^a	(0.85)	-1.38 ^a	(0.71)	-1.40 ^a	(0.72)	-1.49 ^a	(0.64)	-1.82 ^b	(0.39)
– Results in wild animals being killed by hunters.	0.95 ^a	(0.99)	0.52 ^b	(0.78)	-0.17 ^c	(0.65)	-0.83 ^d	(0.83)	-1.44 ^e	(0.83)
+ Contributes to conservation of wild animals.	1.93 ^a	(0.27)	1.59 ^{a,b}	(0.64)	1.40 ^b	(0.72)	1.57 ^{a,b}	(0.68)	1.56 ^{a,b}	(0.83)
– Cruel and inhumane treatment of wild animals.	-1.83	(0.50)	-1.73	(0.57)	-1.71	(0.54)	-1.75	(0.57)	-1.92	(0.28)
– Leads to unethical hunting practices.	-1.63 ^{a,b}	(0.84)	-1.65 ^a	(0.65)	-1.50 ^a	(0.80)	-1.73 ^{a,b}	(0.50)	-1.95 ^b	(0.22)
– Causes pain and suffering to wild animals.	-1.20 ^a	(0.72)	-1.56 ^b	(0.63)	-1.62 ^{b,c}	(0.60)	-1.73 ^{b,c}	(0.53)	-1.90 ^c	(0.30)
+ Experience nature and the outdoors.	1.88 ^a	(0.33)	1.63 ^{a,b}	(0.63)	1.54 ^{a,b}	(0.54)	1.35 ^b	(0.94)	1.43 ^b	(0.96)
– Hunters kill animals unnecessary.	-1.75 ^{a,b,c}	(0.44)	-1.51 ^{a,b}	(0.74)	-1.42 ^a	(0.82)	-1.74 ^{b,c}	(0.47)	-1.90 ^c	(0.35)
– Endangerment and extinction of wild animal species.	-1.85 ^{a,b}	(0.36)	-1.70 ^{a,b}	(0.69)	-1.62 ^a	(0.57)	-1.75 ^{a,b}	(0.46)	-1.93 ^b	(0.25)
+ Managing wild animals to prevent over-population.	1.93 ^a	(0.27)	1.37 ^b	(0.58)	0.98 ^c	(0.75)	0.70 ^{c,d}	(0.83)	0.43 ^d	(0.94)
+ Hold economical benefits for the country.	1.75 ^a	(0.49)	1.29 ^b	(0.54)	1.13 ^{b,c}	(0.69)	0.95 ^c	(0.71)	0.90 ^c	(0.89)
– Hunters take pleasure and enjoyment in killing.	0.35 ^a	(1.19)	-0.24 ^b	(0.91)	-0.88 ^c	(0.88)	-1.39 ^d	(0.75)	-1.75 ^d	(0.57)

Note: Outcome evaluation (e_i) scores can range from -2 to +2.

Tukey post-hoc test reveals between-group differences – means that do not share a superscript are significantly different at $p \leq 0.05$.

Cohen's d effect size measures for between-group differences are reported in the discussion where of interpretive value.