

**Involvement, Motivations and Setting Preferences of Participants  
in the Adventure Tourism Activity of SCUBA Diving**

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## **ABSTRACT**

Adventure tourism is a growing market sector worldwide including Australia. A range of research exists that examined participation in adventure tourism activities by consideration of various aspects such as socio-demographics, motivations, activity/setting preferences and involvement in the activity to understand the adventure tourist. While studies have been conducted that included several of these aspects, a holistic investigation of involvement, motivations and setting preferences together has not been conducted previously regarding adventure tourism in Australia in general and SCUBA diving in particular. Furthermore, in Australia, only limited information is available about those who participate in the adventure activity of SCUBA diving. The aim of this research is to investigate differences and similarities of involvement, motivations and setting preferences of SCUBA diving club members in Eastern Australia.

In this study 294 SCUBA diving club members in New South Wales and Queensland were surveyed by utilisation of a web-based questionnaire in order to identify their involvement in SCUBA diving, socio-demographic characteristics, participation motives and setting preferences.

Descriptive analysis was used to investigate the socio-demographic characteristics of divers, their motivations and setting preferences. Principal component analysis was applied on involvement variables as well as motivations to investigate the underlying constructs. Agglomerative and hierarchical cluster analyses were used to derive clusters of divers that differed in their involvement in SCUBA diving. Exact Pearson chi-square tests were conducted to test whether there were significant differences concerning socio-demographics between clusters. In addition, analyses of variance (ANOVAs) were conducted to determine differences and similarities of motivational components and setting preferences between clusters.

This study found that SCUBA diving club members are a heterogeneous group regarding their involvement in SCUBA diving. Five clusters of divers emerged that differed in their involvement in SCUBA diving. While differences in socio-demographics across the different involvement clusters were revealed, they proved to be less valuable for interpretation purposes. Regarding divers' setting preferences, similar structures were observed across all clusters regardless of differences in involvement. Motivations showed a complex structure across the clusters in regard to divers' involvement in SCUBA diving. Based on the studies findings, recommendations for future research were suggested. These emphasised the need for a holistic examination of motivations and setting preferences of adventure tourists based on the concept of involvement, which would be important for theory development and segmentation of tourists. The same holistic approach would also be valuable for examining other types of tourists such as events tourists and heritage tourists to better understand tourist behaviour.

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## **ABBREVIATIONS**

|       |  |
|-------|--|
| ACT   | Australian Capital Territory   |
| ANOVA | Analysis of Variance   |
| AUF   | Australian Underwater Federation   |
| CEHR  | Committee for Ethics in Human Research   |
| CRC   | Cooperative Research Centre  |
| Email | Electronic-mail  |
| GBR   | Great Barrier Reef   |
| EUH   | Experience-Use-History   |
| KMO   | Kaiser-Meyer-Olkin   |
| NAUI  | National Association of Underwater Instructors   |
| NSW   | New South Wales  |
| PADI  | Professional Association of Diving Instructors   |
| PCA   | Principal Component Analysis   |
| QLD   | Queensland   |
| SA    | South Australia  |
| SARS  | Severe Acute Respiratory Syndrome  |
| SCUBA | Self-Contained Underwater Breathing Apparatus  |
| SPAM  | Unwanted or Unsolicited Electronic-mail Messages or Mailing-list or Newsgroup Postings |
| SPSS  | Statistical Package for the Social Sciences  |
| SSI   | SCUBA Schools International  |
| TAFE  | Technical and Further Education  |
| TAS   | Tasmania   |
| USA   | United States of America   |
| VIC   | Victoria   |
| WA    | Western Australia  |

# CHAPTER ONE

## Introduction

### 1.1 Background

Events like the 2001 terrorist attacks in the USA, threats to tourism locations in Africa and Asia, war in Iraq as well as the outbreak of SARS (Severe Acute Respiratory Syndrome) “... have had an averse effect on the international adventure market” (Mintel International Group Limited, 2003a:3). Nevertheless, adventure tourism as a form of outdoor recreation has become increasingly important for holiday makers in the last decade, thus it is commonly regarded as a rapidly growing market sector of the tourism industry (Loverseed, 1997; Swarbrooke, Beard, Leckie, and Pomfret, 2003). Adventure tourism is also a fast developing industry sector worldwide particularly in North America and Europe (Hossain, 2004; Loverseed, 1997; Mintel International Group Limited, 2003a; Smith and Jenner, 1999), but also in Australia (Fluker, 2005; Morgan and Fluker, 2003; Tourism Victoria and Victorian Tourism Operators Association, 2002). Millington, Locke and Locke (2001:84) note that

every country in the world has potential for adventure tourism (...) however, some countries are more closely associated with adventure tourism than others and these tend to be the ones with large areas of wilderness, forest, mountains or desert.

Australia represents a popular destination for adventure tourists that seek exceptional experiences as this destination offers unique scenarios of remote and wilderness areas. A vast variety of adventure tour operators offer their services in the Australian adventure market and Australia offers a rich adventure tourism product including outback trekking, mountain climbing and “some of the best diving in the world along the Great Barrier Reef” (Millington *et al.*, 2001:85).

## 1.2 Clarification of Adventure Tourism

To place this research in context, this section gives a broad overview about the adventure tourism industry, research in adventure tourism, and provides definitions for clarification.

Adventure tourism is one of the most dynamic and rapid-growing sectors worldwide, especially in North America and Europe (Hossain, 2003; Loverseed, 1997; Mintel International Group Limited, 2003a). The international adventure tourism market consisted of four to five million trips in 2000, corresponding to about seven per cent of all international trips taken in this year (Millington, *et al.*, 2001). In Australia, the industry sector of adventure tourism is also rapidly developing (Tourism Victoria and Victorian Tourism Operators Association, 2002). In 2003 almost 2.2 million international adventure tourists had travelled to Australia, contributing about AUD 6.7 billion to the economy which corresponds to 60 per cent of total expenditure of all international travellers (Hossain, 2004). In 2004 the number of international and domestic adventure travellers in Australia was over 17 million (Tourism Victoria, 2005). However, the precise dimensions of the adventure tourism market are currently still being discussed within the broader tourism literature and to date only limited data is available on its size.

In this context, Swarbrooke, *et al.* (2003:92) state that “the phenomenon of adventure tourism is both relatively new and very complex [and that] comparatively little energy has yet been spent on collecting data on the market”. These authors believe that “measuring the adventure tourism market is extremely difficult if not impossible” (Swarbrooke *et al.*, 2003:93). A possible reason might be that in the literature there is no commonly agreed definition that allows to exactly evaluate the market. Thus, the data that is available on the size of the adventure tourism market is strongly dependent on the respective definition of ‘adventure tourism’ and on the type and nature of activities (e.g. soft/hard adventure activities) that are included.

Adventure tourism is very complex in its nature and means different things to different people and thus “...is a sector that remains broad and ill defined” (Mintel International Group Limited, 2003a:5). The complexity and the often cited broad scope of the industry of adventure tourism also becomes evident when considering the wide range of activities that might be included under the umbrella of adventure tourism (Table 1.1). The wide

variety of activities which might be included under the umbrella of ‘adventure tourism’, is also noted by Millington *et al.* (2001:4) who state that adventure tourism “can be used to describe anything from taking a walk in the countryside to taking a flight in space”. This broad spectrum of activities is not surprising regarding the subjective nature of the word ‘adventure’. Mintel International Group Limited (2003a:5), for instance, states that ‘adventure’ can be explained as “involving risk, danger, daring or a hazardous activity”. In this context, however, it is important to consider that “one person’s risk and daring, maybe another’s daily activity” (Mintel International Group Limited, 2003a:5).

**Table 1.1 Examples of Adventure Activities**

|                        |                                  |
|------------------------|----------------------------------|
| Abseiling              | Nature Trips                     |
| Arctic Trips           | Orienteering                     |
| Arduous treks          | Paragliding                      |
| Backpacking            | Rafting                          |
| Ballooning             | Rappelling                       |
| Bicycling              | Rock climbing                    |
| Bird watching          | Rogaining                        |
| Bungee Jumping         | Safaris                          |
| Camping                | Sailing                          |
| Canoeing               | SCUBA Diving                     |
| Caving                 | Sea kayaking                     |
| Climbing expeditions   | Skiing                           |
| Dog sledding           | Snorkelling                      |
| Fishing                | Snow mobiling                    |
| Four Wheel Drive Trips | Snow shoeing                     |
| Hang gliding           | Soaring                          |
| Hiking                 | Spelunking                       |
| Horseback Riding       | Survival and Wilderness Training |
| Hunting                | Trekking                         |
| Jungle Exploring       | Walking Tours                    |
| Kayaking               | White-water kayaking             |
| Motorcycling           | White-water rafting              |
| Mountain Biking        | Wilderness survival              |
| Mountain Climbing      | Windsurfing                      |
| Mountaineering         |                                  |

Source: Millington *et al.* (2001); Mintel International Group Limited (2003a); Weiler and Hall (1992); Sung, Morrison, and O’Leary (1996)

A considerable amount of research has been conducted about the market of adventure tourism worldwide. In regard to adventure tourism and associated activities, previous studies include classifications of adventure travellers (Sung, 2004); individuals’



perceptions of adventure (Weber, 2001); perceptions of client risk and risk management for Australian commercial adventure tourism operations (Morgan, 2000; Morgan and Fluker, 2003); as well as perceived risk in adventure tourism (Fluker, 2005); and accidents in the adventure tourism industry (Bentley and Page, 2001; Bentley, Page and Laird, 2001). Although research has been conducted in regard to motivations and setting preferences of adventure tourists participating in adventure tourism activities (Burke, 2002; Ewert and Hollenhorst, 1989, 1994), research related to the adventure tourism activity of SCUBA diving in the Australian context is very limited. Motivations are crucial in tourists' decisions related to travel behaviour and are strongly dependent on individuals' expectations, perceptions, experiences and the actual adventure activity they participate in.

### ***Definitions***

Before defining adventure tourism it is important to note that for tourism in general a wide variety of definitions exists, most of which include the elements of 'trip distance' and 'overnight stay' (Hall, 2003; Harris and Howard, 1996; Ewert and Jamieson, 2003). However, Swarbrooke *et al.* (2003:6), referring to the adventure tourism context, argue that "many adventures are sought and provided near to home and therefore do not involve overnight stays". This makes the applicability of the element of 'overnight stay' in the definition of adventure tourism questionable. Furthermore, the United Nations (1995, cited in Hall, 2003:13) state that "tourism refers to all activities of visitors, including both overnight and same-day visitors". Thus, for the purpose of this research only the element of travel distance will be considered. The length of the travel distance is based on distances mentioned in the broader tourism literature (e.g. Australian Government Inquiry into Tourism, 1987; Hall, 2003; Harris and Howard, 1996; House of Representatives Select Committee on Tourism, 1978) and is set at 40 kilometres.

Despite of the above-mentioned subjective nature of 'adventure' and the cited broadness of adventure tourism, a range of explanations exist that aim to define this tourism sector. The Encyclopaedia of Tourism for instance provides a general definition of what is adventure tourism:

Adventure tourism involves trips with the specific purpose of exploring a new experience, often involving perceived risk or controlled danger associated with personal challenges, in a natural environment or exotic setting (Jafari, 2000:11).

Furthermore, a commonly used definition in the literature is that of Hall (1992:143) who defines adventure tourism as

a broad spectrum of outdoor touristic activities, often commercialized and involving an interaction with the natural environment away from the participant's home range and containing elements of risk; in which the outcome is influenced by the participant, setting and management of the touristic experience.

Regarding the second definition above, the focus of this study will not be on commercialised adventure tourism where participants largely rely on and pay money to operators or service providers that organise the adventure experience for them, but rather on the non-commercialised facet of adventure tourism. Further details about the research population will be given in section 3.5.

Interestingly, despite the broad and 'ill-defined' sector of adventure tourism mentioned earlier, the two definitions cited above both contain the elements of experience, risk and natural environment. These elements, among other things, might be factors that influence adventure tourists' motivations to participate in adventure activities as well as their setting preferences regarding their activity participation.

An often-cited reason for participation in adventure tourism activities is to escape from the habitual environment into an unknown nature-based scenario (e.g. Hall, 1992; Jafari, 2000; Millington *et al.*, 2001; Mintel International Group Limited, 2003a). Physical and mental challenges within activities are considered to play a major role in this kind of action holiday (Foo and Rossetto, 1998; Mintel International Group Limited, 2003a; Swarbrooke, *et al.*, 2003). These factors, however, might not be the sole participation motives of adventure tourists. Self-actualisation, the seeking of specific settings or the need to make new experiences may be further motivations for individuals to participate in adventure tourism activities. Issues related to adventure tourism, motivation and preferences for specific activity settings are discussed in more detail in chapter two.

### **1.3 SCUBA Diving Market and SCUBA Diving Research**

In 2003, the international diving market was estimated to comprise between five and seven million active divers with rapid growth rates being experienced worldwide (Mintel International Group Limited, 2003b). In 2002, the economic value of the dive tourism industry (both SCUBA diving and snorkelling) in Australia was estimated to be worth AUD 1.6 billion with the international diving market accounting for AUD one billion and the domestic diving market accounting for AUD 547 million (Tourism Queensland, 2003b).

The growing market size of SCUBA diving in Australia and worldwide becomes evident when examining data of diver training from the Professional Association of Diving Instructors [PADI]. PADI Worldwide is a privately held corporation, has presence in over 170 countries, and offers the most widely recognised diving certification worldwide (International PADI Inc., 2005; Mintel International Group Limited, 2003b). To provide an indication of the value of PADI's data it has to be noted that some two out of every three new divers in the United States of America are PADI certified and more than one in two worldwide. Since its foundation in 1967 PADI, has issued 10,151,841 diver certifications worldwide of which 526,904 new diver certifications have been issued in 2000. In the same year, 21 per cent of PADI diver certifications worldwide were issued in the Asian Pacific region (International PADI Inc., 2005). According to Mintel International Group Limited (2005:4) the number of PADI certifications issued annually grew by almost 94 percent between 1990 and 2000, "whilst cumulative certificates grew by over 200 per cent".

Although an investigation of the data provided by PADI provides information on the growing numbers of certified SCUBA divers internationally, these data only give a partial indication of overall dive activities and diver numbers. This is because a range of organisations exist that provide diving certification. In Australia, the main organisations that provide diving certification comprise SCUBA Schools International [SSI], the National Association of Underwater Instructors [NAUI] and PADI (Tourism Queensland, 2003b; Davis and Tisdell, 1994). The numbers mentioned above relate to PADI certifications only.

Two further aspects that make it difficult to give an exact indication of overall diving numbers in Australia are mentioned in an earlier work of Davis and Tisdell (1994, referring to Wilks, 1993). Firstly, in Australia the number of so-called 'resort-dives' which are offered to tourists as an introduction to diving is growing and constitutes a significant component of the diving industry. Participation in this kind of diving requires no certification or registration, thus data on the number of people conducting these kinds of dives are not available. Secondly, Davis and Tisdell (1994, referring to Wilks, 1993) note that SCUBA certifications do not expire. Therefore, after completion of the diver's first certification, no information is available whether or not this diver remains an active diver.

Despite the difficulty mentioned above to indicate overall diving numbers in Australia, research suggests that in 2000 there were over 34,600 SCUBA divers in Australia (Australian Sports Commission, 2000) and that the number is growing. Queensland [QLD] has the largest dive tourism industry in Australia, followed by New South Wales [NSW] (Tourism New South Wales, 2001). In 2001 SCUBA diving ranked as the number one adventure tourism activity in NSW (Tourism New South Wales, 2001), and according to the Nature Conservation Council of NSW (2005) more than 800,000 people undertook snorkelling or diving activities while they were on holiday in 2003. As stated by the Nature Conservation Council of NSW (2005:10) "this suggests [that] there is a strong demand for quality diving and snorkelling experiences along the NSW coastline" which is undoubtedly also true for the coastline of QLD.

The importance of QLD as a diving destination in Australia becomes evident when considering that QLD "is a stopover for 93% of international divers visiting Australia and around 40% of domestic diving holidays in Australia" (Tourism Queensland Research Department, 2003b:1). Furthermore the strong demand of diving experiences along the QLD coastline is for instance reflected by the fact that Great Barrier Reef Marine Park, a very popular diving destination in QLD, "generates approximately \$1 billion from reef-based tourism each year" (Tourism Queensland Research Department, 2003b:1).

To date only limited literature is available which examines the SCUBA diving industry in Australia. Phillips (1992) for example investigated the status of the dive tourism industry at Byron Bay and its dependence of the Julian Rocks Aquatic reserve regarding the industry's future existence. A similar study was conducted by Doyle (1997) who examined the status of the Gold Coast's SCUBA diving industry and compared the findings with the results of

Phillips (1992). Burke (2002) investigated profiles of different reef visitor groups who experienced SCUBA diving on the Great Barrier Reef, however other research related to recreational SCUBA diving in Australia focuses mainly on environmental impacts of SCUBA diving activities (Davis, Harriott, MacNamara, Roberts and Austin, 1995; Davis and Tisdell, 1994; Harriott, Davis and Banks, 1997). To date in Australia no research has been conducted that investigates involvement, motivations and setting preferences of adventure tourists that participate in SCUBA diving. This research emphasises the importance to holistically investigate these aspects by considering the multidimensional nature of the involvement concept, which will be further discussed in chapter two. An examination of these aspects could provide valuable insights for tourism industry planners and operations as well as natural resource managers.

#### **1.4 Statement of the Problem**

SCUBA diving is an important and growing market segment of the adventure tourism industry worldwide including Australia. Understanding SCUBA divers' participation motives and their specific setting preferences is essential to more effectively satisfy divers' needs and more successfully facilitate their experiences. In other words, for future planning, and resource management of this activity, it is important to understand motivations and preferences of SCUBA diving adventure tourists that differ in their involvement in this activity.

Despite the significance of these issues, possible relationships between motivations, preferred settings and involvement in SCUBA diving have not been researched previously in adventure tourism and recreation studies in an Australian context. Moreover, to date only limited information exists about those who participate in SCUBA diving in Australia. Issues that emerge from this context and need to be investigated are related to SCUBA diving adventure tourists' socio-demographics, motivations, preferred settings and involvement. Previous studies in adventure recreation and tourism have used the concept of involvement and found it valuable as a tool for examining participants' motives and preferences in activities such as white-water boating and rock climbing (Ewert and Hollenhorst, 1994), rock climbing (McIntyre, 1991), white water kayaking (Schuett, 1991), vehicle-based camping (McIntyre and Pigram, 1992; McFarlane, 2004), bird watching

(McFarlane, 1994) and hiking (Kyle, Graefe, Manning and Bacon, 2003). However, most of these studies did not include a holistic investigation of all three aspects (involvements, motivations and setting preferences). Determining SCUBA divers' involvement and then comparing motivations and preferred settings of different involvement groups could provide valuable insights in potential relationships between these aspects. Thus, this study emphasises the need to understand adventure tourists' participation motives and preferred settings regarding divers' involvement in the activity of SCUBA diving by conducting a survey of SCUBA diving club members in NSW and QLD.

In particular the research aims to answer 'what are the foremost motives and setting preferences of adventure tourists participating in SCUBA diving' and 'are there differences in participation motives and setting preferences of SCUBA divers that differ in their activity involvement'. To answer these questions the research addresses the following aim and objectives.

## **1.5 Aim and Objectives**

The aim of this research is 'to investigate similarities and differences of involvement, motivations and setting preferences of SCUBA diving club members participating in the adventure tourism activity of SCUBA diving in Eastern Australia'. To achieve this aim the following seven objectives will be addressed:

- 1) to review literature related to adventure tourism and to discuss relevant aspects and theories in regard to involvement in adventure activities, motivations for participation and setting preferences;
- 2) to identify SCUBA diving club members' socio-demographics;
- 3) to investigate SCUBA diving club members' involvement in SCUBA diving and to segment them by their involvement;
- 4) to investigate SCUBA diving club members' motivations for participation in SCUBA diving;
- 5) to investigate SCUBA diving club members' setting preferences regarding participation in SCUBA diving;

- 6) to examine the differences and similarities between SCUBA diving club members' motivations and setting preferences by their involvement in SCUBA diving;
- 7) to develop a set of conclusions concerning socio-demographics, motivations, and setting preferences of SCUBA diving club members regarding their involvement in the activity and to provide recommendations for further research in adventure tourism.

## **1.6 Scope of the Study and Contribution**

The scope of this study is focussed on SCUBA diving club members of QLD and NSW who have undertaken at least one SCUBA diving trip within the last 12 months. Based on the broader tourism literature (Australian Government Inquiry into Tourism, 1987; Hall, 2003; Harris and Howard, 1996; House of Representatives Select Committee on Tourism, 1978; Murphy and Murphy, 2005) a SCUBA diving trip in this study is defined as a trip that involved a travel distance of at least 40 kilometres.

The survey examined the socio-demographics, dive trip characteristics and involvement of those SCUBA diving club members mentioned above in the adventure activity of SCUBA diving in order to understand their participation motives and setting preferences. The study is conscious of three limitations. These are related to the sample of divers decided upon and linked to that to generalisations, to the application of a quantitative approach for data collection in general and in this context in particular to the utilisation of a web-based survey as a means for data collection. These limitations are elaborated on in more detail in the methodology chapter (chapter three).

In conducting this study, the researcher aims to contribute to knowledge about issues related to participation in the adventure tourism activity of SCUBA diving. Firstly, the investigation of socio-demographic characteristics of divers in this study is aimed to contribute to existing yet limited information available about those who participate in SCUBA diving. Secondly, this research will provide valuable information about what motivates SCUBA divers to participate in this activity and their preferences for specific setting attributes considering their involvement in SCUBA diving. Findings from this research thus may be beneficial for natural resource managers and furthermore may

provide valuable information for commercial dive tour operations as knowledge about motivations and preferences of the pool of divers that exists might have implications for future planning and marketing of this adventure activity.

More broadly this study also contributes to an understanding of the usefulness of using *involvement* in a more holistic way to study adventure tourists and to better understand their motivations and preferences.

## **1.7 Structure of Thesis**

This thesis has five chapters. This chapter has provided the background of this research and has explained the problem to be investigated. In addition, the aim and objectives were presented and the contribution of this thesis to research in adventure tourism was outlined. The scope of this thesis was presented. Finally, an outline of the six chapters of the thesis is provided.

Chapter two explores concepts and issues relevant to participation in adventure tourism activities. In this context, motivational theories and the concept of enduring involvement are discussed. In particular, the literature review reveals the importance of enduring involvement and experience regarding participation motives in adventure tourism and recreation activities. It provides an overview of literature relating to participation in adventure activities in general, both overseas and in Australia, and of literature relating to the adventure activity of SCUBA diving in particular. The term ‘adventure tourism’ is defined and a review of categorisation approaches of this tourism sector is provided.

Chapter three describes the research methodology used for this study. It provides information on the research paradigm that this study followed, and outlines the research strategy. The sampling procedure, the methods employed for the collection of data as well as measuring instruments are presented and discussed. Finally, in this chapter the means of analysing the data are noted and ethical issues considered in this study are presented.

Chapter four presents the results of the primary data collection and provides the analysis of the findings using statistical analysis. In this context the findings that are outlined and



analysed relate to the whole sample of SCUBA diving club members involved in this research and to the clusters that were derived. The results and their analysis relate to SCUBA diving club members' socio-demographics, involvement in SCUBA diving, motivations and setting preferences.

Chapter five discusses the research findings by comparing these to previous studies identified in the literature review, interpreting the results and giving explanations for these findings. Following the structure of chapter four, firstly findings are discussed regarding the whole sample of SCUBA diving club members and secondly, regarding the clusters. Summaries of the study's findings and discussions are provided in the conclusion. Finally, this chapter provides recommendations for further research in the field of participation in adventure tourism activities.

## **CHAPTER TWO**

### **Literature Review**

#### **2.1 Introduction**

The purpose of this chapter is to provide a detailed review and discussion of previous research in adventure tourism and concepts and theories relevant to the topic. Firstly, categorisation approaches of adventure tourism that have been conducted previously are identified and discussed. Secondly, adventure tourism and recreation literature is discussed focusing on concepts related to participant involvement and experience in adventure activities. Thirdly, theories related to tourist motivation in the context of adventure tourism are outlined and discussed. Fourthly, relevant previous research that investigated adventure recreationists' preferences for specific activity settings are discussed in detail. The focus of the discussion is on setting preferences included in this study which are: environmental orientation, social orientation, preferred physical risk and equipment. Finally, key issues that emerged from this literature review are summarised.

#### **2.2 Categorisation Approaches of Adventure Tourism**

As already mentioned in chapter one, the concept of adventure tourism is very broad involving a wide range of products or people. Several approaches have been made by a number of authors to establish categories of adventure tourism (e.g. Millington *et al.*, 2001; Mintel International Group Limited, 2005; Swarbrooke *et al.*, 2003; Weiler and Hall, 1992). Swarbrooke *et al.* (2003) note that usually when the term 'adventure tourism industry' is used people often think of suppliers or consumers that are either providing or participating in activities that contain elements of adventure. These authors further argue that "[adventure tourism] can be based on product categorization, or consumer categorization" (Swarbrooke *et al.*, 2003:35).

Market research conducted by Mintel International Group Limited (2005) is a further example of an attempt to categorise adventure tourism. This market research focuses on adventure travel in Central and Eastern Europe and applies 'adventure tourism' to adventure *sports* and not to adventure *travel*. Within this context, adventure activities are

categorised in ‘extreme sports’ and ‘adrenalin sports’. The distinction between these two categories however, is described as an ‘arbitrary’ one which is often based on “popularity of an activity, the level to which it is organised and the perceived amount of danger” (Mintel International Group Limited, 2005:5). Although, not precisely defining these two categories, this market research states that the category ‘extreme sports’ take place “on a smaller scale and involve death-defying activities, like base-jumping (jumping off buildings, cliffs, bridges and antennae at relatively low altitudes with a canopy)” (Mintel International Group Limited, 2005:5), while ‘adrenaline sports’ take place “on a larger scale and can more easily be booked through local and international tour operators” (Mintel International Group Limited, 2005:7). An overview of extreme sports and adrenalin sports categorised under the umbrella of adventure tourism by Mintel International Group Limited (2005) can be seen in Table 2.1.

**Table 2.1 Examples of Extreme Sports and Adventure Sports**

| Extreme Sports             | Adrenalin Sports               |
|----------------------------|--------------------------------|
| Stunt plane                | Paintball                      |
| Stunt helicopter           | Quad biking                    |
| Bungee jumping             | Off-roading                    |
| Canyoning                  | Caving                         |
| Cliff jumping              | Potholing <sup>4</sup>         |
| Coasteering <sup>1</sup>   | Rock climbing                  |
| River bugging <sup>2</sup> | Mountain biking                |
| Scad diving <sup>3</sup>   | Scrambling                     |
| Free climbing              | Trial biking                   |
| Free diving                | White-water rafting            |
| Sky running                | Surfing                        |
| Ice climbing               | Waterskiing                    |
| Kayak surfing              | Wakeboarding                   |
| White-water kayaking       | Diving                         |
| Body boarding              | Paragliding/tandem paragliding |
| Hydrospeed/riverboarding   |                                |

<sup>1</sup> Crossing rough coastal water, climbing (and jumping from) cliffs

<sup>2</sup> Basically a one-person raft

<sup>3</sup> Freefalling around 50 feet into a safety net, sometimes done from a helicopter

<sup>4</sup> Exploration of vertical cave systems using abseiling ropes and vertical ladders as aids

Source: Mintel International Group Limited (2005)

To better understand previous studies regarding evaluations of the adventure tourism market, as well as motivations of the adventure tourist, two further classifications of

adventure tourism should be considered. These are the sub-divisions of destination-driven and activity-driven adventure tourism (Millington *et al.*, 2001; Hossain, 2004).

As for destination-driven adventure tourism, travellers are highly interested in cultural aspects and landscape of a destination which might be in a remote and bizarre area. According to Millington *et al.* (2001:6), the traveller regards “the destination [to be] the most important aspect of the trip”. Within activity-driven adventure tourism however, the activity is more in the focus of the traveller than the destination. Generally, in adventure tourism it has been acknowledged that it is the activity component which is most important (Hossain, 2004; Loverseed 1997; Wight, 1996).

Within activity-driven adventure tourism the broader adventure tourism literature frequently further distinguishes between ‘hard’ and ‘soft’ adventure tourism activities (e.g. Jafari, 2000; Millington *et al.*, 2001; Mintel International Group Limited, 2003a). Categorisation of activities is dependent on levels of risk and individuals’ experiences. Activities that contain a high level of risk and usually require advanced experience from the participant are referred to as ‘hard adventure’, whereas the term ‘soft adventure’ is used for categorising activities that require only little skills and where the level of risk is lower (Jafari, 2000; Loverseed, 1997; Millington *et al.*, 2001; Mintel International Group Limited, 2003a). Table 2.2 provides an overview of some characteristically hard and soft adventure activities.

**Table 2.2 Hard and Soft Adventure Activities**

| Hard adventure activities | Soft adventure activities |
|---------------------------|---------------------------|
| Abseiling                 | Wilderness survival       |
| Arduous treks             | 4x4 vehicle drives        |
| Caving                    | Cross-country skiing      |
| Climbing expeditions      | Cycling                   |
| Hang gliding              | Dog sledding              |
| Mountaineering            | Horse riding              |
| Rock climbing             | Sail treks                |
| SCUBA diving              | Sea kayaking              |
| Sea kayaking              | Snorkelling               |
| Snow mobiling             | Walking                   |
| White-water kayaking      | Wildlife watching         |
| White-water rafting       | Windsurfing               |

Derived from: Hossain (2004); Millington (2001); Mintel International Group Limited (2003a)

The above categorisation represents only a rough classification of adventure activities because differences in the skills required and the risk involved also exist within each single adventure activity dependent on the context in which it takes place. Nevertheless, the categorisation indicates that different adventure activities may contain different levels of risk and which adventure tourism activities generally require more skills and involve more risk. The nature of these risk levels is dependent on the participant's perception and acceptance of risk, previous experience and the real risk involved in the adventure activity. Hossain (2004) notes that, in Australia, many adventure tourism activities can be categorised as soft adventure, often involving only minimal real risk and requiring little skill or experience from the participant. However, Hossain (2004) also states that some adventure tourism activities undertaken in Australia, including SCUBA diving, are hard in nature.

Millington *et al.* (2001) point out that 'ecotourism' is a further term which has become increasingly common in the last decade but differs from adventure tourism. Ecotourism, like adventure tourism, is a subgroup of natural area tourism. The concept of ecotourism involves responsible travel or visitation to undisturbed natural areas with the objectives of studying, enjoying and conserving the natural environment (Ceballos-Lascuráin, 1996; Wearing and Neil, 1999), which is not necessarily the case for adventure travel. Although noting that adventure tourism sometimes may be classified as ecotourism and that "there is often considerable overlap" (Millington *et al.*, 2001:68) the same authors argue that adventure tourism and ecotourism are nevertheless different categories.

The above discussion revealed that there are *various* approaches within the literature to categorise the adventure tourism market and associated activities, which may be due to the broadness of this tourism segment. It was noted that activity classifications, such as 'hard' and 'soft', can only provide a rough categorisation of adventure tourism activities. This is because the context in which they take place influences activity characteristics such as the level of risk involved and skills required.

The remainder of this chapter will address the concepts of enduring involvement, motivations and setting attributes. It will discuss relevant studies from the fields of adventure tourism (independent and commercial contexts) and recreation in general and in particular studies on the activity of SCUBA diving.

Further studies on SCUBA divers have been conducted which will not be addressed in this literature review, as they did not investigate the concepts mentioned above. They did, however, include an examination of divers' socio-demographic characteristics (e.g. Taylor, O'Toole, and Ryan, 2002; Wilks, 1991a, 1991b, 1993). These studies are relevant for this research with regard to socio-demographic comparisons of divers and will be considered in the methodology chapter (chapter three) and the data analysis chapter (chapter four).

## **2.3 Involvement**

This study determined SCUBA divers' involvement in the activity of SCUBA diving through the concept of enduring involvement and experience in the activity. The subsequent paragraphs provide clarification on the concept of enduring involvement, discuss its application in previous research and place this concept in context within the current study. In this context issues related to individuals' experience in the adventure activity they participate in will also be discussed.

### **2.3.1 Enduring Involvement**

The concept of enduring involvement is based largely upon consumer behaviour literature that has concentrated on purchasing involvement which is the willingness to purchase (Schuett, 1991). Kassarian (1981), who examined the relationship between a consumer's product involvement and individual or personality characteristics, argues that a consumer's purchasing involvement influences his purchase behaviour and that diverse consumer categories or market segments can be identified which differ in their involvement. Slama and Tashchian (1985) investigated general purchasing involvement and argued that the self-relevance of certain products determines if a consumer's involvement is high or low. A consumer with a high involvement is likely to be strongly interested in the product and has much knowledge about it. A low involvement or detached consumer is said to have only minimal interest in the product and knows nothing or very little about it. However, Slama and Tashchian (1985) argue that the purchasing involvement might be influenced by numerous factors such as stage of the family life cycle, working status and income.

According to Laurent and Kapferer (1985:42), enduring involvement “derives from the perception that the product is related to centrally held values”. Laurent and Kapferer (1985) measured consumer involvement profiles on a sample of housewives using a range of household products. They argued that differences in consumer behaviour could not be captured through a single index but rather through a multiple item scale including several facets: (a) the importance of the class of the product to the individual, (b) the risk probability associated with a potential mispurchase, (c) the risk consequences associated with a mispurchase, (d) the pleasure derived from the product and (e) the symbolic value attributed to the product (Laurent and Kapferer, 1985). Laurent and Kapferer (1985) determined that consumers could be classified into groups ranging from minimal to total involvement.

Within the leisure and recreation literature enduring involvement has been studied widely (Ewert, and Hollenhorst, 1989; McIntyre, 1989; Kyle, Graefe, Manning and Bacon, 2003; Havitz and Dimanche, 1997, 1999; Robinson, 1992). It has also been broadly discussed and applied in research particularly related to adventure recreation and tourism (Ewert and Hollenhorst, 1994; McIntyre, 1991; McIntyre and Pigram, 1992; Schuett, 1991, 1993) and recreation specialization (Bricker and Kerstetter, 2000; Kyle, Bricker, Graefe and Wickham, 2004a; Kyle, Graefe, Manning and Bacon, 2004b; McFarlane, 2004; McIntyre and Pigram, 1992; Scott and Shafer, 2001). Enduring involvement, which is also commonly referred to as the *personal meaning of participation* (McIntyre, 1989, Schuett, 1991), was investigated by using a range of different terminologies such as engagement, centrality, affective attachment or commitment. Regarding the latter McIntyre (1989:171) states that commitment is seen as being identical to involvement “not only in recreation, but also in social psychology”. Although there is some inconsistency in usage of terms for enduring involvement, they all relate to the level of self-expression and enjoyment that an individual can achieve through an activity (Schuett, 1991; Selin & Howard, 1988).

Regarding outdoor recreation McIntyre (1989) argued that the personal meaning of participation could be correctly represented by the concept of enduring involvement. He investigated a sample of 347 campers with differing experience levels at three camping areas in Cooloola National Park, southeast QLD. McIntyre (1989) derived 16 items that had been used previously in research related to consumer behaviour and recreation to measure enduring involvement. Two of these sixteen items were eliminated after a pilot

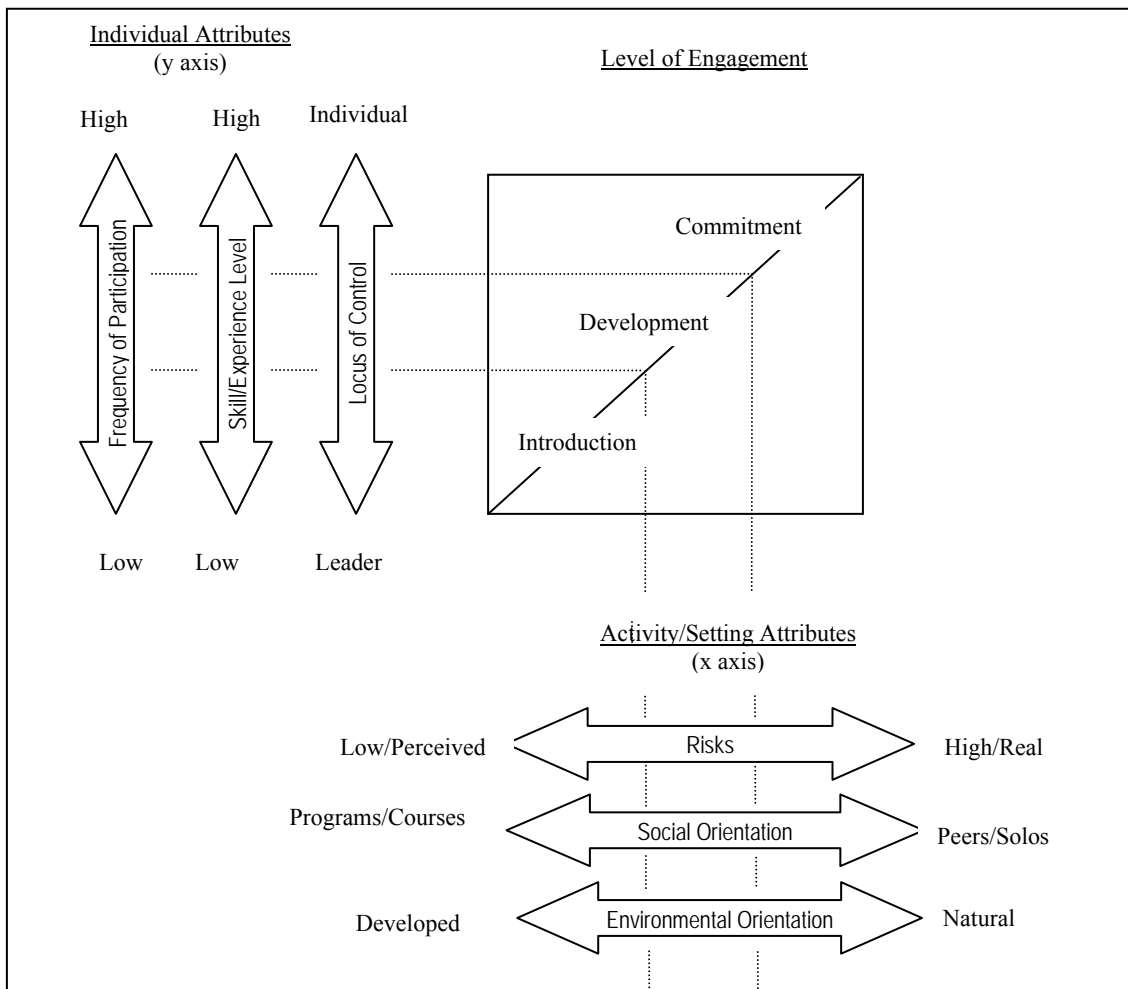
study was conducted and twelve items were included in his final analysis. The four components of enduring involvement were measured on a 5-point Likert scale. Based on earlier studies, the four components identified were: the importance an individual attaches to the activity (importance); the enjoyment derived from the activity (enjoyment); perception of self-expression through the activity (self-expression); and the central role of an activity in an individual's life (centrality to lifestyle).

McIntyre (1989) applied a Principal Component Analysis (PCA) to the 12 items used to investigate enduring involvement to describe the underlying relationships in the context of beach camping. The PCA indicated a three-component structure with eigenvalues above 1.00, explaining 54 per cent of the variance. The enjoyment component was not supported through PCA showing an eigenvalue of less than one. Subsequently, McIntyre (1989) concluded that in the context of beach camping, enduring involvement is best represented as an involvement summary comprising three components: self-expression, centrality to lifestyle and attraction. The latter component consisted of a combination of enjoyment derived from the camping and the importance an individual attached to this activity.

Ewert and Hollenhorst (1989) investigated the level of engagement of adventure recreationists in the context of the *adventure model* (Figure 2.1) on a sample of 115 students participating in a program of Outdoor Pursuits courses at the Ohio State University. The courses included the adventure recreation activities rock climbing, caving, backcountry camping and wilderness canoeing. Within the adventure model, individual and setting attributes are aggregated and present a framework from which the adventure experience can be characterized. Personal attributes in their study comprised frequency of participation, skill/experience level, decision-making, locus of control and motivation factors and setting/activity attributes were referred to as social and environmental factors. The adventure model suggested three engagement levels (introduction, development and commitment) which were based on participants' involvement levels. Engagement in their study was determined through individuals' self-reported skill and experience.



**Figure 2.1 Adventure Recreation: A Conceptual Model**



Adapted from Ewert and Hollenhorst (1989:126)

Ewert and Hollenhorst (1989) found significant differences in regard to preferred activity/setting attributes and individual attributes between participants within these differing engagement levels. Findings included that with increasing level of experience and skills, participants' desire for independence, competence and risk increased and a shift of social orientations from programs and courses towards solos and peer groups became apparent.

Concerning respondents' motivations no definite differences were found by engagement level. Due to the small sample size used, generalisations beyond the student sample were not possible. Moreover, the engagement variable as used by Ewert and Hollenhorst (1989) lacked clearness. Experience level was not only included in determining individuals'

engagement in the activity, but was also used as an independent variable. This created problems of interpretation in the attempt to understand the engagement variable. In their findings these authors suggested that for future investigations a “more comprehensive method for determining engagement level is needed” (Ewert and Hollenhorst, 1989:137).

The same authors addressed these methodological shortcomings in a similar study in 1994, which aimed at identifying the relationship between individual and setting variables by investigating a sample of independent white-water boaters and rock climbers at several sites in the United States. In this study, Ewert and Hollenhorst (1994) included enduring involvement as a measure of individual attributes which also comprised skill level, locus of control and Experience-Use History (EUH). Enduring involvement in their study was measured on a 5-point Likert scale. The major part of correlations between individual and activity/setting attributes was found to be positive. In other words, Ewert and Hollenhorst (1994:188) found that “as individual attributes become more specialised, setting preferences also become more specialised”.

Schuett, (1991:12) argued that the concept of enduring involvement as used by McIntyre (1989) is similar to engagement as applied by Ewert and Hollenhorst (1989) in the adventure model but is more precise regarding the “measure[ment] of identity and personal value associated with a product or activity”. Subsequently, Schuett (1991) tested a revised version of the adventure model in which he substituted level of engagement with enduring involvement to explain the preferences and behaviours of adventure recreationists on a sample of 584 white-water kayakers who participated in an outdoor centre kayak programme in North Carolina. Enduring involvement constituted the dependent variable, was measured on a scale previously used by McIntyre (1989) and consisted of four components: enjoyment, importance, self-expression and centrality. Independent variables investigated included frequency of participation, experience, skill level, social orientation, environmental preference, psychological outcomes, perception of risk, sensation seeking and locus of control. Findings of his study included that the level of enduring involvement was predicted by psychological outcomes, gender, skill level, and perception of risk.

McIntyre and Pigram (1992) argued that previous research related to the fields of leisure and recreation focused too much on behavioural components in measuring involvement or specialisation in recreational activities. Subsequently, McIntyre and Pigram (1992)

included measures of prior participation history and affective attachment in their study about recreation involvement of vehicle-based campers, and thus expanded on the concept of recreation specialisation proposed by Bryan (1977).

To establish a recreation involvement profile of respondents McIntyre and Pigram (1992) combined the three factors of enduring involvement (centrality, self-expression and attraction) with the components 'prior experience' and 'familiarity' which together made up what they called the recreation involvement construct. Importantly, they recognised the multidimensional nature of this construct. Therefore, they restrained from using a single summarised index to segment their sample, as frequently done in specialisation studies, but clustered the campers according to their involvement in the activity.

McIntyre and Pigram (1992:7) argued that the use of a single summarised index has advantages in simplicity, but on the other hand that "the summation process obscures the variation in individual components". To illustrate, an individual who only recently started participating in an adventure recreation activity and participates on a rather occasional basis may still be highly attracted to this activity and perceive it as an important means for self-expression. On the other hand, an adventure recreationist who has been participating in an activity frequently and for many years may not see this activity as an important means for self-expression. This potential variation in individual components is not adequately reflected if a summarised index is used.

McIntyre and Pigram (1992) found that four clusters could be derived that segmented campers in regard to their recreation involvement profile. Campers in these clusters did differ in the importance they attached to the different components of this recreation involvement construct: some viewed camping as possibility for social interaction, some viewed it as escape from the humdrum of every day life and still for others it was an important experience they enjoyed (McIntyre and Pigram, 1992). Regarding these findings, it is important to mention that camping is a low physical risk adventure activity that can be categorised as a 'soft' adventure tourism activity. The latter also applies to the adventure activities of bird watching (McFarlane, 1994, 2004) and hiking (Virden and Schreyer, 1988) as discussed later in this chapter. Results in McIntyre and Prigram's (1992) study regarding the importance participants attach to the involvement components may thus

differ when applied to a 'hard' adventure activity with a high level of physical risk, such as SCUBA diving.

Previously, Bryan (1977) suggested the concept of specialisation to investigate the potential variety of recreationists engaged in the same activity. He defined specialisation as "a continuum of behaviour from the general to the particular reflected by equipment and skill used in the sports and activity setting preference" (Bryan, 1977:175). Since Bryan's (1977) work, his conceptualisation has been applied to a wide range of outdoor and adventure recreation activities such as canoeing and white-water activities (Bricker and Kerstetter, 2000; Ewert and Hollenhorst, 1994; Kuentzel and McDonald, 1992; Wellman, Roggenbruck and Smith, 1982), camping (McFarlane, 2004; McIntyre, 1989; McIntyre and Pigram, 1992), hiking (Virden and Schreyer, 1988), rock climbing (Ewert and Hollenhorst, 1994) and bird watching (Lee and Scott, 2004; McFarlane, 1994).

Generally, it is agreed that specialisation consists of three components (behavioural, cognitive and affective) and represents a multidimensional construct (Kuentzel and Heberlein, 1992; McFarlane, 2004; McIntyre and Pigram, 1992). However, several studies have summarised the various components of specialisation in a single index, the recreation specialization index, to produce a continuum of specialisation (e.g. Bricker and Kerstetter, 2000; Kerstetter, Confer and Graefe, 2001; Virden and Schreyer, 1988; Wellman *et al.*, 1982).

The recreation specialisation index has been derived by the addition of standardised scores of the specialisation variables (frequency of participation, experience, skill) or has been designated labels such as high moderate and low (as in Hammitt, McDonald and Hughes, 1986; McIntyre and Pigram, 1992; Schreyer, Lime and Williams, 1984). Similar to McIntyre and Pigram (1992), Kuentzel and McDonald (1992:273) argue that the use of a continuum in research related to specialisation "assumes different dimensions of specialization increase in the same direction". This would imply that as individuals' experiences in an activity increase, so do their commitment to the activity, the centrality of the activity to their lifestyles and possible attitudes towards the activity also change.

Kuentzel and McDonald (1992) however, question the approach of locating individuals along a continuum by arguing that activity involvement is also influenced by factors such

as age or family obligations. The authors provide the example that while it might happen that centrality to lifestyle decreases with increasing age of a participant, experience levels might remain high. Using a continuum for measuring specialisation, this individual would be located somewhere in the middle of the index which fails to predict attitudes “that may be more like the specialized user” (Kuentzel and McDonald, 1992:273). Moreover, Kuentzel and McDonald (1992:284) concluded in their study that the lifestyle and commitment dimensions did not increase “in a linear fashion with past experience”. Their findings confirmed that the use of an additive index from general to specific for measuring specialisation, which often includes the dimension of commitment or involvement in an activity, slights the complex nature of the specialisation process.

Although, the concept of specialisation has been applied widely in the context of adventure recreation and tourism (e.g. Bricker and Kerstetter, 2000; Ewert and Hollenhorst, 1994; Kuentzel and McDonald, 1992; Lee and Scott, 2004; McFarlane, 1994; 2004; McIntyre, 1989; McIntyre and Pigram, 1992; Virden and Schreyer, 1988; Wellman, Roggenbruck and Smith, 1982), specialisation in respect of its underlying dimensions has been conceived differently by researchers. The latter has also been found by Scott and Shafer (2001) who examined how recreational specialisation is investigated by researchers. These authors stated that “there is little agreement among researchers about how best to assess specialization” and that studies have varied “considerably in terms of their inclusion of behavioural and attitudinal measures” (Scott and Shafer, 2001:325). The concept of specialisation has been applied to a very limited extent to the ‘hard’ adventure tourism activity of SCUBA diving (for an exception see Thapa, Graefe and Meyer [2005]).

As indicated earlier, a range of previous research included *involvement* as a dimension in regard to the investigation and assessment of specialisation in recreation (Table 2.3).

**Table 2.3 Previous Assessment of Involvement in the Recreation Specialisation Context**

| Author/Year                      | Context/Activity  | Assessment of Involvement |
|----------------------------------|---|---------------------------|
| Wellman <i>et al.</i> (1982)     | White-water canoeists' attitudes towards depreciative behaviour   | Index                     |
| McIntyre (1989)                  | Choice of recreation setting amongst beach campers  | Involvement Profile       |
| McIntyre (1991)                  | Participation motives of rock climbers  | Index                     |
| McIntyre and Pigram (1992)       | Recreation involvement of vehicle-based campers   | Clusters                  |
| McFarlane (1994)                 | Motivations and involvement in wildlife recreation within the context of bird watching  | Clusters                  |
| Bricker and Kerstetter (2000)    | Recreation specialisation and place attachment among white-water recreationists   | Index                     |
| Kerstetter, <i>et al.</i> (2001) | Specialisation in the context of heritage tourism on a sample of visitors at various sites along the Path of Progress, Pennsylvania   | Index                     |
| Thapa, <i>et al.</i> (2005)      | Specialisation in SCUBA diving on the relationship between marine-based environmental knowledge and environmental behaviour from a behavioural, cognitive and affective perspective | Index                     |

Reference to Table 2.3 shows that some studies used a summative index to measure participants' involvement while others used a clustering approach similar to that used by McIntyre and Pigram (1992). Some of the differing approaches to assess participants' involvement will be discussed in the subsequent paragraphs.

Wellman *et al.* (1982), in their study of white-water canoeists' attitudes towards depreciative behaviour tested Bryan's (1977) specialisation theory in regard to canoeists' involvement in the activity. Although the authors did not define depreciative behaviour well, it was implied that it is behaviour that produces negative impacts on the physical and biological resources and diminishes visitor safety and the recreational experience. These authors defined specialisation "primarily in terms of experience and involvement" (Wellman *et al.*, 1982:327). Wellman *et al.* (1982) created a specialisation index comprising behavioural components including past experience, canoeing investment and centrality to lifestyle. The study indicated that experience and involvement variables used were helpful in grouping canoeists according to their specialisation in their activity.

However, the study provided only limited support for a relationship between canoeists' attitudes towards depreciative behaviour and specialisation.

McFarlane (1994) investigated motivations and involvement in wildlife recreation within the context of specialisation on a sample of independent bird watchers in Canada. The author suggested that specialisation could be represented by the dimensions of past experience, commitment and centrality to lifestyle. McFarlane (1994) measured involvement in bird watching by ten behavioural items: equipment replacement value, number of equipment items, number of birding books, number birding magazine subscriptions, number of species on life list, identification ability, perceived skill level, personal involvement, farthest distance travelled on outings of trips in 1991, days on outings or trips in 1991.

On the basis of the three specialisation components used, McFarlane (1994) derived four clusters of 'birder types' that differed significantly in their bird watching involvement. McFarlane (1994) also found that birdwatchers in the clusters that the author termed casual, novice, intermediate and advanced, differed significantly in their primary motivations. No differences in socio-demographics were found across the four clusters except that a relatively high percentage of women were represented in the cluster of casual birders.

Importantly, by applying the procedure of a cluster analysis McFarlane (1994) recognised the multidimensional nature of the concept of specialisation. Through cluster analysis he created a profile of birder types rather than a single summative index which according to McFarlane (1994:363) "thereby recogniz[ed] the singular contribution of each component in the construct". By establishing a participant profile rather than using a single summative index he follows the above-mentioned suggestions of McIntire and Pigram (1992) regarding an adequate recognition of the multidimensional nature of the involvement construct.

Bricker and Kerstetter (2000) examined the relationship of recreation specialisation and place attachment among a sample of commercial and independent white-water recreationists in the United States. These authors included the construct of enduring involvement suggested by McIntyre and Pigram (1992) as a dimension of specialisation.

Enduring involvement in Bricker and Kerstetter's (2000) study comprised the components: enjoyment, importance, self-expression and centrality. Findings included that a relationship existed between individuals' level of specialisation and place attachment dimensions. However, in their study the application of the dimension 'centrality to lifestyle' lacked clarity. Centrality to lifestyle was included in the concept of enduring involvement but additionally investigated as a separate dimension of specialisation. Furthermore, the multidimensional measure of activity involvement was collapsed into a uni-dimensional measure and subsequently a single involvement score was calculated for each white-water recreationist. This approach of establishing a single additive index of activity involvement, however, has been previously criticised by several authors (e.g. Havitz and Dimanche, 1997, 1999; Kuentzel and McDonald, 1992) as being limited regarding the information it provides. The notion that an additive index of activity involvement provides limited information has also been supported by the findings of Bricker and Kerstetter (2000).

Scott and Shafer (2001) comprehensively reviewed outdoor recreation literature and visualised recreation specialisation as a three dimensional developmental process, with progress in the dimensions behaviours, skills and knowledge and commitment. In measuring the behaviour dimension they indicated that researchers employed indicators including: years of experience, frequency of participation, the number of sites visited (e.g. rivers), type of equipment used, equipment investment and ownership, number of activity-related books purchased and owned, investment and distance travelled to participate in a specific activity.

With regard to skills and knowledge dimension, Scott and Shafer (2001) argued that development of skills and knowledge represents a suitable indicator for measuring progression. However, they conceived skill development and knowledge as "being a unique dimension of progression and conceptually distinct from past experience" (Scott and Shafer, 2001:328). Finally, these authors argued that progression regarding involvement in outdoor recreation activities may also be measured by commitment. Scott and Shafer (2001:329) refer to commitment as "the types of personal and behavioural investments that recreationists may develop over time" or in other words the extent to which an activity is a recreationists' central life interest. Centrality to lifestyle is also investigated in this study as one component of enduring involvement.



Kerstetter, *et al.* (2001) explored the specialisation concept in the context of heritage tourism on a sample of visitors at various sites along the Path of Progress in Pennsylvania. These authors measured specialisation by three sub-dimensions: past experience, involvement/knowledge and investment. Involvement in their study was assessed by four items related to visitation of other heritage routes and knowledge about the sites visited. They segmented three groups of heritage specialists (low, medium and high specialisation) which significantly differed in their visitation behaviour and motivation. They also found significant differences in level of education and overall satisfaction. Not significant at the .05 level were variables related to level of income, gender, age, nights spent in region, distance travelled, authenticity index and the impact of others on overall enjoyment. The approach of using an additive specialisation index, as used in Kerstetter *et al.*'s (2001) study to measure activity involvement, has been identified previously (e.g. Bricker and Kerstetter, 2000; Kuentzel and McDonald, 1992) as being limited in regard to the information it provides.

McFarlane (2004) investigated recreation specialisation in regard to site choice of vehicle-based campers on unmanaged (no facilities and services) and managed sites in Canada. As for specialisation variables, McFarlane (2004) included behavioural measures (camping experience, familiarity with site and experience with campground types), cognitive measures (general outdoor skills) and affective measures (enduring involvement). Enduring involvement was measured based on the three dimensions (attraction, centrality and self-expression) identified by McIntyre and Pigram (1992). McFarlane (2004) found that a relationship existed between the behavioural, cognitive and affective dimension of specialisation and the choice of campground type. Campers at unmanaged sites were found to have higher centrality scores, were more experienced with unmanaged sites, had greater familiarity with the site, and generally had higher bush skills than those recreationists camping at managed sites. Based on the findings, McFarlane (2004) suggested that the concept of specialisation is a valuable tool in predicting impacts of modifications in recreation opportunities on recreation behaviour in provincial recreation areas.

In the context of SCUBA diving in North America, Thapa, *et al.* (2005) explored the influence of specialisation in SCUBA diving on the relationship between marine-based environmental knowledge and environmental behaviour from a behavioural, cognitive and affective perspective. In their study an additive specialisation index was used for all

specialisation items. As discussed above, previous studies found that this approach of creating a summative specialisation index provides only limited information regarding an individual's activity involvement (Bricker and Kerstetter, 2000; Kuentzel and McDonald, 1992).

The behavioural dimension in Thapa *et al.*'s (2005) study was measured by five items related to respondents' experience and frequency of participation. The cognitive dimension included six items related to self-reported skill-level and certification levels. The affective component was measured by six items including four enduring involvement items based on McIntyre and Pigram's (1992) study. These were: 'diving is one of the most enjoyable things I do'; 'diving is very important to me'; 'diving says a lot about who I am'; and 'I find that a lot of my life is organized around diving'. No rationale was provided in Thapa *et al.*'s (2005) study why only these four items of enduring involvement were included to measure the affective component. In addition, two further items were used that related to centrality to lifestyle. The latter had also been included in previous research as a dimension of enduring involvement (e.g. McIntyre, 1989, McIntyre and Pigram, 1992). Findings revealed that SCUBA divers with higher specialisation levels appeared to have "stronger marine-based environmental knowledge" and also reported "more proenvironmental behaviours" (Thapa *et al.*, 2005:65). These findings suggest that differing activity involvement has an influence on behavioural characteristics on SCUBA divers. Differences in activity involvement may also have an influence on divers' motivations and setting preferences.

In summary, the concept of enduring involvement has been applied widely in research related to adventure tourism and recreation, including, but not limited to studies examining recreation specialisation. Although some inconsistency was found in regard to the terminology of enduring involvement and its operationalisation, previous research has shown that it is a useful concept for measuring behaviour and preferences of adventure recreationists.

This current study aims to contribute to a better understanding of motivations and setting preferences of outdoor adventure recreationists in Australia. The focus is on the adventure tourism activity of SCUBA diving which is investigated using a sample of SCUBA diving club members in QLD and NSW. SCUBA divers participating in this research are

segmented based on their involvement in SCUBA diving. In this context, the current study uses divers' experience in SCUBA diving and also includes the concept of enduring involvement in order to derive clusters of respondents that differ in their experience with, and involvement in, SCUBA diving. Possible differences in motivations and preferred setting attributes of these sub-groups are investigated.

Enduring involvement in this study was measured by 12 items adapted from McIntyre's (1989) study on campers as will be further explained in chapter three. As discussed these items were subsequently used by several studies in the context of adventure recreation (e.g. Bricker and Kerstetter, 2000; Ewert and Hollenhorst, 1994; Kyle *et al.*, 2004a; McFarlane; 2004; McIntyre and Pigram, 1992; Schuett, 1991).

To this author's knowledge, the concept of enduring involvement has not previously been examined in the context of SCUBA diving in Australia. The approach of clustering outdoor recreationists on the basis of their experience and activity involvement has been used previously by McIntyre and Pigram (1992) and McFarlane (1994) as already discussed above. Through the approach used in this study, which is establishing a cluster profile according to activity involvement and experience, it is suggested that the multidimensional nature of the recreation involvement construct is appropriately recognised.

The above discussion revealed that the variable of experience is frequently included in research related to participation in adventurous activities particularly in combination with the concept of enduring involvement. The discussion also revealed that the element of experience might influence adventure recreationists' motivations to participate in a particular activity and thus their behaviours and preferences regarding this activity. Additional studies in adventure tourism that investigated experience of participants in relation to concepts like motivations, perceptions of adventure and risk are considered in the subsequent section of this chapter.

### **2.3.2 Experience**

Several studies found that whether the adventure tourism participant perceives the outcomes of an adventure as positive or negative depends on the participants' expectations, the level of previous experience and perceptions of risk (Fluker and Turner, 2000; Morgan, 2000; Ryan, 1998). In regard to this, a study by Morgan (2000) about adventure tourism activities in New Zealand investigates how risk is assessed by adventure tourism operators and why that risk is accepted by clients. Importantly, in regard to participants' experiences he argues that "the operator should also consider the perceptions of risk held by the relatively less experienced participants in the adventure tourism activity, as these perceptions will have a determining influence on clients' adventure experiences" (Morgan, 2000:80).

Morgan (2000:79) argues that negative experiences like "narrow escapes, mishaps or unforeseen accidents" not only could result in psychological or physical damage to participants' health but might also have a negative impact on adventure operators (loss of reputation) or even the wider adventure tourism industry. This is particularly important to be considered in the market sector of adventure tourism where both the operator and the client are directly involved with the element of risk or risk-taking activities and accidents, including fatal accidents, sometimes occur.

In regard to experiences of participants in adventure activities, Fluker and Turner (2000) investigated the needs, expectations and motivations of a commercial white-water rafting experience. A survey of participants was conducted before and after rafting and a separation was made between participants with and without prior rafting experience. This research found differences in motivations of participants with prior experience who "tend to be more relaxed, have more realistic expectations", like socialising or enjoying the natural environment, and those without prior experience who "tend to focus on (...) seeking a new experience and exploring adventure alternatives" (Fluker and Turner, 2000:387).

The level of experience in an activity may not only be an influencing factor regarding motivations but might also influence participants' risk-taking behaviour. In this context, Sung (2004:345), who categorised North American adventure travellers with regard to traveller characteristics, trip-related factors in the decision-making process and perception

of adventure travel, believes that “the degree of risk taking appears to have a positive correlation with the level of experience and skill of the participant”. Sung (2004) further argues that performance in adventure travel is constantly linked to the participants’ skill level. Thus, consideration of experience and skill levels are of significance when conducting research into motivations and setting preferences of adventure tourists.

In summary, the variables of previous or prior experience and/or skill levels have been included in the majority of research related to participation in outdoor recreation and adventure tourism activities (e.g. Ewert and Hollenhorst, 1989; 1994; Fluker, 2005; Fluker and Turner, 2000; McFarlane, 2004; McIntyre, 1989; McIntyre and Pigram, 1992; Morgan, 2000; Ryan, 1998). Experience has for instance been measured as: a participant’s familiarity with the activity (Cheron and Ritchie, 1982), activity involvement (Ewert and Hollenhorst, 1989), experience use history (Ewert and Hollenhorst, 1994), frequency of participation (Davis, 1997; Schuett, 1991) and as a dimension within the context of recreation specialisation (Bricker and Kerstetter, 2000; Kerstetter, *et al.*, 2001; McFarlane, 2004; Scott and Shafer, 2001).

This current study measured respondents’ experience levels in a multidimensional manner comprising five variables: frequency of participation, self-reported skill level as a SCUBA diver, years SCUBA diving, highest SCUBA diving qualification/certification and whether respondents have any additional SCUBA diving qualifications/certifications such as speciality courses. Using a multidimensional approach to measure experience provides more detailed information about an individual’s experience in SCUBA diving than compared to utilisation of a single item measure. The experience variables used in this research are further discussed in chapter three (section 3.8.1.1).

## 2.4. Tourist Motivation and Adventure Tourism

According to Swarbrooke *et al.*, (2003:67), “consumer motivation is important in all forms of tourism, including adventure tourism” as it explains decision making processes and reasons for tourists’ behaviour “both before and during their holidays”. Swarbrooke *et al.* (2003) further state that due to the diversity of the profile of adventure tourists, the latter pursue adventure to actualise a range of different motivations. As mentioned earlier, in the context of adventure tourism the meaning of the term ‘adventure’ is highly subjective, thus individuals’ perceptions of adventure may vary considerably regardless of the market segmentation and activity classification mentioned above. Motivations of adventure tourists are therefore also likely to be diverse and complex.

To examine the motivations of adventure tourists, it is necessary to clarify the term ‘motivation’ and place it into a tourism context.

Motivation in a tourism context is related to the reasons why people travel which according to Jafari (2000:393) “is probably the most fundamental issue in tourism research today”. Tourist motivation is related to the decision-making process and to the explanation of individuals’ behaviours before as well as throughout their holidays. Swarbrooke *et al.* (2003:66) argue that

individuals’ motivations reflect their inner needs and push them to seek out holiday experiences that will bring satisfaction. People are intrinsically motivated to enjoy holidays and other forms of leisure for many divergent reasons, including relaxation, prestige, socializing, personal development, a desire for something different, excitement, adventure, experiencing different cultures/ways of life, meeting people with similar interests and intellectual enrichment.

The decision-making process and motivations to actually participate in adventure tourism are influenced by so called ‘push’ and ‘pull’ factors which create travel behaviour (Foo and Rosetto, 1998; Mansfeld, 1992; Swarbrooke *et al.*, 2003).

Push factors in this context are related to the individual’s inner needs to take part in adventure. Mansfeld believes that (1992:401) “the tourist is first motivated by given ‘push

factors' (e.g., the boredom of daily life, health problems, the need for relaxation, business) to take a vacation". Pull factors in the adventure tourism sector are related to particular natural resources and scenarios, in the broader sense to the characteristics and attractiveness of a destination, which motivate individuals to travel or participate in adventure tourism (Foo and Rosetto, 1998).

According to Uysal and Jurowski (1994:844), pull factors include "both tangible resources, such as beaches, recreation facilities, and cultural attractions, and travellers' perceptions and expectations, such as novelty, benefit expectation, and marketing image". In their motivational study Uysal and Jurowski (1994) investigated the nature and common features of push and pull factors in the context of pleasure travel and determined that a relationship exists between push and pull factors. These authors suggest that tourist motivation and the attributes of a destination, if examined at the same time, could be useful for tourism planners in the marketing and promotion of a tourist destination as well as contributing to the decision making process of destination development. This study follows Uysal and Jurowski's (1994) suggestion and investigates both SCUBA divers' motivations and setting preferences simultaneously by aiming to provide insights for future development, marketing and structuring of this adventure activity.

Various explanations exist as to why individuals participate in adventurous activities. Motivational theories propose that intrinsic benefits of adventure or rewarding experiences can occur. Martin and Priest (1986), for instance, developed the adventure experience paradigm which aims to describe participant's behaviours based on the interaction of risk and competence. The adventure experience paradigm was based on previous work of Mortlock (1984) and Csikzentmihalyi (1975). Mortlock (1984:23) argued that an outdoor journey consisted of four broad stages: "play, adventure, frontier adventure and misadventure" which progress from low to high environmental challenge. Mortlock (1984) also stated that these four stages overlap and no clear boundaries define them. Csikzentmihalyi (1975) introduced the *concept of flow* which described that the relation between challenges and skills in an experience can either lead to anxiety, boredom or, if perfectly matched, to a *flow experience*. Csikzentmihalyi and Csikzentmihalyi (1991:150) explain that *flow*, in this context "describes a state of experience that is engrossing, intrinsically rewarding and outside the parameters of worry and boredom".

The adventure experience paradigm, as suggested by Martin and Priest (1986), consists of five stages of an outdoor journey: exploration and experimentation; adventure; peak adventure; misadventure; and devastation & disaster. Martin and Priest (1986) argue that participants attempt to achieve the intrinsically rewarding condition of 'peak adventure' which is reached when the two components of risk and competence are balanced and matched. The stage of 'peak experience' is similar to the above-mentioned concept of flow suggested by Csikszentmihalyi (1975), where a flow experience results when a participants' skills are completely matched with the environment (Martin and Priest, 1986). Another motivational theory that suggested that intrinsically rewarding experiences such as 'peak experience' and 'self-actualization' can occur was previously suggested by Maslow (1968) who created the widely discussed hierarchical system of human motivation.

Adventure activities can be described as activities that engage risk-taking, even danger, and are challenging. Physical and mental challenges within activity programs offered by adventure tour operators all over the world regularly play a major role in this kind of action holidays (Foo and Rossetto, 1998; Mintel International Group Limited, 2003a; Swarbrooke, *et al.*, 2003). In this context, Mintel International Group Limited (2003:3a) states that participants in adventure tourism activities "... are usually in search of an element of challenge and self-fulfilment during their leisure time". However, motivations of adventure tourists such as the drive for the ultimate adventure or challenge may not be the sole factors within the decision making process. Social interaction, personal development, self-actualisation, the need to make new experiences or escaping the 'humdrum' of every day life into an unknown nature-based scenario may be further motivators for participation in this type of holidays, as it is often adventure activities that offer the opportunity to develop those aspects.

Given that most adventure tourism activities require high levels of active participation from the participant, Swarbrooke *et al.* (2003:59) recognise that "it [adventure tourism] can result in the ultimate in escapism from daily life". These authors further argue that this feeling of escapism is linked to the phenomenon of 'peak experience' many adventure tourists "thrive for and thrive from" (Swarbrooke *et al.*, 2003:59).

Motivations for participation in adventure tourism and recreation activities have been widely researched in the past in the context of river use specialisation (Kuentzel and



McDonald, 1992), rock climbing (McIntyre, 1991), mountaineering (Carr, 2001; Ewert, 1985, 1993), commercial white-water rafting (Fluker, 1998; Fluker and Turner, 2000), kayaking, rafting and angling (Thapa, Confer and Mendelssohn, 2004), bird watching (McFarlane, 1994) and SCUBA diving (Burke, 2002; Cottrell and Meisel, 2003; Davis, 1997; Ditton and Baker, 1999; Howard, 1999; Todd, Graefe and Mann, 2001; Wilks, 1992).

Many of the above mentioned studies have included an investigation of participants' motivations related to their previous experience or involvement in the respective activity. The majority of research regarding activities that may vary in the levels of risk involved, found differences in motives for participation between participants who differed in their experience levels. As previously discussed, some studies revealed that dimensions of involvement do not necessarily increase in a linear fashion with an individual's higher level of experience in an activity. The subsequent paragraphs discuss studies which included an examination of motivations in relation to participants' experience and involvement.

McIntyre (1991) investigated involvement and motivations of risk recreationists on a sample of independent rock climbers at various sites in Eastern Australia. Involvement in his study was measured by variables related to climbing experience, importance of climbing in comparison to other outdoor activities, perceived importance of rock climbing, equipment owned and important attributes of climbing sites. He suggested that as an individual's involvement in this activity increases, perceptions of the recreational experience including motivations might also change. McIntyre (1991) used a 5-point Likert scale to measure 16 motivational items adapted from an earlier study on mountaineers in the United States conducted by Ewert (1986). Applying a factor analysis on these items, six factors with eigenvalues in excess of one were extracted which the author termed: recognition, problem solving, physical setting, competence, escape and leadership.

Findings revealed that motivations related to the physical setting (enjoy wilderness, close to nature) were ranked most important by rock climbers followed by motivations related to competence (experience excitement, develop skills and abilities, test myself, accomplishment). With respect to climbers' involvement in rock climbing McIntyre (1991) found that highly involved climbers placed significantly more importance on motivations

related to competence, relaxation and problem solving than their less involved counterparts. Findings also revealed that motivations related to the factor 'escape' (relieve stress, let my mind slow down) most efficiently separated the lesser involved climbers from those that were more involved with the latter attaching relatively more importance on the escape factor. In contrast to McIntyre's (1991) results are the findings that were revealed in an earlier study by Ewert (1985) which involved mountain climbers. He found that for inexperienced mountain climbers, motivations related to escape and social activities were more important than for those with greater experience in mountain climbing. However, different approaches were used in Ewert's (1985) and McIntyre's (1991) study to determine participants' experience in climbing, which makes further direct comparisons difficult.

Carr (2001) investigated a sample of commercially guided climbers in New Zealand in regard to their motivations to participate in mountain climbing and their experiences. She found that guided climbers were primarily motivated by physical enjoyment of the alpine environment, skill development, adventure and challenge. Least important motivators were social reasons such as 'to meet new people', 'to be with friends/family' and to participate in climbing for status/prestige. Similar to McIntyre (1991), who found that motivations of more and less involved climbers differed, Carr's (2001) findings revealed differences in inexperienced and experienced guided climbers. The latter were more motivated by social interaction such as 'relaxation' and 'meeting people/making friends' than their less experienced counterparts.

In the context of bird watching specialisation McFarlane's (1994) study, which has been discussed previously, found that significantly different primary motivations existed between birdwatchers across levels of birding specialisation or expertise in the activity. His findings revealed that advanced birdwatchers were primarily motivated by achievement, casual birdwatchers had an appreciative orientation, and novice and intermediate birdwatchers a conservation orientation (McFarlane, 1994).

Kuentzel and McDonald (1992) investigated how multiple dimensions of specialisation affect motives of independent river users on the Ocoee River, Tennessee. To this end they used three specialisation dimensions (commitment, past experience and lifestyle) and 16 motivational variables. The latter reflected motivations such as nature appreciation,

action/excitement, physical fitness, social interaction and additionally some site specific motivations. Findings revealed that the past experience dimension which was measured by years of experience, total number of river trips made, number of different rivers paddled and perceived skill was negatively correlated with risk and excitement. Those river users with a high level of past experience were mainly motivated by the proximity of the river to their home and the desire for a physical workout. The commitment dimension, measured through equipment expenditures, club memberships and frequency of participation, however, was positively correlated with risk and excitement. Kuentzel and McDonald (1992) found that those scoring high on the commitment dimension, were mainly motivated by social aspects, risk and excitement, fitness and skill development. The lifestyle dimension, which was measured through importance of the activity, percent of leisure time spent river running and develop one's skills was found to be only marginally associated with motives. These findings support the notion that specialisation and involvement are multidimensional concepts and thus, a single additive index for measuring these constructs may not adequately reflect the complexity of these concepts, as already mentioned in section 3.1.

Fluker and Turner (2000), as discussed previously, analysed expectations, needs and motivations of white-water rafters with and without prior commercial white-water rafting experience in Australia. These authors found that motivations of participants with previous rafting experience were significantly different than those of rafters without prior experience. Findings revealed that the latter group differed most significantly in motivations that are exploratory in nature or as Fluker and Turner (2000:385) state these rafters are motivated by “an urge to explore alternative experience that may satisfy their antecedent ‘seeking a new experience need’”. In contrast, those with prior experience were found to be mainly motivated by enjoyment of the activity, social interaction and to be in the natural environment.

These findings are comparable to those revealed in Carr's (2001) study who in the context of commercially guided mountain climbers also found that experienced climbers were more motivated by social interaction than inexperienced climbers. Based on their findings, Fluker and Turner (2000) suggested different marketing approaches adjusted to rafters with and without prior experience for an effective segmentation of the white-water rafting market.

Concerning the adventure activity of SCUBA diving, to date research about motives for participation is still limited. Studies that included motivational aspects mainly focused on a particular diving destination for instance Vanuatu (Howard, 1999), artificial reefs in Texas offshore waters (Ditton and Baker, 1999) the Medes Islands on the Catalan Mediterranean coast (Mundet and Ribera, 2000), Sipadan (Musa, 2002), the Florida Keys (Cottrell and Meisel, 2003) and New York State divers (Todd, *et al.*, 2001).

In the Australian context, fewer studies have included investigations of SCUBA divers' motivations. Examples include the Australia-wide surveys of individual recreational SCUBA divers by Davis, Banks and Davey (1996), and Davis (1997) as well as the destination specific studies of Wilks (1992) and Burke (2002) that focused on the area of the Great Barrier Reef. In addition, studies were conducted that examined the dive tourism industry along the East Coast of Australia (e.g. Doyle, 1996; Phillips, 1992). The latter two studies however, did not include participants' motivations in their investigation.

Importantly, some of the above-mentioned studies did not investigate SCUBA diving in the context of adventure tourism and therefore did not include an investigation of certain motivational aspects such as adventure, risk and challenge (Burke, 2002; Mundet and Ribera, 2000; Musa, 2002). Moreover, to this author's knowledge, an investigation of divers' motivations and setting preferences with consideration of their involvement in SCUBA diving has not been conducted previously in the Australian context. The preceding discussion revealed that individuals' participation motives and setting preferences may change with varying levels of involvement and experience. The current study aims to contribute to lack of research regarding SCUBA divers' motivations and setting preferences in Australia. An examination of these aspects provides a deeper understanding of the attitudes and behavioural aspects of differently involved SCUBA divers. Furthermore, this will provide information about possible market segmentation approaches of this adventure tourism sector and suggest further research in this field. The following paragraphs discuss previous studies that examined SCUBA divers' motivations in different contexts in more detail.

Davis (1997), who reported on the development and nature of recreational SCUBA diving in Australia, asked individual SCUBA divers why they first learned to dive. Findings revealed that the most important reasons why respondents first learned to dive were related

to underwater attraction such as interest in marine flora and fauna and to adventure. Motivations associated with relaxation, social interaction and image of the sport of diving represented the least important reasons. Similar findings were reported previously by Wilks (1992) who questioned people about their reasons for conducting an introductory dive on the Great Barrier Reef. It appeared that the main reasons given by those respondents were associated with wanting to see the reef close up and the challenge of a unique experience. Although this current study does not investigate the reasons why participants first learned to dive, the aforementioned aspects may also be important motivators for diving participation of survey respondents in this research.

Howard (1999) in his article provided an overview of the SCUBA diving operations in Vanuatu. He investigated how the industry minimised its impact on the environment by utilisation of operator and diver surveys. A sample of 104 divers were surveyed on-site and questioned on their satisfaction with the operations, their motivations for diving as well as preferences for dive sites. Howard (1999) found that most divers were motivated by the urge to view spectacular natural scenes but also by motivations related to relaxation and experiencing something new. In contrast, motivations concerned with physical fitness and social interaction were ranked least important by divers visiting Vanuatu. However, motivational aspects for participation in diving such as adventure, challenge and risk-taking were not considered in Howard's (1999) study. The aforementioned aspects might be important motivators for SCUBA divers, particularly in the context of adventure tourism, which is the focus of this study.

A report by Burke (2002), which was conducted as part of a CRC Reef Research Centre research project, investigated tourists who experienced SCUBA diving on a particular region in Australia, namely the Great Barrier Reef. In this context profiles of predetermined groups of divers (certified, introductory, reef day trip and live-aboard divers) were presented. Although this report provides only a descriptive analysis of divers' motivations, similarities in motivations of the different diver groups<sup>1</sup> can be observed. The motivation that ranked top within all groups was 'to experience the beauty of nature'. Further dominant motivations were related to skill development, experiencing something new and different, as well as experiencing an undeveloped environment. In contrast,

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<sup>1</sup> no motivational aspects were presented for reef day trip divers in the report

motivations that were related to getting physical exercise and social interaction were least important to those divers. Similar to Howard's (1999) research, motivational aspects related to adventure, risk and challenge, were not considered in Burke's (2002) study.

Ditton and Baker (1999) investigated economic impacts of sport divers that use artificial reefs in offshore Texas Water. Sport divers in these authors' study were referred to as those divers who "used offshore waters adjacent to the Texas coast" and who take dive charter boat trips (Ditton and Baker, 1999:2). In this context, they examined diver clientele regarding socio demographics, management preferences and expenditures and also motivations and involvement in SCUBA diving. Involvement in the activity of SCUBA diving was determined through aspects such as membership in dive clubs or organisations, number of years as a certified diver, importance of diving in regard to other outdoor recreation activities and number of dive trips undertaken within the last 12 months. Divers' involvement in SCUBA diving was assessed to characterise divers according to their diving patterns or in other words for descriptive purposes of the diver clientele.

Ditton and Baker's (1999) study did not relate the involvement of participants with the other concepts they investigated, including motivations or management preferences. As discussed previously, past research in various adventure outdoor recreation activities has shown that motivations differ significantly between differently experienced participants. Motivations to participate in SCUBA diving as well as behavioural patterns of divers might also be influenced by an individual's involvement and experience level. Thus, relating these concepts may provide new insights into divers' motivations and activity/setting preferences.

Ditton and Baker (1999) used 15 items to measure sport divers' motivations. Findings of the study revealed that the most important reasons for going diving were 'to look at fish and other aquatic life', 'to experience tranquillity underwater', 'to experience adventure and excitement', 'for relaxation' and 'to experience new and different things' which were all ranked very or extremely important by participants. Similar to the findings of Howard (1999), divers in Ditton and Baker's (1999) study indicated that physical exercise and social interaction (being with friends; family recreation) were only moderately or slightly important motivators for going diving on their last dive trip. The least important reason for

going on a diving trip was spear fishing which was ranked as 'not at all important' by 68 per cent of the sample.

Todd, *et al.* (2001) argued that SCUBA divers' motivations might differ by their level of development. The authors conducted a survey of active and inactive New York State SCUBA divers and examined their level of development in relationship to their motivations to dive. Level of development was operationalised as a single measure comprising the self-rating categories beginner, intermediate, advanced, expert and post-expert. Todd *et al.* (2001:108) hypothesised that with increasing level of development and experience divers' motives would differ in such a way that the importance of intrinsically rewarding motivations (i.e. challenge, adventure and learning) "would increase from beginners to experts" and more extrinsically-related motives (i.e., stature, escape and social interaction) would "decrease from beginners to experts". Twenty-four motivations for diving participation were extracted from a precedent qualitative data collection and were measured on a 5-point Likert scale.

Most important motives for divers in Todd *et al.*'s (2001) study, regardless of development levels, were related to the diving environment (e.g. to look at underwater animal and plant life) and the thrill of diving itself (e.g. 'because it is stimulating and exciting' and 'for the adventure of it'). The top ranked motives in Todd *et al.*'s (2001) research were similar to the above-mentioned findings of Ditton and Baker (1999), where looking at fish and aquatic life and experiencing adventure and something new were ranked very important by divers. Not important motivations for divers in Todd *et al.*'s (2001) study were related to risk-taking, showing off and collecting artefacts. Six motivation factors emerged as the result of a factor analysis which was conducted to reduce the motivational items. Todd *et al.* (2001) labelled these factors personal challenge, stature, escape, learn, adventure and social interaction and compared these factors with divers' level of development using a one-way analysis of variance.

Todd *et al.* (2001) found that not all motives within a factor category differed significantly by divers' level of development. Their findings however, revealed that divers with a higher level of development participate in diving for diverse reasons, attaching less importance to social interaction and personal challenge and more importance to stature, learning, adventure and escape. Beginners however, scored lower on all motivational themes except

for personal challenge items. Based on a somewhat complex structure of divers' motivations in regard to development levels, these authors concluded that "diving is a unique type of leisure activity in terms of motivation" (Todd *et al.*, 2001:112). The 24 motivational items used by Todd *et al.* (2001) were adapted and complemented by one additional item in this current study for the investigation of SCUBA divers' motivations. A complete list of these items is provided in chapter three (section 3.8.2).

Cottrell and Meisel (2003) examined predictors of personal responsibility for the protection of the marine environment among SCUBA divers in the Florida Keys, North America. They argued that responsible environmental behaviour might, among other things, be affected by an individual's personal interest in or commitment to an activity which in turn is influenced by motivations to participate. Therefore, part of their study comprised an examination of motives. They included a total of 28 motivational items. Twenty-two items were adapted from Todd *et al.* (2001) and complemented by the following six motivations: 'because of the sense of discovery involved', 'for fun', 'to forget the pressures of my daily work for a while', 'to experience the tranquillity here', 'to be with others who enjoy the same things I do' and 'for a chance to control things'. A factor analysis was conducted on the motivations which, like Todd *et al.* (2001), revealed six factors, which explained 60 per cent of the variance. These six factors were labelled: diver experience, skill, escape, interest, social and personal challenge. Findings revealed a complex structure of diving motivations with five variables each loading on two factors. Although labelling of the factors was similar to Todd *et al.*'s (2001) study, item loadings on some factors was quite different, which makes direct comparisons difficult. For example the personal challenge factor in Cottrell and Meisel's (2003) study included two items, whereas in Todd *et al.*'s (2001) study it comprised six items. Only one of those items ('because of the risk involved') emerged in the personal challenge factor of both studies.

For each of the six factors that emerged in Cottrell and Meisel's (2003) study, a scale mean was calculated to indicate their order of strengths. These authors found that the factor which they termed *personal challenge* was the weakest and least important for the sample of divers involved in their study. Motives related to the *diver experience* factor were the most important. Cottrell and Meisel (2003) did not provide information about SCUBA divers' importance ranking for each motive separately, which means that direct



comparisons to above studies in this regard are not possible. The study revealed that four of the six motivation indices were correlates of personal responsibility, which according to Cottrell and Meisel (2003) supports the theory that motivations for an activity relate to the participant's expected outcomes and thus affect a specific behaviour. The study did not attempt to differentiate between motivations of divers with varying levels of experience. Level of experience in their study *was* measured, but only as a specific background variable for the investigation of personal diver responsibility.

The above discussion reveals that motivations for participation have been widely researched regarding a variety of adventure tourism and recreation activities. Some studies found that motivations change with individuals' varying experience levels or involvement in an activity (e.g. Carr, 2001; Fluker and Turner, 2000; McIntyre, 1991). Differing motivations for participation might also influence specific activity settings sought by the participant. Thus, for a deeper understanding of individuals that participate in adventure tourism activities such as SCUBA diving, it is essential to investigate jointly motivations and settings preferences and to also consider individuals' experience and involvement in the activity. With respect to SCUBA diving, studies have been identified which included the component of activity involvement in their investigation (Cottrell and Meisel, 2003; Todd *et al.*, 2001). One study (Todd *et al.*, 2001) on SCUBA divers in North America was identified that related activity involvement to participation motives.

In the Australian context, a limited number of studies have been conducted that examined divers' motivations. Examples include investigations into why people first started diving (e.g. Davis, 1997; Wilks, 1992) and motivations of Great Barrier Reef visitors that experienced SCUBA diving at this location (Burke, 2002). As mentioned previously, none of these studies considered a jointly investigation of SCUBA divers' involvement, motivations and setting preferences in the context of adventure tourism in Australia. This current study addresses this research gap by an inclusion of all of these aspects in its examination and thus aims to contribute to research in the field of adventure tourism and recreation, with a focus on SCUBA diving in Australia.

## **2.5 Setting Preferences**

In the broader adventure recreation and tourism literature the preferences for specific activity settings or the context in which the individual participates in an adventure activity are commonly referred to as *setting preferences*. Measurements for the latter frequently include aspects related to an individual's environmental and social orientation, types and levels of risk sought and importance of equipment. These aspects were included in this study and their application will be explained later in chapter three. The following sections consider how setting preferences have been examined in previous research and discuss relevant findings.

### **2.5.1 Environmental Orientation**

Environmental orientation in adventure recreation research is commonly used as an umbrella for participants' preferences regarding naturalness on the site where the activity takes place or participants' attitudes towards the amount of development (e.g. man-made structures such as buildings, facilities, etc.) present at a site. A number of studies have investigated environmental preferences of adventure recreationists, including wilderness recreationists (Knopp, Ballman and Merriam, 1979), backcountry hikers and backpackers (Virden and Schreyer, 1988), white-water kayakers (Schuett, 1991) and white-water boaters and rock climbers (Ewert and Hollenhorst, 1994). Concerning SCUBA diving, only a limited number of studies could be identified that included some investigation of participants' environmental orientation (e.g. Burke, 2002; Tabata, 1992). The subsequent paragraphs discuss how environmental orientation has been investigated in previous research in adventure recreation and discuss relevant findings.

Knopp, Ballman and Merriam (1979) examined environmental preferences of wilderness recreationists on a sample of river users in North America. Thirty-nine aspects related to river users' environmental orientation were measured on a 9-point Likert scale. Additionally, 11 managerial items were examined. The authors used a hierarchical cluster analysis to group river users' preferences for these items into 'packages' or 'sets' which could be easily applied and translated into management policy. Findings revealed that preferences for environmental elements associated with a high level of development (e.g. 'industrial/commercial development' and 'residential development') were ranked lowest

by respondents. In contrast, most desirable elements appeared to relate to natural and undeveloped environments (e.g. ‘water clean enough for swimming’, ‘natural vegetation, landscape’ and ‘a campsite all to ourselves’) as indicated through high mean scores on these items. This study did not attempt to distinguish between different river user groups in regard to their environmental preferences which was done in subsequent studies (e.g. Ewert and Hollenhorst, 1994; Schuett, 1991; Virden and Schreyer, 1988).

Virden and Schreyer (1988) conducted a study on recreationists participating in backcountry day hiking and backpacking in North America. These authors investigated hiking specialisation and its possible relationship to recreationists’ preferences for environmental setting attributes. Specialisation included items that referred to participants’ general and recent experience in hiking, their equipment and economic commitment as well as centrality to lifestyle. Thirty-eight items assessed environmental setting attributes which were representative of physical, social and managerial settings on a 7-point Likert scale.

Virden and Schreyer (1988) found that 21 out of 38 environmental setting attributes used were significantly related to level of hiking specialisation. Findings revealed that the more experienced and thus specialised hiker prefers “rugged, primitive environment, free of conveniences with less social contact” (Virden and Schreyer, 1988:736). In contrast, the less specialised hiker placed more emphasis on trails that are developed and easy-to-follow and the existence of trail signs. Less specialised hikers appeared to feel less comfortable in a wild, primitive environment. The authors concluded that specialisation offers an important indication of the underlying processes that influence differing environmental perceptions. They pointed out that specialisation “can only offer a partial explanation” of different environmental preferences amongst these recreationists (Virden and Schreyer, 1988:737). The study was not conclusive in ascertaining whether hikers that are highly specialised always have more focused environmental preferences or preferences of high and low specialised hikers just differed.

Ewert and Hollenhorst (1989), which have already been discussed in detail regarding enduring involvement (section 2.3.1), also included environmental orientation to test the validity of an adventure recreation model of participation. Environmental orientation in this context was related to “preference or dependence on natural versus developed settings”

(Ewert and Hollenhorst, 1989:127). Based on the adventure model, they hypothesised that with increasing experience levels, participants would seek more natural environments while adventure recreationists with low experience levels in the activity would depend more on developed settings.

Ewert and Hollenhorst (1989) found significant differences between the three involvement stages, which they termed engagement levels, in regard to variables related to social orientation, age, skill, decision-making, locus of control and also environmental orientation. Findings revealed that committed or advanced adventure recreationists apart from seeking small group experiences and higher risk levels also prefer natural settings. In contrast, introductory adventure recreationists who have only a low level of experience prefer programs "... with low levels of risk in relatively developed settings" (Ewert and Hollenhorst 1989:137). Ewert and Hollenhorst (1989:137) thus concluded that behaviour and preferences of adventure recreationists are not identical but that they "follow predictable progressions". Regarding adventure recreationists' environmental preferences, these findings are similar to those of Virden and Schreyer's (1988) study which revealed that preferences of hikers and backpackers with different experience levels varied. The studies of Ewert and Hollenhorst (1989) and Virden and Schreyer (1988) both found that advanced adventure recreationists placed more emphasis on naturalness while less experienced recreationists preferred more developed settings. Virden and Schreyer (1988) however, did not find a linear progression of preferences from more developed to more natural environments.

As mentioned in section 3.1, Ewert and Hollenhorst (1994) conducted a study similar to that of 1989 on a sample of white-water boaters and rock climbers. In this study environmental orientation investigated in terms of preferred naturalness present at the activity site. Ewert and Hollenhorst (1994) hypothesised that the more experienced an individual gets the more emphasis will be placed on a natural setting. They found a significantly negative correlation between involvement and naturalness. Findings revealed that more involved and experienced rock climbers were less dependent on remote natural conditions. However, this was believed to relate to "conditions of the climbing route, the equipment used, and the social context" rather than be related to the naturalness of the site (Ewert and Hollenhorst, 1994:187). Relating these findings to the adventure recreation

context, Ewert and Hollenhorst (1994:188) thus concluded that access to a climbing site might be more important “than providing remote and undeveloped locations”.

Schuett (1991) in his study of white-water kayakers, which has been discussed earlier in the context of enduring involvement (section 3.1), included an investigation of environmental preferences and assessed their predictive power regarding enduring involvement. Based on previous research and the author’s personal expertise 15 items were used to measure kayakers’ attitudes towards man-made structures on the rivers or near the rivers they kayak. Environmental preference items included for instance ‘rock formations’, ‘wildlife’, ‘clean rivers’, ‘paved access roads’ and ‘comfort facilities’. ANOVA tests did not reveal a significant main effect and no interaction effect for skill level on environmental preference for kayakers.

Schuett (1991:107) found that less experienced kayakers who were termed ‘novice’, placed more emphasis on comfort facilities, but were less likely “to kayak rivers that are in remote areas” and placed less importance on clean water for swimming and on paved access roads when compared to the whole sample. Similar to the novice group, ‘advanced’ kayakers, appeared to be more interested in comfort facilities, however placed also more importance on paved access roads and on “pureness of the river water for swimming” (Schuett, 1991:107) than the combined sample. Schuett (1991) revealed that all kayakers in his sample were more interested in a natural environment and placed less importance on man-made facilities. Thus, he concluded that environmental preferences did not predict the enduring involvement of these kayakers. Schuett (1991) furthermore recommended that environmental preference should be investigated in the context of further adventure recreation activities.

In the context of SCUBA diving, few studies have been conducted that included environmental preference attributes (for exceptions see Tabata, 1992; and Burke, 2002). Although these studies did not focus on divers’ environmental preferences (the first study concentrated on dive tour operators’ perceptions of resource requirements for diving on popular sites in Hawaii, Kauai, Oahu and Maui and the second study on dive tourism to the Great Barrier Reef), they are considered here to determine environmental orientation items for this study.

As mentioned above, Tabata (1992) investigated dive tour operators' perceptions of resource requirements for recreational diving on popular sites in Kauai, Oahu, Maui and Hawaii. Environmental preference attributes were examined through factors that influenced the selection of dive site characteristics. These factors included items such as 'lack of crowding' and 'close to harbour or dive shop' which were also considered in this study. Tabata (1992) found similar environmental preference profiles for dive tour operators on these sites. Closeness to a harbour or dive shop and lack of crowding were only ranked moderately important by operators with only operators in Hawaii preferring sites that are not crowded. Although Tabata's (1992) study focused on SCUBA operators, this author perceives that preferences related to the closeness of the dive site to a harbour or dive shop and the crowding situation are also important factors to be considered when examining participants' environmental preferences. Dive shops in this context are often an important starting point for a dive trip in terms of hiring SCUBA diving equipment or for having SCUBA diving cylinders filled (air or Nitrox fills).

Burke (2002), who studied commercial SCUBA diving tourism to the Great Barrier Reef, investigated among other things aspects of reef experiences among four different groups of divers. These groups were classified as certified divers, introductory divers, reef day trip divers and live-aboard divers<sup>2</sup>. Factors related to environmental attributes included the number of other people and boats, as well as built facilities. Findings revealed that over two-thirds of respondents in each of these three groups rated the number of built facilities provided at the destination 'about right'. Furthermore, regarding their reef experience, only one third of respondents or less in each group thought that there were too many other people present. It can therefore be assumed that no differences were apparent between the different diver groups regarding preferences of natural versus developed settings. Although it can be argued that introductory divers are less experienced and skilled than certified divers or live-aboard divers, the aspect of experience or involvement was not specifically addressed in Burke's (2002) study.

In summary, several studies have investigated environmental preferences of adventure recreationists in the context of various activities. The majority of these studies found differences between participants' preferences for more natural versus more developed

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<sup>2</sup> no aspects related to reef experiences were presented for live-aboard divers in this report

environments. Often, environmental orientation was examined in relation to adventure recreationists' experience in the respective activity. Only a few studies were identified that included preferences for environmental settings concerning the adventure activity of SCUBA diving. In this current study environmental orientation items were established considering studies of Knopp *et al.* (1979), Virden and Schreyer (1988), Ewert and Hollenhorst (1994), Howard (1999), Schuett (1991), Tabata (1992) and Burke (2002) and adjusted to the context of SCUBA diving where necessary.

### **2.5.2 Social Orientation**

In the adventure recreation literature it is commonly recognised that an individual's social orientation might influence decision making in adventure recreation (Schuett, 1991). Schuett (1991) argued that the influence the *social group* has on recreation decision making is a regularly investigated theme which is central to recreation participation. He defined a social group as a group which is "composed of individuals who recognize themselves as part of that group and who are also recognized by others as part of that group" (Schuett, 1991:25). The importance of the social group in adventure recreation whether it be family or friends cannot be ignored. Kelly (1982:163) argued that the social meanings of participation in leisure activities such as camping and travel "are most often derived from family and friendships" and that some social satisfaction is derived from establishing and maintaining social relationships. It can be assumed that the importance of social groups or social orientation is no less significant regarding participation in the adventure recreation activity of SCUBA diving which justifies its investigation in this current study. The means for investigating SCUBA divers' social orientation as applied in this study will be further explained in chapter three (section 3.8.3.2).

Participants' social orientation was assessed considering relevant previous research of Ewert and Hollenhorst (1989) and Schuett (1991) and will be discussed in the subsequent paragraphs.

The research of Ewert and Hollenhorst (1989) which has already been examined in the context of enduring involvement and environmental orientation, investigated social orientation on a sample of 115 students participating in outdoor adventure recreational

courses (backcountry camping, rock climbing, caving and wilderness canoeing). Social orientation was measured on a 9-point Likert scale and comprised of five items: friends, classes, self, teachers and peers. The question was stated as follows: “Regarding most of your adventure experiences who do you participate with?” In their study, social orientation differentiated preferred social contexts of adventure recreationists such as “peers and solo experiences versus programs and courses” (Ewert and Hollenhorst, 1989:127). Based on the adventure model these authors hypothesised that as an individual’s level of involvement in an activity increases, social group structures would change from family, friends and organised groups towards solo participation or small groups of fellow experts.

Findings lent support for the hypothesised change in participant’s social orientation according to their level of involvement, and thus supported the predictive ability of the adventure model. In their study, introductory level participants preferred structured programs, whereas the highly involved or committed participants preferred solo or small group experiences. In regard to interpretation and application of these findings however, it is important to take into consideration the methodological shortcomings of Ewert and Hollenhorst’s (1989) study. As has been discussed earlier in this chapter, the determination of the engagement variable in these authors’ study lacked clearness concerning *experience* which was used both as an independent and dependent variable. Furthermore, generalisation beyond the sample of students used by Ewert and Hollenhorst (1989) was not possible.

Schuett (1991) adopted the social orientation items used by Ewert and Hollenhorst (1989) and complemented them by additional two items and one supplementary question on group size and applied them to the context of white-water kayakers. The findings of Schuett (1991) were in contrast to the findings of Ewert and Hollenhorst (1989). Schuett (1991) did not reveal that social orientation shifted from programmes and classes to peers with increasing level of engagement in kayaking. He found for instance that novice kayakers like advanced kayakers preferred to kayak within classes or programmes. The results were also believed to be possibly influenced by other factors such as past social experiences and social status. In addition, findings showed that the social context of white-water kayaking was influenced by factors such as age, gender, and skill level. Schuett (1991:199) concluded that the social context of white-water kayaking “is an important part of the adventure recreation experience”, but he also emphasised the need for further examination



of outdoor recreators' social orientation particularly in the context of other adventure activities.

### **2.5.3 Preferred Physical Risk**

The importance of risk in the context of adventure tourism has been identified earlier in section 2.2.2. Risk may among other aspects be a motivator to participate in adventure tourism activities. In this context, Vester (1987:242) believes that “every adventure has its particular form and amount of risk which is a stimulatory motive to participate in the activity”. Although in the tourism industry it is generally desirable to decrease risk perceptions among tourists to increase sales, the tourism sub-sector of adventure tourism appears to work in the contrary way (Dickson and Dolnicar, 2004). In this context, Dickson and Dolnicar (2004:184) state “[p]erceived risk is something attractive to the potential consumers, something they are actively searching for”. Furthermore, Hall (1992:143) underlines the significance of risk within the adventure tourism industry by arguing that “adventure tourism is categorized by the deliberate seeking of risk and danger by participants in outdoor activities”. Risks related to adventure recreation and tourism may vary from undamaging activities to those which might include physical or mental injury or even death (Vester, 1987). Yet, despite the recognition of risk as an element of adventure tourism activities, Swarbrooke *et al.* (2003:70) state that research into the role of risk in adventure tourism is “less advanced than its application to the disciplines of recreation and psychology”.

In a study by Cheron and Ritchie (1982:140), risk was viewed as a “multidimensional psychological phenomenon” that influences individual decision processes and perceptions within the context of leisure activities. Cheron and Ritchie (1982) used six types of risk to assess the amount of overall perceived risk of participants in twenty leisure activities. Although SCUBA diving was not included in the latter, leisure activities included for instance snowmobiling, golfing, alpine skiing, swimming, walking and cross country skiing.

The six types of risk were: financial risk, performance risk, physical risk, psychological risk, social risk and time loss risk. They found that some of these components of perceived

risk “are more useful for discriminating among leisure activities than are others” (Cheron and Ritchie, 1982:143). Functional risk for example was observed to have a wider range of ratings than social risk. After conducting a factor analysis on their data, the authors found that the six types of risk belong to two major dimensions, namely ‘functional’ and ‘psychosocial’ risk. The first dimension refers to the inability to perform a particular activity well and “the danger of physical injury” (Cheron and Ritchie, 1982:153). The second dimension relates to “fears involving failure to meet personal or social standards” and possible frustration “derived from an unsatisfactory experience” and the waste of leisure time (Cheron and Ritchie, 1982:153).

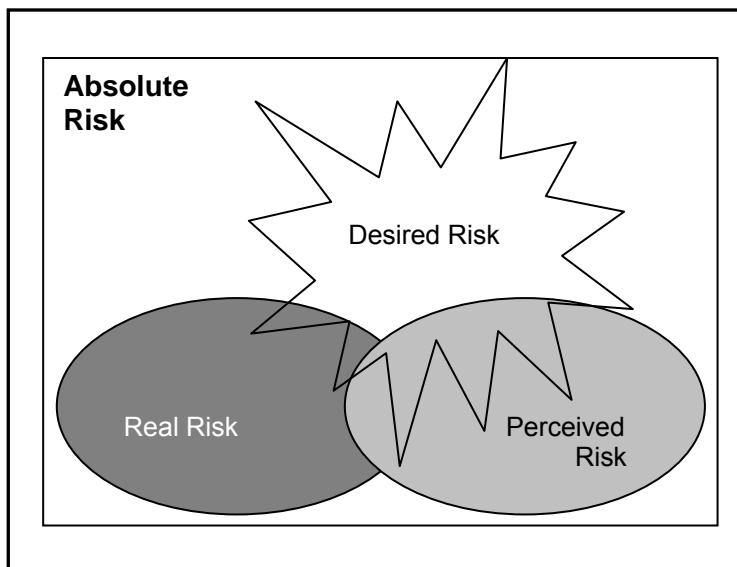
Ewert and Hollenhorst (1989), who tested the adventure model for risk recreation participation, predicted that risks of low involved or introductory participants in an adventure activity are more perceived than real. They further argue that in the development phase risks get more real and consequential and that adventure recreationists who are in the commitment level “are prepared to face substantial risks” (Ewert and Hollenhorst, 1989:128). Regarding risk, they found adventure recreationists go through a predictable pattern with low involved adventure recreationists preferring lower levels of risk as inherent in structured programmes while committed adventurers have a preference for higher risk levels. In other words, their findings showed that with increasing involvement, risk levels shifted from perceived to real. Regarding these findings it is important to mention that more involvement and experience in an activity may lead to a better understanding of the real risks involved in an activity, and thus the level of perceived risk may decrease. However, it is important to note that Ewert and Hollenhorst’s (1989) study measures the preferred level of risk by only one item, which may have limited its predictive power.

Schuett (1993) expanded on the work of Ewert and Hollenhorst (1989) and considered the dimensions of risk, as stated by Cheron and Ritchie (1982), in his study involving white-water kayakers. Perceived risk in Schuett’s (1993) study was measured by seven items which related to the dimension of physical, social, financial and psychological risk. To conceptualise perceived risk, a factor analysis was conducted which resulted in the seven items loading on three factors. Factor one comprised physical risk items, factor two comprised items related to satisfaction and financial risk and factor three included social risk items. Schuett (1993) found that only the latter two factors of perceived risk predicted

involvement. He concluded that perceived risk decreased with increasing involvement based on the fact that the individual “was more familiar with and in more control of the activity” (Schuett, 1993:213). Importantly, Schuett also noted that kayakers’ perceptions of risk, whether psychological or physical, might relate to many factors and thus have to be considered when investigating perceived risk.

Dickson and Dolnicar (2004) investigated and compared operationalisations of perceived risk in the context adventure tourism. They identified three concepts of risk which are commonly referred to in the broader literature of outdoor and experiential learning, namely absolute risk, perceived risk and real risk. Absolute risk was defined as “the uppermost limit of the risk inherent in a situation (no safety controls present), real risk as “the amount of risk which actually exists at a given moment in time (absolute risk adjusted by safety controls)” and perceived risk was defined as “an individual’s subjective assessment of the real risk present at any time” (Haddock, 1993 in Dickson and Dolnicar, 2004:185). However, Dickson and Dolnicar (2004) state that regarding the adventure tourism literature these concepts are not well-explored. They combined the three concepts of risk and proposed an initial conceptualisation of what they termed *desired risk*. Dickson and Dolnicar (2004:188) explained the *desired risk* level as one that “represents the level of risk perception that is optimal for each single individual”. The authors further suggested that the concept of desired risk will be “either a subset of or an extension of the individuals’ perceived risk” (Dickson and Dolnicar, 2004:188) (see Figure 2.2). Regarding adventure tourism, they proposed that the interrelationship between perceived and desired risk might influence consumers’ behaviours on the trip according to the amount of risk sought. The concept of desired risk is comparable to the preferred risk as investigated in this current study.

**Figure 2.2 Multiple Concepts of Risk**



Adapted from Dickson and Dolnicar (2004:188)

Fluker (2005), in his study on perceived risk in adventure tourism, provided a taxonomy of risk types identified in marketing, leisure, adventure tourism and recreation literature. Types of risk included, in addition to those mentioned above, ecological risk, environmental risk, situational risk, satisfaction risk, real risk, perceived risk and tourist risk. Fluker (2005:30) stated that regarding the multiple dimensions of risk, “some dimensions of risk may be more relevant to include in particular studies than others”.

Risk in this current study is investigated as one part of SCUBA divers’ preferred setting attributes. The focus hereby is on the functional dimension of risk, which includes physical risk as previously identified by Cheron and Ritchie (1982). The importance of the dimension of physical risk in the context of adventure tourism activities is also emphasised by Fluker (2005:33), who argues that “many of these types of risk are common to a variety of tourism experiences, but it is the deliberate acceptance of physical risk by adventure tourism, that describes its uniqueness”.

#### 2.5.4 Equipment

Equipment incorporates the hardware and specialist clothing individuals need to take part in an adventure activity. The use of adequate or specialised equipment is often essential when participating in adventure tourism activities. Swarbrooke *et al.* (2003:144) go even further and argue that “much adventure tourism is based on activities that require specialised equipment”. The latter is also true for SCUBA diving. Davis (1997:38), who investigated the recreational SCUBA diving industry in Australia, defined the activity of SCUBA diving as an “equipment-based sport”. He further argued that the recreational SCUBA diving industry “is based heavily on mechanical and equipment technology and on continued development of that technology”.

Davis (1997:38) listed the most commonly used equipment items by an individual diver when undertaking a dive as being “full body wetsuit, hood (in cooler water conditions), mask and snorkel, compressed air cylinder, buoyancy compensating device (BCD), watch, regulator, weight belt, dive boots and fins”. Additionally, many divers today now use dive-computers that assist the diver through a number of information pieces such as depth, water temperature and length of decompression stops. Based on personal interests of individual divers further equipment such as torches, cameras or video equipment might be carried by divers (Davis, 1997). According to Swarbrooke *et al.* (2003) considerations regarding the purchase of equipment for adventure activities may relate to personal interests of participants and fashionability but also include aspects related to safety. Concerning the latter, Ewert and Hollenhorst (1994:181) argue that “[w]ithout specialized equipment, the adventure recreationist is placed at a severe disadvantage and exposed to much higher risk levels”. These authors further assume a higher level of importance of specialised equipment in adventure recreation than is frequently the case “in many other forms of recreation” (Ewert and Hollenhorst, 1994:181).

Today, specialised equipment is available in any kind of adventure activity and importantly to participants of all levels of participation. However, despite its availability, specialised equipment is also often expensive and thus requires a certain level of purchasing power. The latter is not always in reach of younger participants (prior to their mid-20s) and means that they sometimes cannot afford it. This might also be true for SCUBA diving as stated previously by Davis (1997) and is supported by other SCUBA diving studies which found

that SCUBA diving participation rates were lower in the age group of under 25s than compared to the age groups of mid-20s to mid-30s and mid-30s to mid 40s (e.g. Burke, 2002; Ditton and Baker, 1999; Mundet and Ribera, 2001).

However, participation in SCUBA diving does not necessarily imply the need for purchasing expensive equipment. Recreational divers may also start with minimal equipment like mask and fins and hire further gear required for SCUBA diving which is commonly available for hire at dive shops or dive tourism operators (Davis 1997). Thus, it can be argued that number of equipment items owned or expenditure made to purchase equipment does not automatically reflect an individual's involvement in an activity or vice versa. In the context of specialisation, Ewert and Hollenhorst (1994:180-181) for instance argue that equipment ownership alone is "a poor predictor of specialisation" or individuals' levels of involvement in adventure activities in general.

Concerning the *importance* individuals attach to equipment associated with an activity, studies suggested different findings. Bloch, Black and Lichtenstein (1989:197), who examined the involvement sports participants have with relevant sports equipment, for instance found that runners with more experience in this activity "place[d] less importance on running gear". In contrast, Schuett (1991) found that advanced white-water kayakers placed more importance on testing and using equipment than intermediate and novice kayakers. Furthermore, findings of Ewert and Hollenhorst (1994) revealed that white-water boaters and rock-climbers with greater involvement, EUH and skill level placed more emphasis on their equipment. Interestingly, these authors found that among boaters two comparable groups existed. One group used equipment as a means to optimise their performance and a further group related the usage of equipment to safety issues or in other words to minimise risk.

Another aspect related to the importance individuals attach to equipment associated with an activity has been discussed by Haggard and Williams (1992) and Kelly (1983). These authors identified the symbolic role of equipment concerning an individual's self-identification and its identification with an activity in the context of leisure. Kelly (1983:101) for instance argues that leisure symbols (e.g. running shoes, hiking boots, ski jackets and football jackets) are used to "tell others that one has a significant leisure identification". Haggard and Williams (1992:3) believe that a richer meaning exists to this

identification. They argue the symbolic role of equipment is not only related to signal others one's identification with a particular activity, but is furthermore related to creating "leisure identity images". According to Haggard and Williams (1992:3), the latter is not only used in terms of self-identification but also provides others with information "that will allow them to understand us [leisure recreationists] more accurately".

The above discussion revealed that equipment is an important factor to be included in research about preferred activity/setting attributes in the field of adventure tourism and recreation. The importance an individual attaches to specialised equipment might be an indicator of a participant's identification with an activity. However, studies also found that the importance participants attach to equipment not always increases with advancing experience levels in the activity. The importance divers attach to specialised equipment might be related to personal special interests in the activity (such as underwater photography, videography), or even more importantly in the context of SCUBA diving, be related to safety issues and therefore may be generally high. The latter is crucial in the activity of SCUBA diving as equipment problems that might occur while SCUBA diving easily can lead to injury or even participant death.

## **2.6 Chapter Summary**

In summary, this second chapter discussed research in the area of adventure tourism and recreation. It was revealed that several categorisation approaches of adventure tourism exist. Furthermore, the concept of enduring involvement was investigated within the leisure and adventure recreation literature. In this context it was found that a range of different terminologies (such as engagement, centrality, affective attachment and commitment) are used in studies which investigate enduring involvement. It was highlighted that enduring involvement is a multidimensional construct. Therefore, it was suggested that clustering participants according to their involvement more appropriately recognises the multidimensional nature of involvement than classifying participants based on a summative index. Experience was identified as an important component regarding participation in adventure activities. In the majority of research discussed, experience was also found to be investigated particularly in combination with enduring involvement.

Concepts and theories about tourist motivation and motivations to participate in adventurous activities were examined. Various studies were considered that examined participation motives of adventure recreationists participating in a wide range of activities in general and in SCUBA diving in particular. It was revealed that motivations to participate in an adventure activity are sometimes complex. This was particularly found for the adventure activity of SCUBA diving. Often, but not always, motivations differ between participants with varying involvement and experience levels in the respective activity.

Furthermore, it was discussed how previous research assessed adventure recreationists' preferences for specific activity settings. Setting preferences investigated in detail were: environmental orientation, social orientation, preferred physical risk and equipment. Again, comparable to the influence of involvement and experience on participation motives, experience was found to have an influence in participants' setting preferences such as environmental and social orientation and preferred physical risk. Equipment was revealed to be an important factor regarding participation in adventure tourism activities. This was found to be particularly true for the activity of SCUBA diving. Regarding this aspect it was also revealed that the importance of equipment might serve as an indicator of a participant's identification with SCUBA diving. However, it was also revealed that the importance an individual attaches to equipment might not necessarily increase with advancing experience levels and involvement in the activity of SCUBA diving.

The following chapter will describe the research methodology employed in this study.



## **CHAPTER THREE**

### **Methodology and Methods**

#### **3.1 Introduction**

In the previous chapter, the study examined research literature of the adventure tourism market and motivational issues to participation in adventure activities. The use of activity involvement in previous research to examine recreation adventurers' and adventure tourists' motivations and setting preferences was discussed. Categorisation approaches of adventure tourism were provided and elements of adventure were discussed. In addition, research literature related to participation in SCUBA diving was reviewed to better understand the issues discussed regarding participation in this adventure tourism activity.

This chapter describes the research methodology employed in this study. It includes information on the research paradigm and research strategy, data collection, instrumentation, research population, questionnaire design and implementation. The variables that were used are discussed and the statistical procedures that were employed to analyse the data are outlined. Research limitations restricting the scope of this study and the application of the findings are outlined. Ethical issues considered in this study are presented and the limitations of the study are discussed.

#### **3.2 Research Paradigm and Approach**

Guba and Lincoln (1998:200) describe paradigm as “a set of basic beliefs” and “a worldview that defines, for the holder, the nature of the ‘world’, the individual’s place in it and the range of possible relationships to that world”. According to Jennings (2001), theoretical paradigms that can inform research include the critical theory paradigm, the interpretive social sciences paradigm and the positivism paradigm. Each paradigm is based on its own epistemological, ontological and methodological considerations. Epistemological considerations relate to the relationship of the researcher towards subjects or objects, ontological considerations relate to the view of the real world, and

methodological considerations relate to data collection and how knowledge is created (Jennings, 2001).

This research is following the positivist paradigm. The ontological perspective of this paradigm is that “the world is seen as a closed system [...] in which behaviour and events can be predicted” (Jennings, 2001:444) and explained on the basis of causal relationships. By adopting the positivist paradigm according to Remenyi *et al.* (1998:33), “the researcher is independent of and neither affects nor is affected by the subject of the research” and thus takes the role of an objective analyst. Following the positivist paradigm, this research employs and is informed by a quantitative methodology as suggested by Jennings (2001). A quantitative methodology is based on

the collection and analysis of statistical data, and hence tends to obtain a limited amount of information on a large number of respondents or observations (Jennings, 2001:444).

The research aims to explain aspects related to participation in the adventure activity of SCUBA diving, that is to explain tourism behaviour, based on causal relationships, from which some form of generalisations can be made to the research population investigated. This means that the nature and the aims of this research clearly suggest a quantitative methodology as it is discussed in the literature (Jennings, 2001; Saunders, Lewis and Thornhill, 2000).

In regard to the research approach, a deductive approach is adopted as data follows theory and not vice versa as with the inductive approach (Saunders *et al.*, 2000). Major issues related to participation in adventure activities in general and in SCUBA diving in particular are identified and derived from theories and themes discussed in the literature review. These issues provide the basis for the research design in regard to the choice and design of data collection methods and the analysis of the data.

### **3.3 Research Strategy**

The main research strategies in the social sciences comprise action research, grounded theory, survey, case study, ethnography and experiment (Saunders *et al.*, 2000). For the purpose of this study, the survey strategy was utilised. According to Saunders *et al.* (2000), the survey method is usually adopted when following a deductive research approach and allows for large amounts of data to be collected from a considerable population size in a very economical way. Burns (1997) identifies two major forms of survey: descriptive and explanatory. Descriptive surveys aim to assess as exactly as possible the scenery of existing conditions, whereas the explanatory survey seeks “to establish cause and effect relationships” (Burns, 1997:466). In this study, the survey is both of descriptive and explanatory nature, since data was collected with the aim to identify motivations and setting preferences of participants in an adventure tourism activity and with the aim to examine and analyse the relationship between participants’ differing involvement, motives for participation and setting preferences.

### **3.4 Data Collection**

Secondary and primary data was collected and examined to answer the research question and to meet the research objectives. Secondary data sources comprised journal articles, conference proceedings and academic books related to motivational studies in the area of adventure tourism and recreation. These sources helped to organise the literature review and the themes arising from the literature provided the theoretical framework for arranging and conducting the primary research.

For collecting primary data, a self-administered survey was used with web-based questionnaires. According to Denscombe (1998:88), questionnaires in general are useful for research in which the information required tends to be “relatively brief and uncontroversial” and “when there is a need for standardized data from identical questions – without requiring personal, face-to-face interaction”. These aspects corresponded to this research, as it aimed to investigate and make generalisations about motivations and setting preferences of adventure tourists participating in the activity of SCUBA diving, which involved gathering of both factual information as well as information on attitudes and

preferences. While the above aspects relate to questionnaires in general, self-completion questionnaires have the following additional advantages:

- the respondents can complete the questionnaire at their own pace
- if left with the respondent, the questionnaire can be completed at a time convenient to the respondent
- anonymity is high
- can be administered electronically, if desired
- avoidance of fear and embarrassment which may result from direct contact

Sources: Burns (1997); Cavana, Delahaye and Sekaran (2001); Jennings (2001); Saunders *et al.* (2000)

The strategy of web-based questionnaires was considered to be particularly useful for this study, as it allowed for data collection from a large number of respondents of the target population of SCUBA diving club members from a wide geographic area in a quick and cost effective way (Cavana, *et al.*, 2001; Cole, 2005; Cooper and Schindler, 2003; Creswell, 2005). The latter is of particular importance, as data was collected from SCUBA diving club members from two states in Eastern Australia, namely QLD and NSW. Hence, the method of on-site surveys, which according to Veal (1997:154-155), “tend to be used in the context of outdoor recreation studies”, was rejected as it would have been too time and cost intensive for this research. Concerning the response rate, Saunders *et al.* (2000: 244) state that electronic questionnaires are similar to mail questionnaires, which “suffer from a fairly low response rate”. However, as in this study potential respondents were asked questions related to their hobby it was assumed that their willingness to complete the survey and thus the actual response rate would be higher than in electronic questionnaires in general. Furthermore, several steps were taken during the data collection to increase the number of responses, which will be further explained in section 3.6.2.

### **3.5 Research Population**

The research population consisted of members of SCUBA diving clubs in QLD and NSW who had undertaken a SCUBA diving trip within the last 12 months prior to the start of

data collection. Based on the literature review, a SCUBA diving trip for this study was defined as a trip, which involved a travel distance of at least 40 kilometres.

This target population was considered appropriate for the aim of this research, as it can be assumed that members of SCUBA diving clubs have an interest in SCUBA diving and are to some extent actively involved in this activity. The researcher is aware of possible constraints in the adoption of this research population, which will be dealt with in the section on research limitations (section 3.11).

Initially, it was intended that SCUBA diving clubs of all states and territories of Eastern Australia (QLD, NSW, Australian Capital Territory [ACT], Victoria [VIC] and Tasmania [TAS]) would be included in the study. Due to time and financial constraints of this research, it was decided to reduce the scope of the study and thus to include only SCUBA diving clubs in QLD and in NSW. These two states were decided upon as they comprised almost 60 per cent of all SCUBA diving clubs and almost 65 per cent of SCUBA diving club members that could be identified in Eastern Australia (QLD, NSW, ACT, VIC and TAS). These percentages are based on the following data sources used in this research: the Yellow Pages online directory (Telstra Corporation Ltd., 2004), the web pages of 'Dive-Oz' (Dive-Oz, 2005) and 'Underwater Australasia' (Underwater Australasia, 2005); and the membership list of the SCUBA diving association in NSW (SCUBA Clubs Association of NSW [SCAN], 2005). The reasoning for using these data sources to identify SCUBA diving clubs in Eastern Australia will be explained later in this section.

The travel distance of 40 kilometres corresponds to the clarification of adventure tourism as provided in chapter one. The inclusion of this travel distance in the definition of the research population was aimed at focussing the research on adventure tourists participating in the activity of SCUBA diving. SCUBA diving club members were targeted instead of individuals that conduct SCUBA diving within the context of commercial adventure tourism operations due to the following reasons:

- Information gathered from this target group was assumed to allow for new insights about motivations and setting preferences of adventure tourists participating in SCUBA diving. Detailed knowledge of these divers' motivations

and setting preferences is of value for the promotion and management of SCUBA diving and diving sites in Australia, but is currently lacking.

- For commercial SCUBA diving operators knowledge about this pool of SCUBA divers provides a possibility to develop or adjust products and marketing according to the needs of this potential customer group and broaden their target market.
- Two practical considerations were also significant: Firstly, targeting members of SCUBA diving clubs allowed for data collection from a large number of respondents involved in this form of adventure tourism from a wide geographic area (two states of Eastern Australia). Secondly, it was assumed that gaining access to this population would be more realistic within the limited time frame of this study than gaining access to clients of SCUBA diving operators.

In Australia the 'Australian Underwater Federation' [AUF] is the national umbrella for a range of underwater sports including SCUBA diving. Therefore, contact was made with the AUF Membership Database Co-ordinator regarding information on SCUBA diving clubs and membership numbers on a national basis. This information was sought in order to determine the size of the target population and receive contact details of clubs. The AUF Membership Database Co-ordinator provided the information that a listing of SCUBA diving clubs that are members of the AUF did not exist at that time (Dockar, S., AUF Membership Database Co-ordinator, personal communication, 15 September 2005).

Since, to this author's knowledge, no register exists that comprehensively lists SCUBA diving clubs within Australia, it was attempted to establish a detailed list of SCUBA diving clubs of the states and territories that were to be included in this study by using various information sources. The following paragraphs identify these sources and provide details of the process of identifying potential subjects that were included in this study.

The Australian Yellow Pages online directory (Telstra Corporation Ltd., 2004), lists of SCUBA clubs published on the 'Dive-Oz' (Dive-Oz, 2005) and 'Underwater Australasia' (Underwater Australasia, 2005) internet websites were used to identify potential clubs to be included in the research. The 'Dive-Oz' and 'Underwater Australasia' internet

websites are very comprehensive and include up-to-date information resources mainly about Australian SCUBA diving. Both provide lists of SCUBA diving clubs containing contact details (telephone numbers and email addresses) for almost each club.

In addition, the membership list of the SCUBA diving association in NSW (SCUBA Clubs Association of NSW [SCAN], 2005) was retrieved from the internet and compared with the above-mentioned directory and website lists. Since QLD and Western Australia [WA], which was used for the pilot study as explained in section 3.6.1, have no SCUBA diving associations, membership lists of associations could not be used as the primary source for identifying clubs.

Membership lists of all sources were compared and combined. This method of comparing and combining various lists from different information sources was aimed at establishing a directory of SCUBA diving clubs that would be as comprehensive as possible given that neither of the above-mentioned listings of SCUBA diving clubs was found to be all embracing. Through this procedure, 12 SCUBA diving clubs could be identified in WA, 34 in QLD and 45 in NSW.

A valid email address and contact telephone number were essential to approach the club's contact person. These contact details were essential because prior to sending the invitation email (Appendix A) to SCUBA diving clubs, the latter were called to inform them about the email which was sent to them shortly after the call. On the one hand, this was important to confirm each club's email address and to adjust the latter when necessary. On the other hand, contacting each dive club prior to sending the invitation email was aimed to reduce the risk of the email being SPAM filtered and thus not being successfully forwarded to the dive club. Although the various sources of information were used, valid contact details could not be gathered for all clubs. Thus, 27 SCUBA diving clubs in NSW and 26 in QLD were included in the main study, and seven SCUBA diving clubs in WA were included in the pilot study, as only this number of clubs had valid contact details.

Based on the information indicated on 'Dive-Oz' web-directory the seven SCUBA diving clubs that were contacted in WA had a total number of 1,785 members, the 27 clubs in NSW 6,409 members and the 26 clubs in QLD 8,933 members. Thus, the total number of

SCUBA diving club members in NSW and QLD initially identified was 15,342. However, correspondence with the clubs proved that the membership numbers indicated on the web-directory were not in line with the most recent membership numbers of a number of clubs in NSW and QLD. Therefore, wherever possible up-to-date information on membership numbers was gathered from SCUBA diving clubs, but not all clubs provided this information. Most of those clubs from which up-to-date information about their membership numbers could be gathered indicated much lower membership levels than stated on the 'Dive-Oz' web-directory. This means that the size of the target population is consequently much less than 15,342 members.

Furthermore, the target population of this research includes only those SCUBA diving club members who have undertaken a dive trip within the last year. The main study indicated that 89 per cent of survey respondents had undertaken a dive trip within the last year, which further reduces the size of the target population.

For these reasons, it was not possible to determine the exact size of the target population for this research. A 95 per cent level of certainty, which "researchers normally work to" (Saunders *et al.*, 2000:155) was used for this study. As the survey resulted in 262 responses from club members that belong to the target population, it can be assumed that the margin of error for this study was slightly above five per cent (Saunders *et al.*, 2000).

### **3.6 Implementation of Data Collection**

As mentioned before, the research involved SCUBA diving clubs located in QLD, NSW and WA. The survey was pilot-tested with SCUBA diving clubs in WA and the main study involved clubs in QLD and NSW. SCUBA diving clubs were invited to participate in this research project by an email that included detailed information about the project. Attached to this email was a copy of the survey questions. If the clubs contacted agreed to participate, they were sent an invitation email (Appendix B) to be forwarded to their club members. This invitation email included a hyperlink that lead to the web-based survey, located on an internet website of 'SurveyMonkey.com' (SurveyMonkey.com, 2004).



‘SurveyMonkey.com’ is an online survey software for creating professional online surveys. Participating club members filled in the questionnaire, which after completion was submitted to and saved at this password protected website of ‘SurveyMonkey.com’ in such a way that the sender could not be tracked down. An overview of steps and procedures undertaken to approach SCUBA diving clubs and club members is also outlined in Table 3.1.

**Table 3.1 Approach to contact and invite SCUBA Diving Clubs and Members**

| <b>Step</b>  | <b>Procedure/ Process</b>  |
|--|--|
| 1. A directory of SCUBA diving clubs in QLD and NSW was established using several sources of information | Sources of information were compared and SCUBA diving club details (e-mail, addresses, contact person, phone number) were updated with the final directory of SCUBA diving clubs |
| 2. SCUBA diving clubs were contacted by phone  | Information about the research project was provided; clubs’ contact details and membership information were updated, where necessary   |
| 3. Invitation emails were sent to SCUBA diving clubs   | More background information about the project and an outline of the questionnaire were provided  |
| 4. Follow-up calls were made to non-responding SCUBA clubs   | Where necessary, invitation email was forwarded again  |
| 5. Invitation emails for SCUBA diving club members were sent to clubs’ contact persons                   | Information about the research project, including the hyperlink that directed to the web-based survey was provided   |
| 6. Reminder emails were sent to participating clubs  | The contact persons of each participating SCUBA diving club were asked to forward the reminder email to their club members   |

By following the approach of the web-based survey, the researcher did not require any access to membership data bases of SCUBA diving clubs which might have been denied due to privacy issues and regulations. Moreover, through this approach, the researcher did not receive any names or email addresses of participants, which assured their anonymity. ‘SurveyMonkey.com’ was decided upon as it eased the process of putting the survey on the internet, administering data collection and analysis and furthermore as it was found to be the least expensive option for this research.

### **3.6.1 Pilot Study**

A pilot study was conducted with SCUBA diving clubs in WA during the period of 18th November 2005 and 09th December 2005 for testing construct validity of the questionnaire and clarity of questions. Twelve SCUBA diving clubs could be identified in WA of which seven clubs were invited to participate, as only this number of clubs had valid contact details. WA was randomly selected amongst those Australian states and territories that were not included in the main study. For the pilot study it was not considered particularly important, which of those states or territories was selected. This is because the main aim of the pilot study was testing the questionnaire for clarity and practicability. This is also in line with Burns (1997:481) who suggests that a pilot test of the questionnaire is “useful to reveal confusing and other problematic questions that still exist in the questionnaire”.

Conducting the pilot test with all SCUBA diving clubs in WA that had valid contact details was aimed at estimating likely response rates of clubs with differing membership numbers for the main study. These response rates were sought to allow for an estimation of the number of clubs that would have to be contacted for the main study in order receive back a sufficient number of completed questionnaires to achieve an appropriate return rate. Consequently, with the pilot study, SCUBA diving clubs were grouped into three categories based on membership numbers. The categories comprised 1-150 members, 151 to 300 members and more than 300 members. To identify response rates within these categories, a question about the size of the club in which the respondent was a member was included in the questionnaire.

However, based on the results of the pilot study an estimation of SCUBA clubs that would have to be contacted in each category for the main study was not possible. This was due to several reasons. Firstly, the target population of SCUBA diving club members could only respond to the survey if the SCUBA diving club’s contact person agreed to participate in the research project. Secondly, SCUBA diving clubs that participated (Appendix C) only fell into the first two categories mentioned above, leaving the third category with no response. Thirdly, as discussed in section 3.5 no information on recent membership numbers could be gathered from all clubs included in the main study, making the initial idea of categorising clubs based on membership numbers questionable.

Fourthly, more than eight per cent of respondents in the pilot study indicated that they did not know how many members their SCUBA club had in which they were a member. For these reasons, a calculation of response rates within the established categories was not possible. The approach of categorising SCUBA diving clubs based on membership numbers would not have been reasonable and thus was not applied for the main study.

One week after the invitation email to participate in the pilot study had been sent to SCUBA diving clubs in WA, a follow-up phone call was made to contacted clubs. Four out of seven contacted SCUBA diving clubs agreed to participate, which equals a response rate of 57 per cent. By the end of the pilot study, 37 questionnaires were completed and saved at 'SurveyMonkey.com'.

Although a calculation of the response rate was not possible, the pilot study provided an indication of the likely participation rate for SCUBA clubs, which was valuable for the main study. Importantly, the pilot study also indicated the time span between the initial contact to the club and the forwarding of the invitation email to club members, which ranged from one day to 18 days. For the main study, this constituted valuable information regarding the time to be allowed for correspondence with SCUBA clubs and data collection.

### **3.6.2 Main Study**

The main study commenced on January 9th 2006 and replies to the survey were accepted and included in the analysis up to February 13th 2006. Fifty-three SCUBA diving clubs in QLD and NSW were included in the main study which equals 67 per cent of all clubs that were identified in these states. All clubs were contacted by phone and were informed about the invitation email, which was sent to them shortly thereafter. This invitation email was identical for clubs located in QLD and NSW and included detailed information about the project and an outline of the survey questions. Although SCUBA clubs were informed in advance about this invitation email, the response, either positive or negative, was very poor. One week after the initial contact, only two out of fifty-three SCUBA diving clubs had responded. Consequently, to increase the number of responses, ten days

from the initial contact, non-responding clubs were followed-up by a telephone call to issue a reminder and ascertain SCUBA diving clubs' interest to be involved.

Several reasons appear to have led to the poor response. In follow-up phone calls, many clubs revealed that this was their busiest time of the year and therefore, they had had no time to read it or simply disregarded the invitation. Some clubs expressed their interest but indicated that they forgot to respond. Other SCUBA diving clubs remembered the invitation email but indicated that they could not find it anymore or that they had deleted it. Three SCUBA diving clubs expressed that they were not interested in being involved in the project. Although several attempts were made to speak to each club's responsible contact person, this was not possible for all clubs.

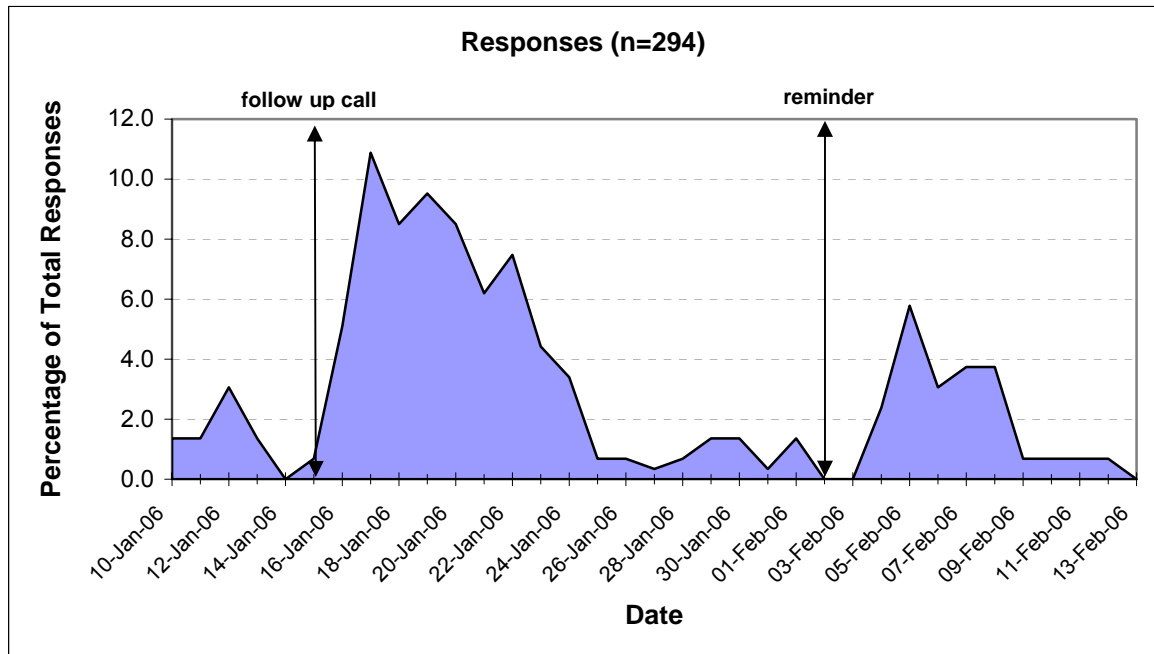
After the follow-up call, the invitation email was forwarded once again to those clubs that were interested to participate and had not yet responded. Three clubs indicated that a decision about participation would have to be made by the club's committee. As clubs differed in their timing of club meetings and frequency of mailings to their members, the distribution of the invitation email to members in some cases took one month. Based upon telephone conversations and email correspondence with SCUBA diving clubs, definite participation of 16 clubs (10 clubs in QLD and six clubs in NSW) could be ascertained. The total number of participating clubs in both states equals a 30 per cent participation rate (29 per cent participation rate for QLD clubs and 13 per cent for NSW clubs). A club was considered as participant in this study, if it confirmed the forwarding of the invitation email including the hyperlink to the survey to its members. A list of SCUBA diving clubs that participated is given in Appendix D.

Despite the expression of interest in the project and the assurance to forward the invitation email to club members, no confirmation was received from four SCUBA diving clubs in QLD and four SCUBA diving clubs in NSW that the invitation email had actually been forwarded to club members. Therefore, the total number of participating SCUBA diving clubs might have been higher than the indicated number of sixteen clubs.

Three weeks after the initial contact, participating SCUBA diving clubs were sent a reminder email to be forwarded to club members. An increasing number of responses shortly after the reminder had been issued indicated that reminders had been forwarded to

club members. However, the researcher had no control over how many SCUBA diving clubs actually had forwarded reminders. The distribution of responses to the survey over the conducted time is shown in Figure 3.1.

**Figure 3.1 Survey Response**



Reference to Figure 3.1 shows that over 40 per cent of total survey responses were received within the first 10 days from the sending of the invitation email. After two weeks from the sending of that email, the percentage of responses decreased. Thus, three and a half weeks after the invitation email had been sent, a reminder was issued. The reminder proved valuable as after it had been issued the response rate increased again totalling over 20 per cent of total survey responses.

Due to a lack of information on (a) the exact membership numbers of all clubs involved in this research; (b) how many members participating SCUBA diving clubs had forwarded the invitation email; and (c) whether or not some clubs forwarded the invitation email at all to their members, a calculation of a response rate was not possible.

### 3.7 Questionnaire Design

The questions included in the survey related to four main themes: involvement of respondents in SCUBA diving, motivations to undertake a SCUBA diving trip; setting preferences; and socio-demographics. These themes and the instruments used to assess them will be explained in section 3.8. Regarding the questionnaire design, mainly closed questions were used in the main study. A major advantage of closed questions compared to open questions is that answers provide the researcher with pre-coded information that can be easily quantified and compared (Denscombe, 1998). According to Saunders *et al.* (2000:291), closed questions are also “usually quicker and easier to answer, as they require minimal writing”, which is considered to be important to facilitate a high response rate (Burns, 1997). Response sets used included checklists and multiple rating list scales. Rating scales are often used “to collect attitude and belief data” (Saunders *et al.*, 2000:295). In this research, 5-point Likert scales were used to determine the relative importance of participation motives and preferred settings to respondents. As suggested by Jennings (2001:247), checklists were used to categorise answers to “diminish detailed responses” for instance in regard to socio-demographic information as well as information on experience and skill levels and frequency of participation.

At the beginning of the survey, a filter question was used to target those adventure tourists that have travelled at least 40 kilometres on a SCUBA diving trip in the last 12 months. This means that all respondents completed the survey, however, for further data analysis only those were included that had undertaken a dive trip within the last 12 months. The travel distance of 40 kilometres corresponds to the clarification of adventure tourism as provided in chapter one.

In addition to closed questions and multiple rating questions, the pilot study included two open-ended questions, which were not included in the final questionnaire. These questions provided respondents with the possibility to indicate any additional motivations to participate in SCUBA diving not mentioned in the questionnaire and to make general comments on the questionnaire content and design. Comments on these questions helped to modify the questionnaire for the main study.

Based on the results of the pilot study one motivational aspect was added to the final questionnaire which will be further explained in section 3.8.2. As discussed in section 3.6.1, the question on club size was not included in the main study. As the main study included more than one state, one question was added to determine the state in which the respondents' SCUBA diving club was located. Based on the results of the pilot study two categories were added to the question about how many years club members had been SCUBA diving and existing categories were adjusted accordingly. Furthermore, one category was added to the question about the respondent's highest SCUBA diving qualification/certification. Additionally, minor changes were made regarding the wording of some questions. A copy of the final questionnaire is provided at Appendix E.

### **3.8 Instrumentation**

The following section explains the instruments used in this research and provides the actual items used in the questionnaire.

#### **3.8.1 Involvement**

Respondents' involvement in SCUBA diving was determined through questions on level of experience and the concept of enduring involvement. The factors were based on previously discussed research related to adventure tourism and recreation and specialisation in outdoor activities. In the following paragraphs, the assignation of the factors experience and the concept of enduring involvement will be explained.

##### **3.8.1.1 Experience Variables**

Several variables, rather than one single item, were used to determine SCUBA diving club members' experience in SCUBA diving in a multidimensional manner. Experience comprised the following five variables: frequency of participation, self-reported skill level as a SCUBA diver, years SCUBA diving, highest SCUBA diving qualification/certification and whether or not respondents had any additional SCUBA diving qualification and/or certification. The experience items can be found in Table 3.2.

### ***Frequency of Participation***

Frequency of participation was assessed by one question about the number of SCUBA diving trips respondents had undertaken within the last 12 months. As mentioned earlier a SCUBA diving trip was defined as a trip that involved a travel distance of at least 40 kilometres. Frequency of participation was also assessed by various studies that investigated participation in outdoor adventure activities as discussed in the literature review (chapter two).

Schuett (1991) for instance, who tested the Adventure Model for outdoor adventure recreation participation, asked white-water kayakers the number of days they had been participating in kayaking in the past twelve months. Ewert and Hollenhorst (1994) included in their study of white-water boaters and rock-climbers besides participants' years of experience and the number of sites visited also frequency of participation to assess participants' dimensions of experience. Davis (1997) investigating the development and nature of recreational SCUBA diving in Australia, asked respondents how many dives they had completed per year to assess experience and regularity of diving. The current study asked for the *number of diving trips* undertaken within the last 12 months from the start of the survey, rather than the *number of dives* undertaken per year.

In order to assess SCUBA diving club members' frequency of participation respondents were asked to choose one out of five categories, which ranged from zero trips to ten or more trips. As to this author's knowledge no relevant study exists about SCUBA divers that asks respondents for the number of diving trips undertaken, categories were self-established and tested for their applicability within the pilot study. Based upon the distribution of responses within the pilot study, the categories were maintained for the main study.



**Table 3.2 Experience Items**

How many SCUBA diving trips have you undertaken within the last 12 months (a SCUBA diving trip in this study is defined as a trip that involves a travel distance of at least 40 km)?

- 0
- 1 to 3
- 4 to 6
- 7 to 9
- 10 or more

Please indicate which of the following categories best describes your skill level in SCUBA diving

- Advanced
- Intermediate
- Novice

How many years have you been SCUBA diving?

- less than 1 year
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 to 25 years
- 26 to 30 years
- more than 30 years

Please indicate your highest SCUBA diving qualification/certification

- No qualification
- Open water diver (or equivalent)
- Advanced open water diver (or equivalent)
- Rescue diver (or equivalent)
- Master SCUBA diver (or equivalent)
- Divemaster (or equivalent)
- Instructor

Do you have any additional diving qualifications/certifications not mentioned above?

- No
- Yes (please specify)

***Skill Level and SCUBA Diving Qualification***

Ewert and Hollenhorst (1989) used a self-assessment inventory for skill level to categorise users in the adventure recreation setting in different engagement levels based on their level of involvement. They suggested, however, that future work should use a more comprehensive method for determining involvement levels of adventure recreationists as the basis for categorising the latter. In a similar manner to that of Ewert and Hollenhorst

(1989), Schuett (1993) assessed white-water kayakers' skill levels by means of self-reporting. Additionally, he included a standardised white-water difficulty rating scale to improve the self-assessment inventory used by Ewert and Hollenhorst (1989).

In this study, SCUBA divers' skill levels were also assessed by using a self-assessment inventory comprising the categories novice, intermediate and advanced. To this author's knowledge, no standardised difficulty rating scale exists regarding the activity of SCUBA diving, which could have been used for the assessment and categorisation of SCUBA divers according to their experience levels. However, in order to include an additional objective measurement of experience level, respondents were asked to indicate their highest SCUBA diving qualification and/or certification.

A wide range of speciality courses are offered by different SCUBA diving certification organisations. Although not all embracing, an overview of PADI and NAUI (two predominant diver certification organisations in Australia) speciality and recognition courses is provided in Table 3.2. As speciality courses also require certain diving experience (number of dives, number or type of speciality courses or previously completed SCUBA diving qualifications/speciality courses) they could not be ignored. Thus, as a further measurement component of respondents' level of experience, a question on whether or not respondents had any additional SCUBA diving qualification and/or certification was included in the survey. It was decided not to include these speciality courses in the question on the highest qualification or list them separately in the questionnaire since this would have unnecessarily lengthened the survey without gaining valuable additional participant information.

It could be argued that using SCUBA diving qualifications, as a method of assessing divers' experience levels might be vague as some divers might not advance in qualification, but dive very often and have high skills and abilities while the opposite might also be true. To minimise this possible shortcoming the researcher used a multidimensional approach for assessing SCUBA divers' experience levels rather than assessing level of experience with one single item. Thus, components of SCUBA diving qualifications and/or certifications constituted only one of several factors used to assess experience level. Other factors used were frequency of participation, skill level and years SCUBA diving. This multidimensional approach is also in line with Ewert and Hollenhorst

(1989:137, referring to Hollenhorst, 1987) who suggest that in the context of adventure recreation activities an inclusion of “[b]ehavioural measures of this type may provide a more objective and meaningful basis for classifying users”.

**Table 3.3      Alphabetical Listing of Specialities offered by PADI and NAUI**

| <i>PADI</i>                                   | <i>NAUI</i>                           |
|---|---------------------------------------|
| AWARE - Fish Identification Speciality Course | Cave Diver (Levels I, II and III)     |
| Cavern Diver                                  | Cavern Diver                          |
| Coral Reef Conservation Speciality Course     | CCR Mixed Gas Diver                   |
| Deep Diver                                    | Closed Circuit Rebreather Diver       |
| Discover Enriched Air Nitrox                  | Decompression Technique               |
| Distinctive Specialities                      | Deep Diver                            |
| Diver Propulsion Vehicle Diver                | Dry Suit Diver                        |
| Drift Diver                                   | Enriched Air Nitrox (EANx)            |
| Dry Suit Diver                                | Heli-air Diver                        |
| Enriched Air Diver                            | Helitrox Diver                        |
| Equipment Specialist                          | Ice Diver                             |
| Go Pro  | Intro to Tech                         |
| Ice Diver                                     | Mixed Gas Blender and O2 Service Tech |
| Multilevel Diver                              | SCUBA Rescue Diver                    |
| Night Diver                                   | Search and Recovery Diver             |
| PADI Altitude Diver                           | Semi-Closed Rebreather Diver          |
| PADI Boat Diver                               | Technical Nitrox Diver                |
| PADI Search and Recovery Diver                | Technical Support Leader              |
| Peak Performance Buoyancy Speciality Course   | Technical Wreck Penetration Diver     |
| Project AWARE Speciality Course               | Training Assistant                    |
| Semiclosed Rebreather - Dolphin/Atlantis      | Tri-Mix Diver (Levels I and II)       |
| Semiclosed Rebreather - Dräger Ray            | Underwater Archeologist               |
| Underwater Naturalist                         | Underwater Ecologist                  |
| Underwater Navigator                          | Underwater Environment                |
| Underwater Photographer                       | Underwater Hunter and Collector       |
| Underwater Videographer                       | Underwater Photographer               |
| Wreck Diver                                   | Wreck Diver (External Survey)         |
|   | Wreck Penetration Diver               |
| International PADI Inc. (2006)                | NAUI Worldwide (2005a; 2005b)         |

Six categories were used to assess SCUBA diving qualifications and/or certifications which were termed ‘No qualification’, ‘Open water diver’, ‘Advanced open water diver’, ‘Rescue diver’, ‘Master SCUBA diver’, ‘Divemaster’ and ‘Instructor’. The categories used were adopted from the PADI diving education scheme (PADI Diving Society, 2005:67). The researcher was aware that several diver training organisations certify SCUBA divers in Australia and that an unknown number of respondents might be certified by an

organisation other than PADI (for instance SCUBA Schools International [SSI] or the National Association of Underwater Instructors [NAUI]). However, as certification agencies have similar core certification programs, for the aim of this study it was not considered to be of particular importance, with which certification organisation respondents had been certified. To address this issue to each SCUBA qualification category stated in the questionnaire the term ‘or equivalent’ was added in brackets, for instance: ‘Advanced Open Water Diver (or equivalent)’.

The education scheme offered by PADI was decided upon as PADI offers the most widely recognised diving certification worldwide (International PADI Inc., 2005; Mintel International Group Limited, 2003b). No recent statistics or studies are available on the recognition of PADI’s certifications in the Australian SCUBA diving context. Earlier studies relevant to recognition of PADI certifications in Australia are that of Davis (1997), Doyle (1995) and Phillips (1992).

Phillips (1992) argued that PADI dominates diver certification in the Great Barrier Reef Region, which is located along the coastline of QLD, one of the two states included in the main study of this research. Doyle (1996:32), who investigated the Gold Coast’s recreational SCUBA diving industry, stated that within the study region, PADI was the “most popular certification agency with 91% of the operators affiliated with this agency”.

Davis (1997:124) conducted an Australian-wide survey of recreational SCUBA divers and found that PADI was the organisation where “the majority of SCUBA diving certifications, at all levels, were approved”. In the same study, Davis (1997) also mentions that PADI represents the largest diver training organisation in Australia.

### ***Years SCUBA Diving***

Six categories were used in the pilot study to assess the number of years respondents’ had been SCUBA diving. Based on the results of the pilot study these were complemented by additional two categories. Eight categories (ranging from less than one year to more than 30 years) were used in the main study, which were identical to those used by Davis (1997).

### 3.8.1.2 Enduring Involvement

In addition to the experience variables, the concept of ‘enduring involvement’ was used to establish respondents’ involvement in SCUBA diving. The concept of enduring involvement is based on the work of McIntyre (1989:167) who proposed enduring involvement as a “conceptualisation of the personal meaning of participation” and applied it to beach campers in QLD.

McIntyre (1989) tested the instrument on 347 campers on three camping areas in Coolooloa National Park in Australia. In his study, the scale consisted of four components: importance (I), enjoyment (E), centrality (C) and self-expression (S). Internal consistency reliability for the enduring involvement scale was 0.85 (Cronbach’s coefficient alpha). McIntyre (1989) conducted a Principal Component Analysis (PCA) on the enduring involvement items, which indicated a three-component structure with eigenvalues above 1.00 and with the three components explaining 54 per cent of the variance. The fourth component ‘enjoyment’ was not supported through PCA. The three components he consequently used were termed self-expression, centrality and attraction, with the latter representing a “mixture of items which refer to the enjoyment and importance of camping” (McIntyre 1989:174). McIntyre (1989:174) further reported that the three scales demonstrated “good trait and discriminant validity, in that each loads on only one factor and items in one scale tend to have lesser loading on the other scales”.

Enduring involvement has been widely discussed and applied in research related to adventure recreation (Ewert and Hollenhorst, 1994; McIntyre, 1990; McIntyre and Pigram, 1992; Schuett, 1991; 1993) and leisure and recreation specialization (Bricker and Kerstetter, 2000; Kyle *et al.*, 2004a; Kyle *et al.*, 2004b; McFarlane, 2004; McIntyre and Pigram, 1992; Scott and Shafer, 2001) and has already been discussed in detail in the review of the literature in chapter two.

To measure the components of enduring involvement a total of 12 items were adapted from McIntyre’s (1989) study on campers. These items were subsequently used by several studies in the context of *hard* and *soft* adventure activities, for instance by McIntyre and Pigram (1992), who investigated recreation involvement of vehicle-based campers; Ewert and Hollenhorst (1994), who examined individual and setting attributes of the adventure

recreation experience on white-water boaters and rock climbers; Bricker and Kerstetter (2000), who investigated level of specialisation and place attachment amongst white-water recreationists; Kyle *et al.* (2004a), who explored recreationists' relationships with activities and settings using a sample of hikers, boaters and anglers; and McFarlane (2004), who examined recreation specialization and site choice among vehicle-based campers.

However, to this researcher's knowledge, the concept of enduring involvement has not previously been applied in the context of SCUBA diving in Australia. To suit the recreational SCUBA diving context of the research, for each single item adapted from McIntyre (1989) the wording had to be altered. To achieve this, the word 'camping' in McIntyre's (1989) study was simply substituted by the word 'SCUBA diving' in this study. The complete list of enduring involvement items as used in this research can be found in Table 3.4.

**Table 3.4 Enduring Involvement Items<sup>a</sup>**

|  |
|--|
| <p>CENTRALITY</p> <p>I find a lot of my life is organised around SCUBA diving<br/>Most of my friends are in some way connected with SCUBA diving</p> <p>SELF-EXPRESSION</p> <p>SCUBA diving says a lot about who I am<br/>When I participate in SCUBA diving others see me the way I want them to see me<br/>When I participate in SCUBA diving I can really be myself<br/>You can tell a lot about a person when you see them SCUBA diving</p> <p>IMPORTANCE</p> <p>I enjoy discussing SCUBA diving with my friends<br/>I have little or no interest in SCUBA diving<br/>SCUBA diving is important to me</p> <p>ENJOYMENT</p> <p>Participating in SCUBA diving is one of the most enjoyable things that I do<br/>Participating in SCUBA diving is one of the most satisfying things that I do<br/>SCUBA diving offers me relaxation when pressures build up</p> |
|--|

<sup>a</sup> measured on a 5-point Likert scale ( 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

### 3.8.2 Motivations

A set of 24 motivational statements was adopted from Todd *et al.* (2001) who investigated New York State divers' level of development in relationship to their motivations to dive. These 24 motivational statements were considered very comprehensive and thus were adopted *a priori* as a valid measure to assess divers' motivations in this research. As mentioned in section 2.4 based on the results of the pilot study one additional motivational statement was added to those adapted from Todd *et al.* (2001) which was termed 'To go hunting (spear fishing and catch prawns, crabs, crayfish, etc.)'. This motivation was added as in the pilot study hunting emerged as an important aspect to go diving. Respondents were asked to rate each motivational statement on a 5-point Likert-scale with the anchors 'strongly disagree' to 'strongly agree'. The motivational items are in Table 3.5.

**Table 3.5 Motivational Items<sup>a</sup>**

|   |
|---|
| <p>Please indicate the importance of the following motivations/reasons to go on a SCUBA diving trip</p> <ul style="list-style-type: none"><li>For relaxation</li><li>To give me a feeling of confidence in myself</li><li>It's sort of an impressive thing to do</li><li>Because it is stimulating and exciting</li><li>To see historically significant shipwrecks</li><li>To experience peace and tranquillity</li><li>To share my skill and knowledge with others</li><li>To use my equipment</li><li>To collect interesting artefacts</li><li>Because of the risk involved</li><li>To do something creative, such as take pictures or videos</li><li>To show myself that I can do it</li><li>To gain an experience I can look back on</li><li>To study underwater geological formations</li><li>For the adventure of it</li><li>To meet new people</li><li>To learn more about the underwater environment</li><li>Because I think it is a challenge</li><li>To help keep me physically fit</li><li>To look at underwater animal and plant life</li><li>To develop my diving skills and abilities</li><li>To explore things</li><li>For a change from everyday life</li><li>So I can do things with my friends and/or family</li><li>To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.)</li></ul> |
|---|

<sup>a</sup> measured on a 5-point Likert scale with 1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important

### 3.8.3 Setting Preferences

Setting refers to where and how the activity of SCUBA diving takes place. Setting preferences comprised components such as respondents' environmental orientation, social orientation, preferred physical risk and importance of equipment. These components included physical resource (location and development of diving site/area), social (number and type of others) and managerial aspects (facilities). The instruments used to assess these components are described in the following paragraphs.

#### 3.8.3.1 Environmental Orientation

Environmental orientation in this study related to preferred naturalness present at the activity site and to divers' attitudes towards developed structures on or near diving sites. Six items were used to determine SCUBA divers' environmental orientation (Table 3.6). SCUBA divers were asked to rate the importance of each item on a 5-point Likert scale with the anchors 'very unimportant' to 'very important'. The environmental orientation items were established considering studies of Burke (2002), Ewert and Hollenhorst (1994), Howard (1999), Knopp *et al.* (1979), Schuett (1991), Schuett (1993), Tabata (1992) and Virden and Schreyer (1988). Environmental orientation items used in this study were adjusted in a way that they could be applied meaningful to the context of SCUBA diving. Environmental orientation items are in Table 3.6.

**Table 3.6 Environmental Orientation Items<sup>a</sup>**

Please indicate the importance of the following aspects when you are on a SCUBA diving trip

- Presence of dive shops
- Lack of crowding
- Remoteness of diving site
- Easy access to dive site
- To experience an undeveloped environment
- Other onshore built facilities (e.g. food, accommodation, ...)

<sup>a</sup> measured on a 5-point Likert scale with 1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important



### 3.8.3.2 Social Orientation

Social orientation or the social context in which individuals participate in SCUBA diving related to SCUBA divers' preferences in regard to diving with an organised group, with a guide, friends or alone. Social orientation items were established considering studies of Ewert and Hollenhorst (1989; 1994) and Schuett (1991, 1993). This research investigates preferred social contexts in a similar manner as the study conducted by Ewert and Hollenhorst (1989) which has been discussed earlier in section 2.5.2.

Seven items from Schuett's (1993) study were adopted and adjusted to the context of SCUBA diving. The latter involved replacement of 'kayaking' and 'kayakers' with 'SCUBA diving' and 'SCUBA divers'. Furthermore, 'instructors' which constitutes a clearer expression in the context of SCUBA diving replaced 'mentors'. Social orientation items were rated on a 5-point Likert scale with the anchors 'never' to 'very often' (Table 3.7).

**Table 3.7 Social Orientation Items<sup>a</sup>**

|   |
|---|
| How often do you usually go SCUBA diving                  |
| With friends?   |
| With participants in classes or instructional programs?   |
| Alone?  |
| With fellow SCUBA divers of similar experience and skill? |
| With teachers/instructors?                                |
| With groups from clubs or organisations?                  |
| With a guide?   |

<sup>a</sup> measured on a 5-point Likert scale with 1=never, 2=rarely, 3=sometimes, 4=often, 5=very often

### 3.8.3.3 Preferred Physical Risk

Risk, as discussed in chapter two, is an element often described as being intrinsic in adventure activities (Jafari, 2000; Morgan, 2000; Morgan and Fluker, 2002; Vester, 1987).

An investigation of perceived risk in this research was limited to the dimension of physical risk due to the following reasons. Firstly, a discussion of relevant literature in the field of adventure tourism (chapter two) has revealed the significance of physical risk in regard to

motives for participation in adventure activities. Secondly, a comprehensive investigation of perceived risk and a subsequent inclusion of all perceived risk items mentioned above would have unnecessarily lengthened the questionnaire, which in turn might have reduced respondents' willingness to complete the questionnaire.

Two risk items, adopted from Schuett (1993), measured physical risk. The wording was changed in order to measure respondents' preferences of physical risk and to adjust them to the context of SCUBA diving. Physical risk items were termed 'I enjoy the physical risk associated with SCUBA diving' and 'I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation)'. Respondents were asked to rate their level of agreement on the physical risk items on a 5-point Likert scale with the anchors 'strongly disagree' to 'strongly agree' (Table 3.8).

**Table 3.8 Physical Risk Items<sup>a</sup>**

Please indicate your level of agreement on the following statements

I enjoy the physical risk associated with SCUBA diving  
I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation)

<sup>a</sup> measured on a 5-point Likert scale with 1=never, 2=rarely, 3=sometimes, 4=often, 5=very often

Schuett (1993) included the second item shown in Table 3.8, which was adapted and modified for this study, under the dimension of functional risk. However, in this research this item was utilised to measure preferred physical risk due to the following reason. Problems (mechanical, equipment or organisational) that can occur while SCUBA diving are highly interrelated to physical risk, because problems of this nature might easily lead to injury, or even worse, participant death.

#### **3.8.3.4 Equipment**

The importance of equipment was previously examined in adventure recreation research (e.g. Ewert and Hollenhorst, 1994; Schuett, 1993) and in context of adventure activities has already been discussed in chapter two. Two equipment items as used by Schuett (1993)

were adopted in this study. In one item it was necessary to alter the wording to suit an assessment of the importance SCUBA divers placed on specialised equipment. Respondents were asked to rank the importance of these statements on a 5-point Likert scale with the anchors ‘strongly disagree’ to ‘strongly agree’ (Table 3.9).

**Table 3.9      Equipment Items<sup>a</sup>**

Please indicate your level of agreement on the following statements

It is important for me to use specialised equipment  
It is important for me to talk to others about my equipment

<sup>a</sup> measured on a 5-point Likert scale with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

### **3.8.4      Socio-demographic Characteristics**

To date only limited information exists about those who participate in recreational SCUBA diving. With regard to SCUBA diving in Australia, Wilks (1991a) examined continuing education among QLD SCUBA divers and identified some demographic characteristics including age, family status and education. Two years later, Wilks (1993) investigated social perceptions of the recreational sport of SCUBA diving using a sample of SCUBA divers that had completed an introductory SCUBA dive on the Great Barrier Reef. In this study, Wilks (1993) also examined demographic characteristics, which comprised the same components as mentioned above.

Davis (1997) undertook an Australia-wide survey of recreational SCUBA divers in conjunction with an industry survey between December 1994 and March 1995. In this survey Davis (1997) collected comprehensive data on divers’ socio-demographics including age, income, occupation, years diving, number of dives completed per year and dive qualifications and expenditure on diving.

Burke (2002) studied Great Barrier Reef [GBR] visitors who experienced SCUBA diving on the GBR. He profiled four groups comprising certified divers, introductory divers, dive-specific Reef day trips and live-aboard trips asking respondents a range of questions,

including those related to origin, size of the travel party, trip planning, length of stay, factors influencing choice of Reef trip, expenditure, motivations and travel behaviour.

Taylor, O'Toole and Ryan (2002) surveyed recreational divers belonging to SCUBA diving clubs across Australia to determine the prevalence of diseases contra-indicated in diving. These authors also assessed socio-demographic characteristics of their sample including age, education, occupation, years diving and number of dives undertaken.

Although not related to the Australian SCUBA diving context a further relevant study regarding socio-demographic information of SCUBA divers was conducted by Cottrell and Meisel (2003). They investigated predictors of personal responsibility to protect the marine environment among North American SCUBA divers and established a detailed diver profile of their sample including age, gender, education levels, dive group type, diving experience, years diving and number of dives logged.

As discussed in chapter two, to date only limited information exists on socio-demographics of SCUBA divers that are a member of a SCUBA diving club in Australia. This research addressed this lack of information by gathering socio-demographics of SCUBA diving club members in QLD and NSW, which included information on gender, age, education, occupation, income and place of residency. Moreover, socio-demographic information in this research was important for profiling SCUBA diving club members that participated in this study.

### **3.9 Data Analysis**

The primary data gathered by web-based questionnaires was analysed and tabulated by utilisation of statistical analysis software [SPSS (Statistical Package for the Social Sciences) for Windows, version 12.0.1] and Microsoft Excel.

Primary data was analysed using the following statistical techniques and procedures: descriptive analyses, cross-tabulations, Principal Component Analyses (PCA), an agglomerative hierarchical cluster analysis, a non-hierarchical cluster analysis, repeated measures Analysis of Variance (ANOVA) and one-way ANOVAs. Exact Pearson chi-

square tests were conducted to test whether there were significant differences concerning socio-demographic variables between clusters. The application of those statistical techniques is explained in the following paragraphs.

Descriptive analyses were used to describe the profile of respondents related to socio-demographics, their motivations to go on a SCUBA diving trip, their experience in SCUBA diving and the results of respondents' setting preferences. Club members' involvement in the activity of SCUBA diving was determined through five experience variables, which have been described in section 3.8.1.1, and 12 enduring involvement variables, which have been explained in section 3.8.1.2.

Cross-tabulations with Exact Pearson chi-square tests using the Monte Carlo method were conducted to test whether there were significant differences of socio-demographic variables (gender, age, education, occupation and income) between the five clusters.

A Principal Component Analysis (PCA) with varimax rotation was conducted on the 12 enduring involvement variables. The PCA was used to investigate if the three components (attraction, centrality, and self-expression), suggested previously by McIntyre (1989), captured effectively the components of enduring involvement for the 246 respondents in this study. PCAs were also conducted on variables that measured respondents' motivations and experience in SCUBA diving to investigate the underlying constructs and to reduce the number of variables used. Prior to performing the PCA, data was tested for suitability to be factor-analysed by investigating the correlation matrix. The goals of the PCA used in this study are in line with those stated by Tabachnik and Fidell (2001:582) who state that “[t]he specific goals of PCA (...) are to summarize patterns of correlations among observed variables [and] to reduce a large number of observed variables to a smaller number of factors”.

Regression factor scores were calculated for all respondents for experience and for each of the enduring involvement components found. These regression factor scores were subsequently used for further data analysis, in particular for deriving clusters of SCUBA diving club members.

Cluster analyses were conducted based on respondents' experience characteristics and the construct of enduring involvement to group SCUBA diving club members according to similarities in relation to these variables. Generally, the objective of cluster analysis is "to partition or subdivide a set of objects into homogeneous subgroups or into a hierarchical arrangement of homogeneous subgroups" (Lorr, 1983:3). Moreover, in this research, utilisation of a cluster analysis technique provided appropriate recognition of the multidimensional construct of enduring involvement. To resolve the number of clusters problem, two techniques of cluster analysis were applied which follows suggestions of Dolnicar (2002). Firstly, an agglomerative hierarchical cluster analysis technique was applied to find the most favourable number of clusters present in the data. Secondly, after the number of cluster has been decided upon, as a partitioning algorithm the k-means clustering method was conducted.

A repeated measures Analysis of Variance (ANOVA) was conducted to compare, on the one hand, mean scores of motivational components that emerged through the PCA between clusters and on the other hand to test for statistically significant differences between cluster mean scores on these motivation components. Furthermore, one-way ANOVAs were conducted to test for statistically significant differences between the clusters with regard to respondents' setting preferences.

### **3.10 Ethical Issues**

Researchers at the University of Canberra who intend to carry out research with human participants, require the approval of the Committee for Ethics in Human Research [CEHR] of the University of Canberra. The CEHR operates under the guidelines of the National Statement on Ethical Conduct in Research Involving Humans by the National Health and Medical Research Council (University of Canberra, 2005). An application for approval of this research was submitted to the CEHR in August 2005 and approval was granted in October 2005.

By utilisation of quantitative methods for data collection, this research aimed to investigate motivations and preferences from a large number of individuals relevant to the research topic and to make possible generalisations from the sample to the research population.

Although there is generally a “greater scope for ethical issues to arise in relation to [a qualitative] approach to research” than in relation to a quantitative approach (Easterby-Smith *et al.*, 1991 referred to in Saunders *et al.*, 2000:137), the researcher was aware of general ethical issues which had to be considered when conducting a quantitative research approach. Key ethical issues that were considered in this research were related to the collection of data and the reporting of research findings. Ethical issues that were considered in this research are discussed in the following paragraphs.

### **3.10.1 Informed Consent**

Burns (1997:18) states that informed consent “is the most fundamental ethical principle that is involved [in research]. Participants must understand the nature and purpose of the research and must consent to participate without coercion”. In order to adhere to the principal of informed consent, each of the SCUBA diving clubs that were approached received an invitation email to participate in the research which comprised detailed information on the nature and aim of the research, the research process, and their rights as participants. Attached to this email SCUBA diving clubs were also sent a copy of the survey questions. A positive response to this invitation email, which constituted an agreement to participate in the research, was considered as informed consent. As mentioned before, SCUBA diving clubs that agreed to participate were asked to forward an invitation email to participate to their club members. This invitation email included the same information as the one that was sent to the SCUBA clubs. Informed consent of SCUBA club members was considered to be obtained by the respondent’s completion of the web-based survey.

Jennings (2001:109) suggests that involvement in research should be voluntary based on the participant’s informed consent as well as “the freedom to withdraw from the research process”. The voluntary nature of participation of both SCUBA diving clubs and SCUBA diving club members was highlighted on the invitation emails. Furthermore, participants could withdraw from completing the web-based survey at any stage.

### **3.10.2 Confidentiality and Anonymity**

Confidentiality and anonymity are two further issues that have to be considered concerning informed consent and data collection on individuals (Jennings, 2001). According to Burns (1997:29), the first issue, confidentiality, involves “a clear understanding between researcher and participant concerning the use to be made of the data provided”. Participants in this research were fully informed about the use of data provided within the invitation email.

The second issue, anonymity, means “that the researcher will not and cannot identify the respondent” (Jennings, 2001:109). Anonymity of participants was protected in the use of this web-based survey at all times. As mentioned earlier, participating SCUBA diving clubs forwarded the invitation email to their members who could then follow a hyperlink and complete the questionnaire. After completion, the questionnaire was submitted to and saved at ‘SurveyMonkey.com’ in such a way that the sender could not be tracked down and thus, surveys submitted were entirely anonymous. These surveys were saved until the completion of the data collection at this professional online survey site. Access to this site was restricted to the researcher by a password-protected login.

### **3.10.3 Participants’ Access to Results**

Participants were informed within the invitation email that access to the final thesis would be possible through the University of Canberra Library after completion of the research. Furthermore, participating SCUBA diving clubs were sent an executive summary of the results.

## **3.11 Limitations**

The following limitations have to be considered concerning this research. This study confines itself to surveying members of SCUBA diving clubs. This means, the research does not consider individuals that conduct the activity of SCUBA diving and have no membership in a diving club. However, the sample frame is considered most appropriate as a large number of respondents, which are actively involved in SCUBA diving, can be contacted within a limited time frame.



A possible bias is introduced to this study through the utilisation of web-based surveys as respondents have to be computer and internet literate and must have access to computer and email (Cavana, *et al.*, 2001). This indicates that the findings can only be related to those SCUBA diving club members that have access to email. Due to the geographical dispersion of SCUBA diving club, which have been contacted throughout WA, QLD and NSW this method is still considered most appropriate taking into account the time and financial constraints of this research.

Using the quantitative approach of questionnaires for data collection might result in a possible misinterpretation of questions by the respondent (Burns, 1997; Saunders *et al.*, 2000), which affects the quality and validity of the data collected. Therefore, careful consideration was given on the planning and designing of the questionnaire. Furthermore, the questionnaire was pilot-tested, enabling the researcher “to obtain some assessment of the questions’ validity and the likely reliability of the data that [were] collected” (Saunders *et al.*, 2000:305). As mentioned in section 3.6.1, based on the results of the pilot test minor modifications were made in the questionnaire, where necessary.

Conclusions derived from the findings of this research can only be drawn in regard to SCUBA diving club members that participate in the adventure tourism activity of SCUBA diving within QLD and NSW. Therefore conclusions derived are applicable to adventure tourists that participate in SCUBA diving in all Australian states and territories or adventure tourists that participate in other adventure activities. This provides directions for further research, which could investigate and compare participants’ motivations and preferred setting attributes of two or more adventure activities, which might allow for larger generalisations to be made.

### **3.12 Chapter Summary**

This chapter drew on the previous chapter to establish the methodological approach for this research. The research methodology employed in this study was presented based on the review of the literature related to adventure tourism and recreation and motivational issues to participation in adventure activities in general and in the activity of SCUBA diving in particular.

The chapter outlined the research paradigm and strategy used, the research design with data collection and its implementation, the research population and the questionnaire design, which included the presentation of variables used. Primary data was collected by self-administered web-based questionnaires with the survey instrument designed to investigate SCUBA diving club members' involvement in the activity of SCUBA diving; motivations to participate; setting preferences; and socio-demographics. Based on the results of the pilot study the questionnaire used for the main study was adjusted accordingly. The research population was defined and the variables used in this research were presented and discussed.

The statistical procedures employed to analyse the data were outlined. These included descriptive analyses, cross-tabulations, PCAs, an agglomerative hierarchical cluster analysis, a non-hierarchical cluster analysis, repeated measures ANOVA and one-way ANOVAs. The chapter presented ethical issues that were considered in this study. Lastly, the research limitations that may have restricted the scope of this study and the application of the findings were examined. In the following chapter (chapter four), the data analysis and the research findings are presented.

## **CHAPTER FOUR**

### **Data Analysis and Results**

#### **4.1 Introduction**

In chapter three, the research design and the research methodology used in the study to address the research objectives were presented. This chapter presents the results of this research regarding involvement, motivations and setting preferences of SCUBA diving club members involved in this research.

Firstly, a socio-demographic profile of respondents is provided. Secondly, the results of variables used to assess SCUBA diving club members experience in SCUBA diving are outlined. Thirdly, the findings of a cluster analysis on the sample are revealed which is based on respondents' experience and the concept of enduring involvement. Fourthly, the results of club members' motivations are outlined and discussed. Differences and similarities between clusters regarding motivations are presented. Lastly, the results of SCUBA diving club members' setting preferences are provided. Differences and similarities between clusters regarding setting preferences are presented.

The findings are based on descriptive analyses, cross-tabulations, an agglomerative hierarchical cluster analysis, a non-hierarchical cluster analysis, principal component analyses and Analyses of Variance (ANOVAs).

As for statistical techniques, cross-tabulations with Exact Pearson chi-square tests were conducted to test whether there were significant differences of socio-demographic variables between the five clusters. ANOVAs were performed to test significant differences in respondents' motivations and setting preferences between clusters.

## **4.2 Survey Response**

For the main study, 294 questionnaires were completed and saved at the 'SurveyMonkey.com' internet website. Due to issues related to confidentiality, it was impossible to link survey completions to specific clubs. Thus an average response rate of for each club that has participated cannot be stated.

As explained in section 3.5, this study focused on SCUBA diving club members who had undertaken a SCUBA diving trip within the past 12 months. Two-hundred and sixty-two respondents (89.1%) indicated that they had undertaken a SCUBA diving trip within the last 12 months. Subsequently, 32 respondents (10.9%) who had not undertaken a trip during the last year were excluded from further investigation. Additionally, 15 questionnaires (5.1%) were excluded from data analysis as only the first three questions were answered and thus no information on motivations, setting preferences or socio-demographics were indicated. One outlying case was deleted, which will be further explained in section 4.5.1. From the remaining 246 questionnaires which were finally retained for further data analysis, seven respondents (2.9%) did not indicate their income, two respondents (0.8%) did not identify their country of residence and additionally three respondents (1.2%) did not complete any question related to socio-demographics.

## **4.3 Results Socio-demographics**

The following sections reveal the socio-demographic findings of SCUBA diving club members who participated in this study. Findings include country of residence, location of SCUBA diving clubs in which respondents were members, gender, age, education levels, country of residence and income levels.

### ***Country of Residence***

Table 4.1 shows that 234 respondents (95.1%) identified Australia as their country of residence. Other countries of residence identified by SCUBA diving club members were the USA, which was indicated by three respondents (1.2%), and England, Philippines, Saudi Arabia and Sweden, each indicated by one respondent (0.4%) respectively.

**Table 4.1 Country of Residence of Respondents (n=246)**

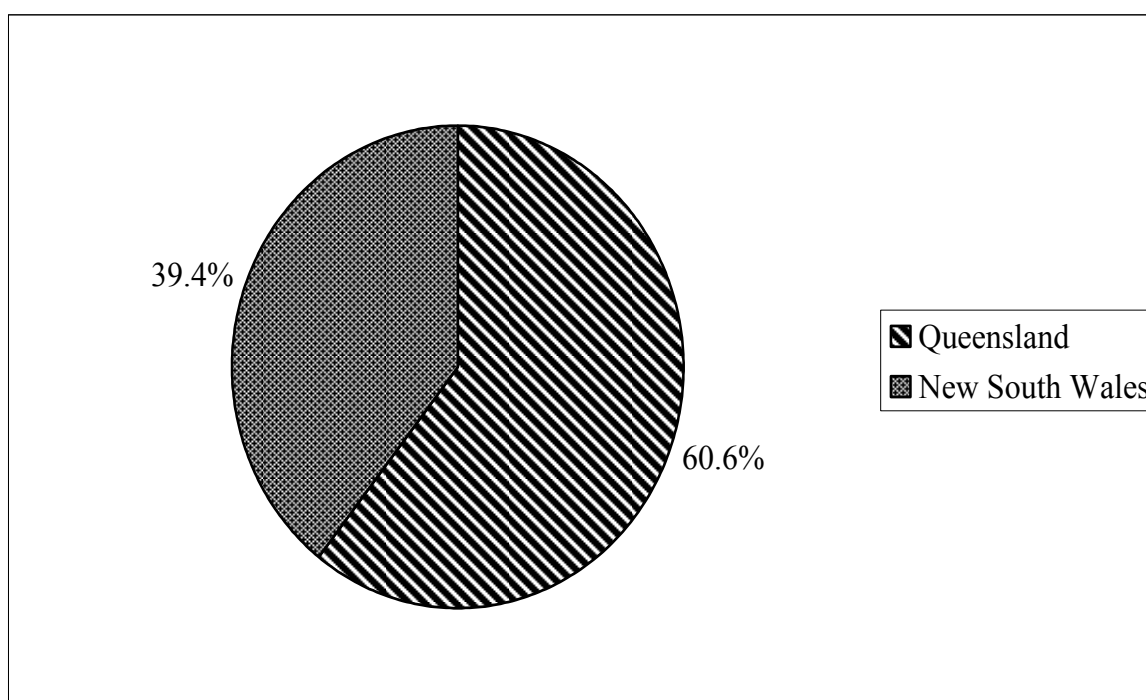
| Variables    | Frequency | Percent | Cumulative Percent |
|--------------|-----------|---------|--------------------|
| Australia    | 234       | 95.1    | 95.1               |
| USA          | 3         | 1.2     | 96.3               |
| England      | 1         | 0.4     | 96.7               |
| Philippines  | 1         | 0.4     | 97.2               |
| Saudi Arabia | 1         | 0.4     | 97.6               |
| Sweden       | 1         | 0.4     | 98.0               |
| No response  | 5         | 2.0     | 100.0              |
| Total        | 246       | 100.0   |                    |

As can be seen from Table 4.2, 149 respondents (60.6%) of respondents were members of SCUBA diving clubs in QLD and 97 respondents (39.4%) were members of clubs located in NSW. The graphical distribution can be seen in Figure 4.1. The higher percentage of respondents from QLD is assumed to relate to the fact that more SCUBA diving clubs from Queensland (n = 10) than clubs from NSW (n = 6) participated in this study.

**Table 4.2 Club Membership of Respondents by State (n=246)**

| Variables       | Frequency | Percent | Cumulative Percent |
|-----------------|-----------|---------|--------------------|
| Queensland      | 149       | 60.6    | 60.6               |
| New South Wales | 97        | 39.4    | 100.0              |
| Total           | 246       | 100.0   |                    |

**Figure 4.1 Club Membership of Respondents by State (n=246)**



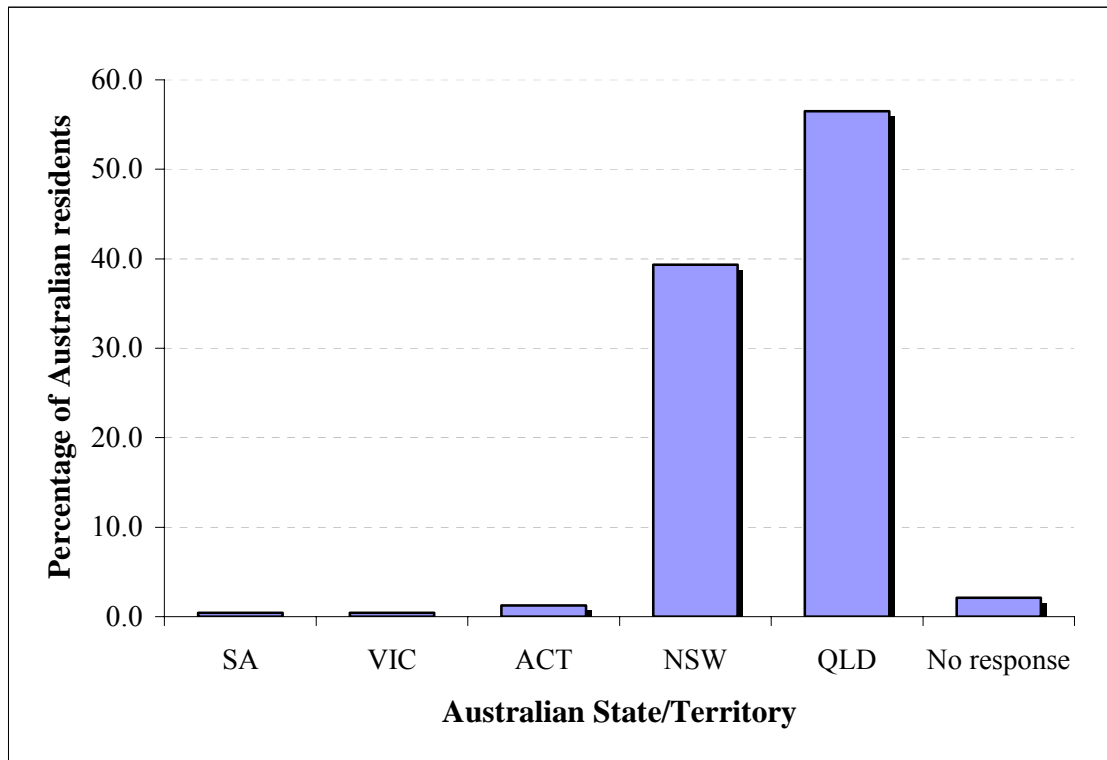
***Australian Residents by State/Territory***

The home states of Australian residents were identified through a question on their postcodes. From 239 Australian residents in the sample, 234 indicated their postcodes. The latter have been categorised according to Australian states and territories, which is shown in Table 4.3 and Figure 4.2. The majority of Australian residents came from QLD (56.5%) and NSW (39.3%). Only five respondents (2.1%) indicated other Australian states or territories as their place of residence.

**Table 4.3 Percentage of Australian Residents by State/Territory (n=239)**

| State                        | Frequency | Percent | Cumulative Percent |
|------------------------------|-----------|---------|--------------------|
| New South Wales              | 94        | 39.3    | 39.3               |
| Queensland                   | 135       | 56.5    | 95.8               |
| Australian Capital Territory | 3         | 1.3     | 97.1               |
| Victoria                     | 1         | 0.4     | 97.5               |
| South Australia              | 1         | 0.4     | 97.9               |
| No response                  | 5         | 2.1     | 100.0              |
| Total                        | 239       | 100     |                    |

**Figure 4.2 Percentage of Australian Respondents by State/Territory (n=239)**



### ***Gender***

The profile of the respondents revealed that 63.8 per cent were males (Table 4.4), which almost equals to the percentage reported by Wilks (1991a) and Wilks (1993), where 62.1 per cent and 60.5 per cent of divers respectively were male. The percentage of male divers in this study was higher than reported by Burke (2002) who profiled certified divers (51.0% males), introductory divers (50.0% males), Reef day trip divers (53.0% males) and live-aboard divers (52.0% males) in QLD. However, the percentage of male respondents in this survey was lower than that reported by Davis (1997) who conducted an Australia-wide survey of recreational SCUBA divers, where 76.0 per cent of divers were male. Interestingly, the percentage of male respondents in this study was lower than stated by Taylor *et al.* (2002), who conducted a survey of SCUBA diving club members across Australia, where 73.4 per cent of respondents were male.

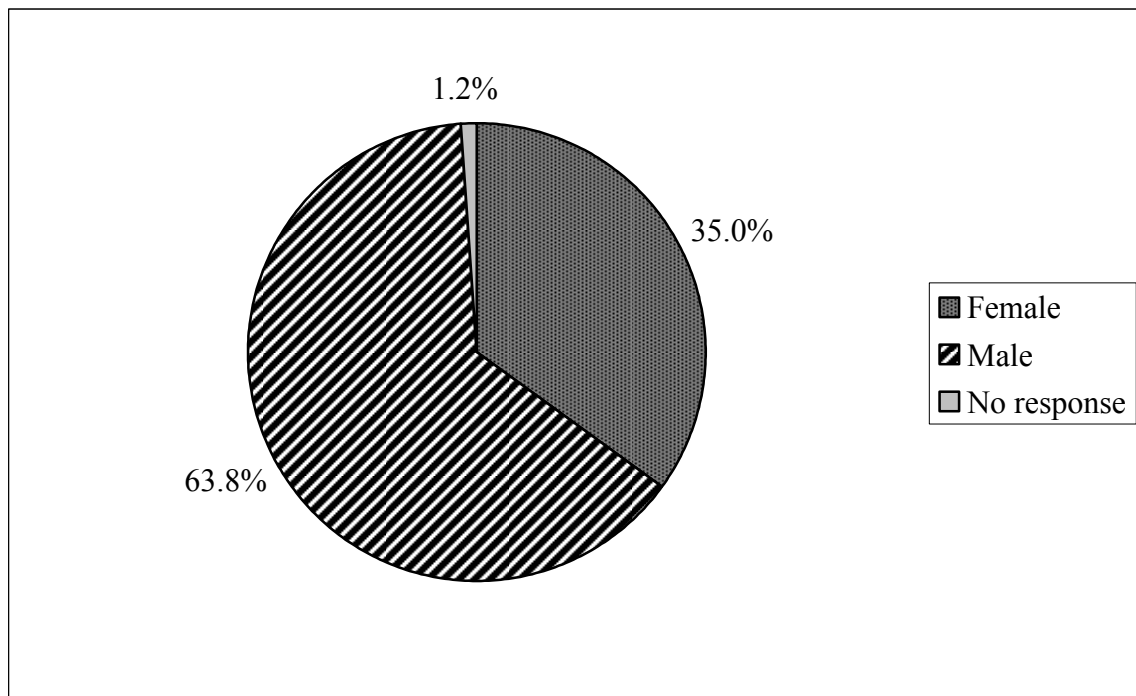
In comparison, the percentage of male divers in this study was different from two relevant studies in the USA that involved SCUBA divers, where 80.0 per cent (Todd *et al.*, 2001)

and 79.0 per cent (Cottrell and Meisel, 2003) were males. The graphical distribution of male and female respondents in this study is shown in Figure 4.3.

**Table 4.4 Gender of Respondents (n=246)**

| Variables   | Frequency | Percent | Cumulative Percent |
|-------------|-----------|---------|--------------------|
| Female      | 86        | 35.0    | 35.0               |
| Male        | 157       | 63.8    | 98.8               |
| No response | 3         | 1.2     | 100.0              |
| Total       | 246       | 100.0   |                    |

**Figure 4.3 Gender of Respondents (n=246)**



**Age**

Concerning age, a majority of respondents were 25 to 54 years old, which represented 80.4 per cent of the total respondents (Table 4.5). The age group of 35 to 44 year old SCUBA diving club members was strongest represented (30.1%), followed by the 25 to 34 age group (25.2%) and the 45 to 54 age group (25.2%). Reference to Figure 4.4 shows a



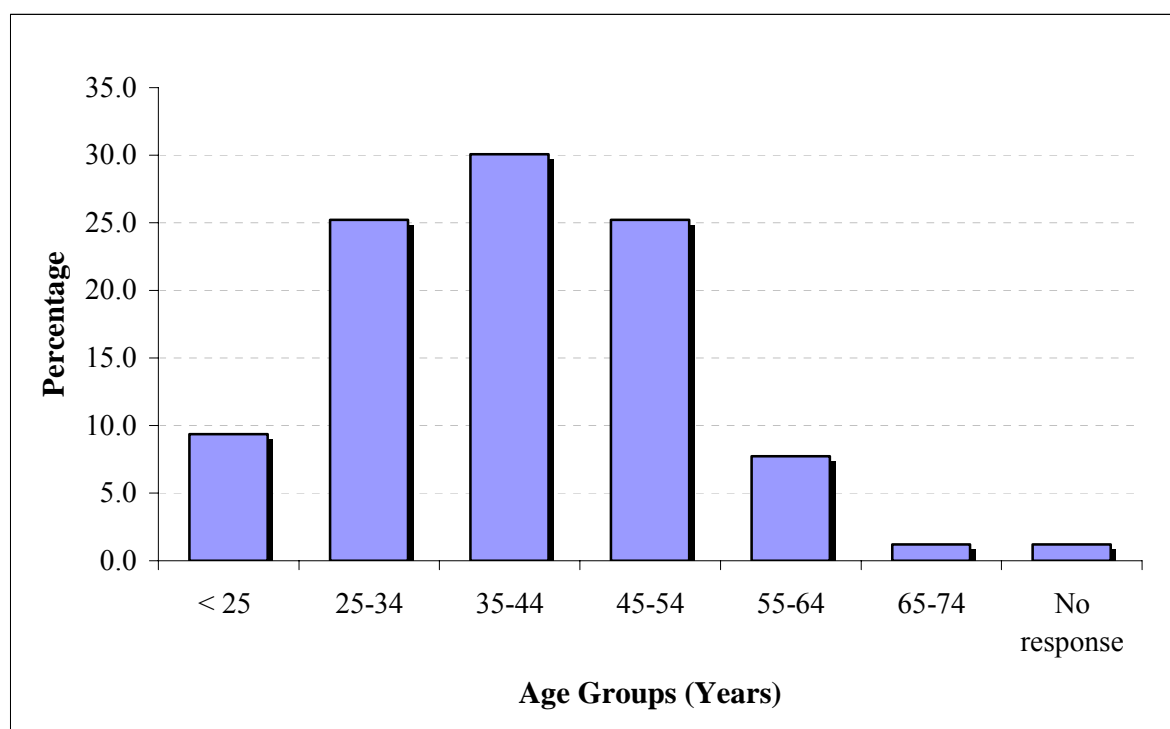
decline in the percentage of divers who were older than 55 years. Only 8.9 per cent of respondents in this sample were older than 55 years.

SCUBA diving club members in this study were older than the sample of recreational SCUBA divers reported by Davis (1997), where the age group that participated most in SCUBA diving was the 25 to 34 age group. Regarding age of respondents, further direct comparisons to other SCUBA diving studies identified (e.g. Burke, 2002; Todd *et al.*, 2001; Wilks, 1991a, 1991b) were found to be difficult as in these studies different age group categories were used than in this study. The latter is also true for a study that involved SCUBA diving club members in Australia conducted by Taylor *et al.* (2002).

**Table 4.5 Age Groups of Respondents (n=246)**

| Variables       | Frequency | Percent | Cumulative Percent |
|-----------------|-----------|---------|--------------------|
| younger than 25 | 23        | 9.3     | 9.3                |
| 25-34 years     | 62        | 25.2    | 34.6               |
| 35-44 years     | 74        | 30.1    | 64.6               |
| 45-54 years     | 62        | 25.2    | 89.8               |
| 55-64 years     | 19        | 7.7     | 97.6               |
| 65-74 years     | 3         | 1.2     | 98.8               |
| No response     | 3         | 1.2     | 100.0              |
| Total           | 246       | 100.0   |                    |

**Figure 4.4 Age Groups of Respondents (n=246)**



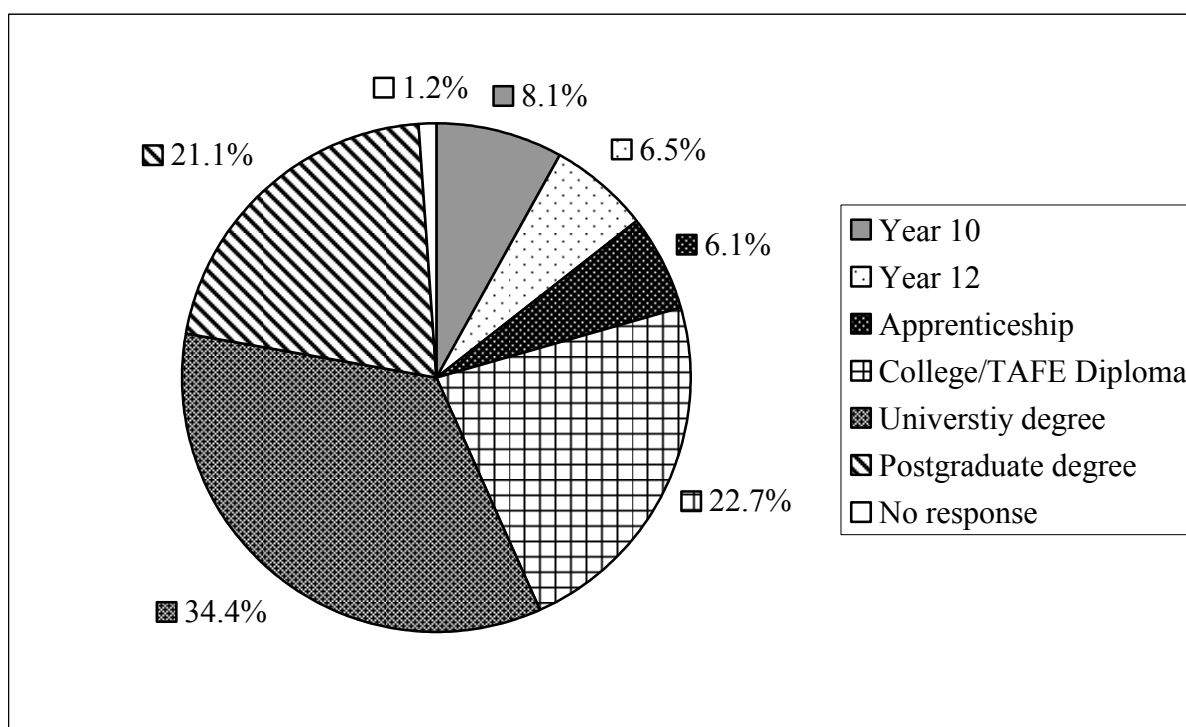
### ***Education***

More than 78 per cent of the total population had a tertiary qualification (Figure 4.5). Of these, 22.7 per cent had a college degree or a TAFE diploma, 34.4 per cent had a university degree and 21 per cent a postgraduate degree. Only 8.1 per cent had a year 10 qualification and a year 12 qualification accounted for 6.5 per cent of respondents. Merely 6.1 per cent of SCUBA diving club members indicated that an apprenticeship was their highest level of education (Table 4.6).

**Table 4.6 Education of Respondents (n=246)**

| Variables            | Frequency | Percent | Cumulative Percent |
|----------------------|-----------|---------|--------------------|
| Year 10              | 20        | 8.1     | 8.1                |
| Year 12              | 16        | 6.5     | 14.6               |
| Apprenticeship       | 15        | 6.1     | 20.7               |
| College/TAFE Diploma | 55        | 22.4    | 43.1               |
| University degree    | 85        | 34.6    | 77.6               |
| Postgraduate degree  | 52        | 21.1    | 98.8               |
| No response          | 3         | 1.2     | 100.0              |
| Total                | 246       | 100.0   |                    |

**Figure 4.5 Level of Education of Respondents (n=246)**



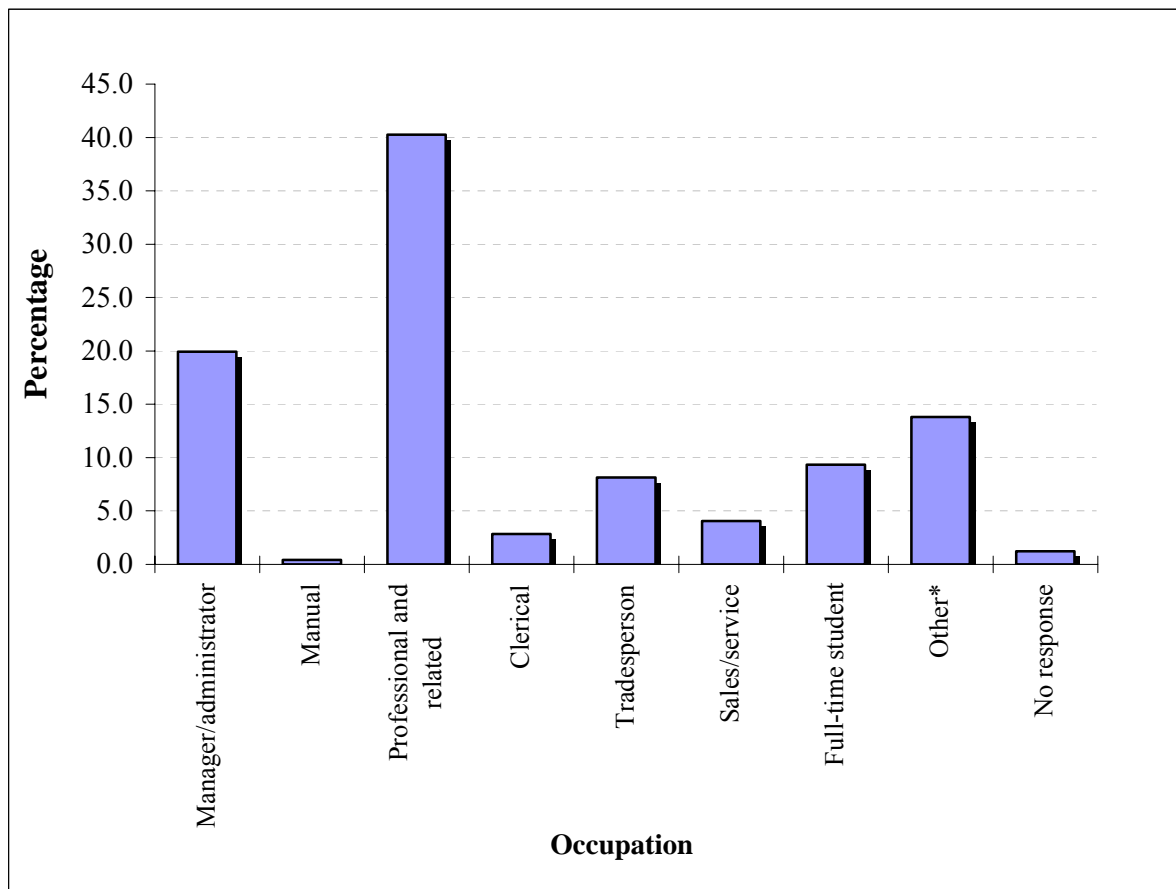
### **Occupation**

In regard to occupation, as can be seen in Table 4.7 and Figure 4.6 the majority of respondents were professionals and related (40.2%) followed by managers/administrators (19.9%), full-time students (9.3%) and tradespersons (8.1%). The relatively high percentage of professionals corresponds to the percentage of Australian SCUBA diving club members reported by Taylor *et al.* (2002), where 44.8 per cent were professionals.

**Table 4.7 Occupation of Respondents (n=246)**

| Variables                | Frequency | Percent | Cumulative Percent |
|--------------------------|-----------|---------|--------------------|
| Manager/administrator    | 49        | 19.9    | 19.9               |
| Manual                   | 1         | 0.4     | 20.3               |
| Professional and related | 99        | 40.2    | 60.6               |
| Clerical                 | 7         | 2.8     | 63.4               |
| Tradesperson             | 20        | 8.1     | 71.5               |
| Sales/service            | 10        | 4.1     | 75.6               |
| Full-time student        | 23        | 9.3     | 85.0               |
| Other                    | 34        | 13.8    | 98.8               |
| No response              | 3         | 1.2     | 100.0              |
| Total                    | 246       | 100.0   |                    |

**Figure 4.6 Occupation of Respondents**



\* see Appendix F

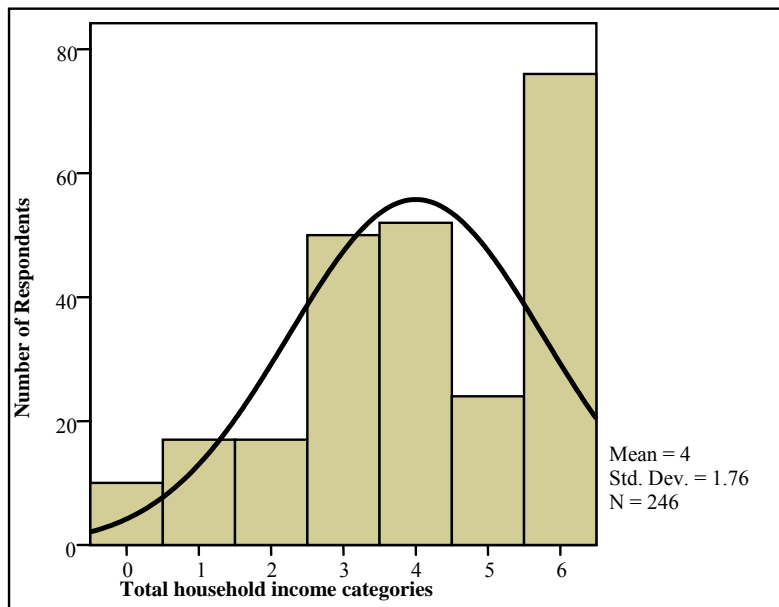
### ***Income***

Two hundred thirty-six respondents (95.9%) provided information of their total household income (Table 4.8). Although 61.8 per cent of SCUBA diving club members indicated that they earned more than \$60,000 per annum, the income of all respondents was clustered around three main income categories, which together accounted for 72.3 per cent of responses (Figure 4.7). These income categories comprised the “over \$100,000 per annum” category, accounting for 30.9 per cent of responses, the “between \$60,000 and \$79,999 per annum” category (21.1%) and the “between 40,000 and \$59,000 per annum” category, which accounted for 20.3 per cent of responses. Only 13.8 per cent of SCUBA diving club members in this study indicated a total household income of less than \$39,999.

**Table 4.8 Total Household Income (Before Tax) of Respondents in AU\$ (n=246)**

| Variables             | Frequency | Percent | Cumulative Percent |
|-----------------------|-----------|---------|--------------------|
| No response           | 10        | 4.1     | 4.1                |
| Less than \$20,000    | 17        | 6.9     | 11.0               |
| \$20,000 to \$39,999  | 17        | 6.9     | 17.9               |
| \$40,000 to \$ 59,999 | 50        | 20.3    | 38.2               |
| \$60,000 to \$79,999  | 52        | 21.1    | 59.3               |
| \$80,000 to \$99,999  | 24        | 9.8     | 69.1               |
| \$100,000 +           | 76        | 30.9    | 100.0              |
| Total                 | 246       | 100.0   |                    |

**Figure 4.7 Total Household Income Categories of Respondents (n=246)**



#### 4.4 Results Experience

As mentioned in section 3.8.1.1, SCUBA diving club members' experience in SCUBA diving was determined through frequency of participation, self-reported skill level as a SCUBA diver, years SCUBA diving, highest SCUBA diving qualification/certification and whether they had any additional SCUBA diving qualification and/or certification. The results of the experience variables concerning the whole sample are presented in the subsequent sections.

#### 4.4.1 Frequency of Participation

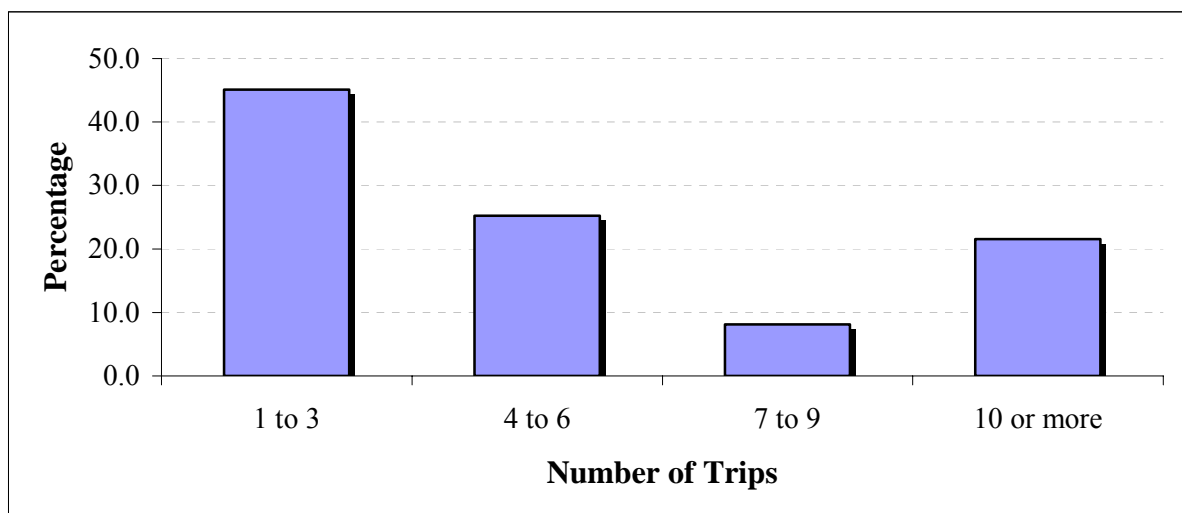
Frequency of participation in SCUBA diving was determined through the number of SCUBA diving trips undertaken within the last 12 months. Categories that were used ranged from '1 to 3 trips' to '10 or more trips' (Table 4.9). A SCUBA diving trip in this study was defined as a trip that involves a travel distance of at least 40 km.

**Table 4.9 Number of Trips Undertaken Within Last 12 Months (n=246)**

| Variables  | Frequency | Percent | Cumulative Percent |
|------------|-----------|---------|--------------------|
| 1 to 3     | 111       | 45.1    | 45.1               |
| 4 to 6     | 62        | 25.2    | 70.3               |
| 7 to 9     | 20        | 8.1     | 78.5               |
| 10 or more | 53        | 21.5    | 100.0              |
| Total      | 246       | 100.0   |                    |

As can be seen in Table 4.9 and in Figure 4.8 graphically, over 70 per cent of SCUBA diving club members indicated that they undertook between one and six SCUBA diving trips within the last year. Over 29 per cent of respondents undertook more than seven trips and of those respondents, 21.5 per cent undertook more than 10 trips within the last 12 months.

**Figure 4.8 Number of Trips Undertaken Within Last 12 Months (n=246)**



#### 4.4.2 Self-reported Skill Level

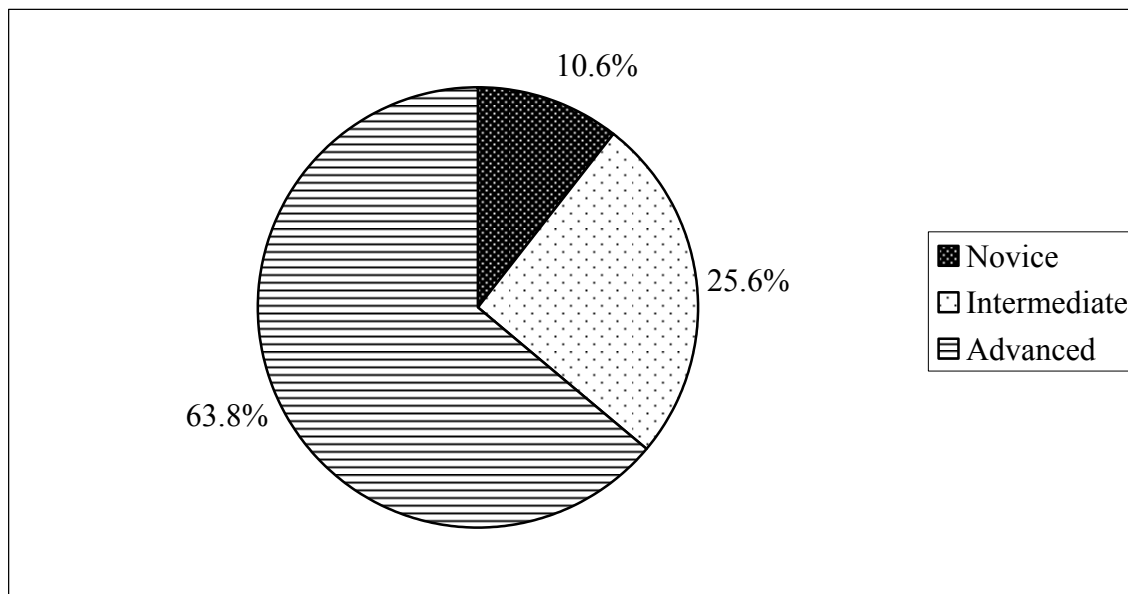
To assess SCUBA divers' skill-levels in this study, three categories *novice*, *intermediate* and *advanced* were used. The results of respondents' self-reported skill-levels are in Table 4.10.

**Table 4.10 Self-reported Skill Level (n=246)**

| Variables    | Frequency | Percent | Cumulative Percent |
|--------------|-----------|---------|--------------------|
| Novice       | 26        | 10.6    | 10.6               |
| Intermediate | 63        | 25.6    | 36.2               |
| Advanced     | 157       | 63.8    | 100.0              |
| Total        | 246       | 100.0   |                    |

Reference to Figure 4.9 shows, that the majority of respondents (63.8%) indicated the category 'advanced' would best describe their skill-level in SCUBA diving. Over 25 per cent of SCUBA diving club members rated themselves in the skill-level category 'intermediate'. Only 10.6 per cent of all respondents indicated that they were novices regarding their skill-levels in SCUBA diving.

**Figure 4.9 Self-reported Skill Level (n=246)**



#### 4.4.3 Years SCUBA Diving

Six categories were used to measure how many years respondents in this study had been SCUBA diving, which ranged from *less than 1 Year* to *more than 30 Years*. The results of ‘Years SCUBA Diving’ are presented in Table 4.11.

**Table 4.11 Years SCUBA Diving (n=246)**

| Categories         | Frequency | Percent | Cumulative Percent |
|--------------------|-----------|---------|--------------------|
| Less than 1 Year   | 20        | 8.1     | 8.1                |
| 1 to 5 Years       | 94        | 38.2    | 46.3               |
| 6 to 10 Years      | 35        | 14.2    | 60.6               |
| 11 to 15 Years     | 33        | 13.4    | 74.0               |
| 16 to 20 Years     | 25        | 10.2    | 84.1               |
| 21 to 25 Years     | 20        | 8.1     | 92.3               |
| 26 to 30 Years     | 13        | 5.3     | 97.6               |
| More than 30 Years | 6         | 2.4     | 100.0              |
| Total              | 246       | 100.0   |                    |

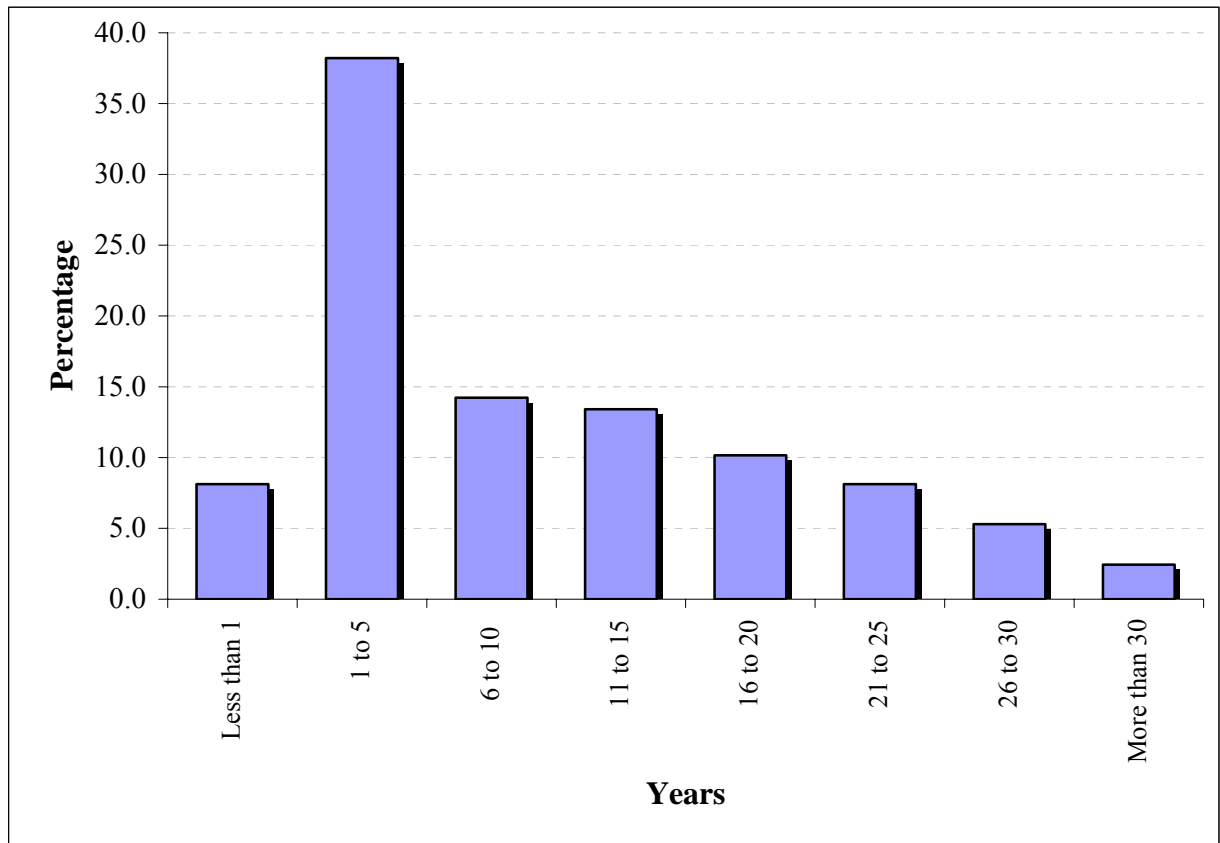
Reference to Figure 4.10 shows that more than 62 per cent of survey respondents had been diving for less than 10 years and more than 46 per cent of respondents for five years or



less. These figures are comparable to the findings of Davis (1997), where 79 per cent of respondents had been diving less than 10 years and more than 50 per cent had been diving five years or less. Davis (1997) argued that the figures in his study might be possible indicators of three features of participation in recreational SCUBA diving. Regarding the latter, Davis (1997) firstly mentioned, the growth in the SCUBA diving industry worldwide and in Australia between the mid 1980s and 1990s. Secondly, he pointed out the high drop-out rate among recreational SCUBA divers in general in other words the average time a person is active as a diver, which is according to Davis (1997:121) “around 21 months”. Thirdly, the cost factor of SCUBA diving and the lack of time to continue diving were mentioned. In this context, Davis (1997) argues that due to the fact that participation in SCUBA diving is generally cost-intensive, many people up to their mid-20s cannot afford to dive whereas people in their mid 30s, when careers are established, often lack the time to participate in SCUBA diving (Davis, 1997).

Time and money constraints were also reported to be the foremost reasons why people drop-out of recreational SCUBA diving in earlier studies by Wilks (1991a) and Wilks (1991b). High drop-out rates due to lack of time and money might also be influencing factors in regard to the findings of this study where the percentage of respondents diving for 10 years or less is relatively high as indicated above. However, deeper investigation is necessary to explore the reasons for drop-outs of recreational SCUBA divers, which is not in the scope of this research.

**Figure 4.10 Years SCUBA Diving (n=246)**



#### **4.4.4 Highest SCUBA Diving Qualification/Certification**

Six categories were used to measure respondents' highest SCUBA diving qualification/certification (Table 4.12). As explained earlier in section 3.8.1.1, categories of SCUBA diving qualification were adopted from the PADI diving education scheme (PADI Diving Society, 2005:67). The categories ranged from a basic entry level of SCUBA diving qualification such as 'Open Water Diver' to a highly advanced qualification level such as 'Instructor'. With an 'Open Water Diver' qualification, individuals can show that they have been trained to a certain standard, which is often a requirement when hiring or purchasing equipment. Moreover, with open water training, individuals are also qualified "to dive in buddy pairs without the supervision of an instructor" (Wilks (1991a:10). An entry level qualification such as the 'Open Water Diver' qualification is in contrast to the highly advanced and leadership qualification 'Instructor'. The specific prerequisites for becoming a certified SCUBA diving instructor vary between certification agencies. However, many instructor training schemes from different training

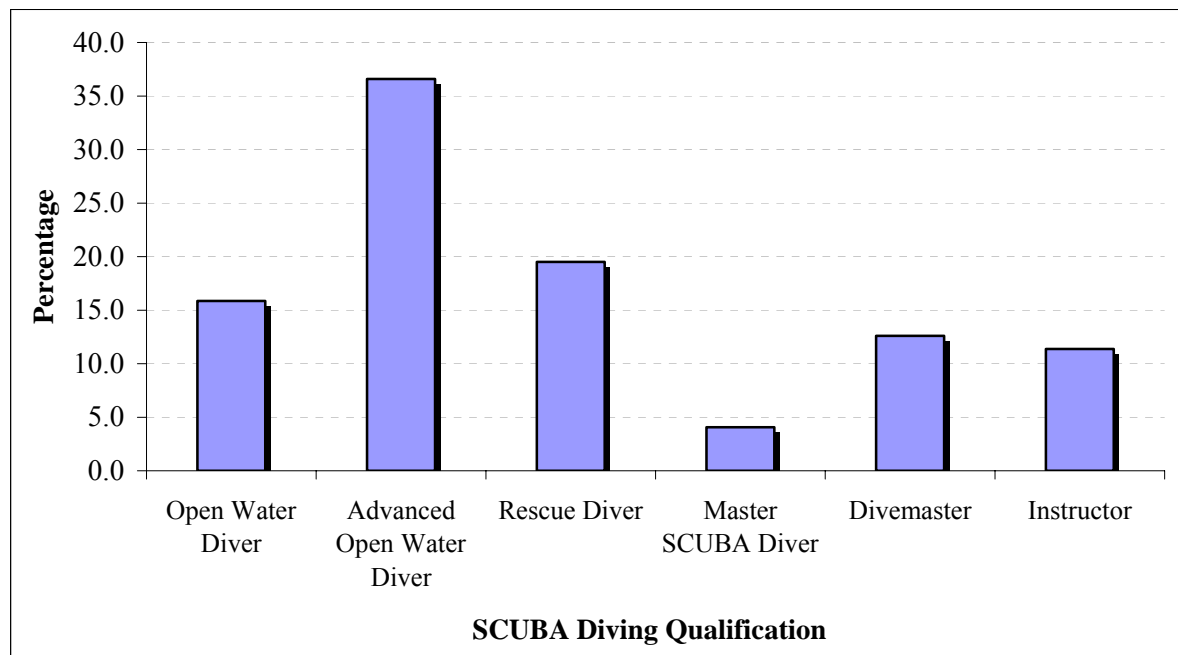
organisations require the individual to at least hold a previous qualification such as ‘Master SCUBA Diver’ or ‘Divemaster’ and a certain number of logged dives, which is equivalent to an advanced level of experience in SCUBA diving.

**Table 4.12 Highest SCUBA Diving Qualification/Certification (n=246)**

| Categories                | Frequency | Percent | Cumulative Percent |
|---------------------------|-----------|---------|--------------------|
| Open Water Diver          | 39        | 15.9    | 15.9               |
| Advanced Open Water Diver | 90        | 36.6    | 52.4               |
| Rescue Diver              | 48        | 19.5    | 72.0               |
| Master SCUBA Diver        | 10        | 4.1     | 76.0               |
| Divemaster                | 31        | 12.6    | 88.6               |
| Instructor                | 28        | 11.4    | 100.0              |
| Total                     | 246       | 100.0   |                    |

Reference to Figure 4.11 shows, that over half of the respondents (52.4%) were qualified at the ‘Open Water Diver’ or ‘Advanced Open Water Diver’ level. The responses to this questions showed that 23.6 per cent of SCUBA diving club members were certified to ‘Rescue Diver’ and ‘Master SCUBA Diver’ level. Only 11.4 per cent of SCUBA diving club members in this study were certified to ‘Instructor’ level. This figure is much lower than that reported in the Australian-wide survey of recreational SCUBA divers by Davis (1997), where 20.5 per cent of respondents indicated ‘Instructor’ as their highest level of SCUBA diving qualification. Interestingly, the majority of respondents (almost 64%) in this study indicated an advanced skill-level in SCUBA diving (see section 4.2.2), but only 28.1 per cent have been certified to the ‘Master SCUBA Diver’ level or above. One the one hand this may indicate that a less advanced SCUBA diving qualification does not necessarily indicate a lower skill level or experience of divers. On the other hand, these results may also relate to the subjectiveness of respondents’ self-reporting on their skill level. This emphasises the need to assess experience in SCUBA diving in a multidimensional way as it has been done in this study.

**Figure 4.11 Highest SCUBA Diving Qualification/Certification (n=246)**



#### **4.4.5 Additional SCUBA Diving Qualification(s)/Certification(s)**

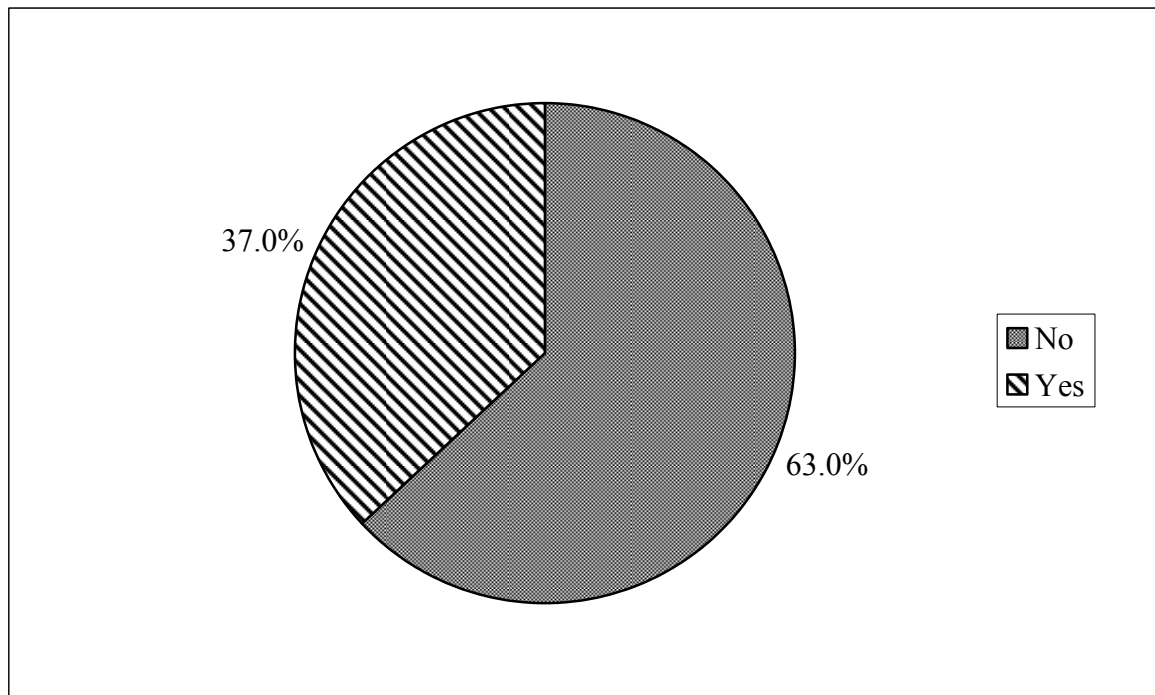
As discussed earlier in section 3.8.1.1, additional to the qualifications mentioned above, a wide range of speciality courses is offered by SCUBA diving certification organisations. Previous experience, for instance a certain number of dives conducted, preceding completed SCUBA diving qualifications/speciality courses, is often a prerequisite to qualify for many speciality courses. Thus, additional qualifications were considered important for this study and therefore, SCUBA diving club members were asked whether they had any additional SCUBA diving qualification.

**Table 4.13 Additional SCUBA Diving Qualifications (n=246)**

| Categories | Frequency | Percent | Cumulative Percent |
|------------|-----------|---------|--------------------|
| No         | 155       | 63.0    | 63.0               |
| Yes        | 91        | 37.0    | 100.0              |
| Total      | 246       | 100.0   |                    |

The majority of respondents (63%) in this study indicated that they did not have any additional SCUBA diving qualification. Those club members who responded positively to this question, however, indicated had a broad range of SCUBA diving qualifications/specialities. The complete list of additional qualifications/specialities can be found in Appendix G.

**Figure 4.12 Additional SCUBA Diving Qualifications (n=246)**



#### **4.5 Results Involvement**

Respondents' involvement in the activity of SCUBA diving was determined through five experience variables and 12 enduring involvement variables. The experience variables

have been described earlier in section 3.8.1.1 and the descriptive statistics of experience variables have been presented above in section 4.4. Enduring involvement variables used in this study have been discussed in section 3.8.1.2 and the descriptive statistics for enduring involvement variables regarding the whole sample are in Appendix H. The following sections explain the statistical procedure for determining involvement and present the results respectively.

#### **4.5.1 Principal Component Analysis - Enduring Involvement**

Twelve enduring involvement items were adapted from McIntyre's (1989) study on campers. A PCA was applied on the responses to the 12 enduring involvement items using SPSS version 12. The PCA was conducted to investigate whether the three factors (centrality, attraction and self-expression) suggested by previous research (McIntyre, 1989) captured effectively the components of enduring involvement for the 246 SCUBA diving club members involved in this research. Data was tested for suitability to be factor-analysed prior to performing PCA: The correlation matrix showed many correlations  $r = 0.3$  or greater which are formatted in bold in Table 4.14. Internal consistency reliability for the scale was 0.86 and thus very satisfactory.

The Kaiser-Meyer-Olkin measure (KMO) of sampling adequacy was 0.87, which exceeded the recommended value of 0.6 (Tabachnik and Fidell, 2001) and Bartlett's Test of Sphericity was statistically significant ( $p = 0.000$ ) which further supported the factorability of the correlation matrix. As was the case for McIntyre's (1989) study on campers, the four-component model of enduring involvement was not supported through PCA. The PCA initially revealed a two-component structure with eigenvalues exceeding one.

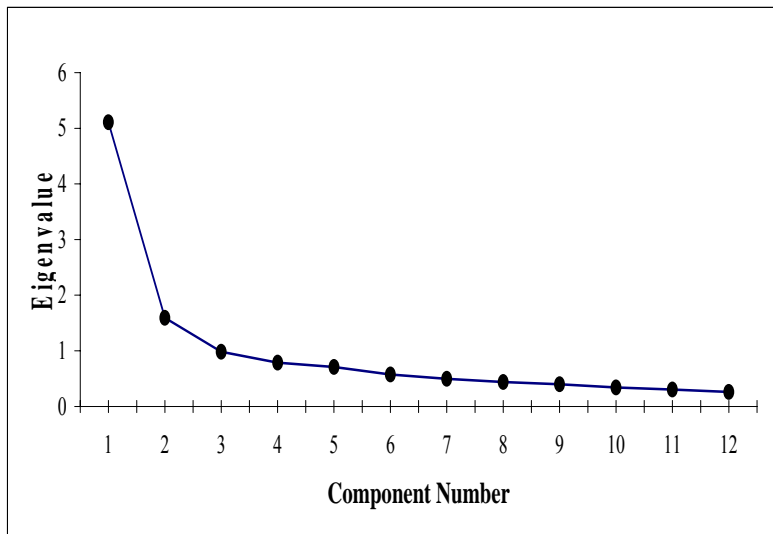
**Table 4.14 Correlation Matrix – Enduring Involvement Items**

| Enduring involvement variables | I1    | I2    | I3    | E1    | E2    | E3    | C1    | C2    | S1    | S2    | S3    | S4    |
|--------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| I1                             | 1.000 | .451  | .394  | .571  | .529  | .367  | .467  | .325  | .395  | .212  | .206  | .291  |
| I2                             | .451  | 1.000 | .249  | .429  | .385  | .273  | .255  | .154  | .290  | .080  | .160  | .233  |
| I3                             | .394  | .249  | 1.000 | .363  | .329  | .415  | .469  | .440  | .422  | .385  | .316  | .443  |
| E1                             | .571  | .429  | .363  | 1.000 | .723  | .460  | .452  | .298  | .382  | .216  | .255  | .355  |
| E2                             | .529  | .385  | .329  | .723  | 1.000 | .433  | .462  | .244  | .362  | .257  | .270  | .404  |
| E3                             | .367  | .273  | .415  | .460  | .433  | 1.000 | .381  | .298  | .510  | .243  | .280  | .333  |
| C1                             | .467  | .255  | .469  | .452  | .462  | .381  | 1.000 | .550  | .331  | .355  | .251  | .423  |
| C2                             | .325  | .154  | .440  | .298  | .244  | .298  | .550  | 1.000 | .396  | .332  | .316  | .348  |
| S1                             | .395  | .290  | .422  | .382  | .362  | .510  | .331  | .396  | 1.000 | .379  | .469  | .481  |
| S2                             | .212  | .080  | .385  | .216  | .257  | .243  | .355  | .332  | .379  | 1.000 | .622  | .599  |
| S3                             | .206  | .160  | .316  | .255  | .270  | .280  | .251  | .316  | .469  | .622  | 1.000 | .620  |
| S4                             | .291  | .233  | .443  | .355  | .404  | .333  | .423  | .348  | .481  | .599  | .620  | 1.000 |

- I1 = SCUBA diving is important to me
- I2 = I have little or no interest in SCUBA diving
- I3 = I enjoy discussing SCUBA diving with my friends
- E1 = Participating in SCUBA diving is one of the most enjoyable things that I do
- E2 = Participating in SCUBA diving is one of the most satisfying things that I do
- E3 = SCUBA diving offers me relaxation when pressures build up
- C1 = I find a lot of my life is organized around SCUBA diving
- C2 = Most of my friends are in some way connected with SCUBA diving
- S1 = When I participate in SCUBA diving I can really be myself
- S2 = You can tell a lot about a person when you see them SCUBA diving
- S3 = When I participate in SCUBA diving other see me the way I want them to see me
- S4 = SCUBA diving says a lot about who I am

Component one explained 42.6 per cent and component two 13.3 per cent of the variance. The eigenvalue-one criterion is commonly applied for factor analysis, however careful consideration should be given regarding its application (Rummel, 1970). Disregarding a factor with an eigenvalue that is hardly under the 1.00 cut-off, according to Rummel (1970:363), “risks missing important factors”. In this study, a third component was closely under the 1.00 cut-off with an eigenvalue of 0.983 (Table 4.15). To help in the decision whether this third factor should be included for further investigation, a Scree plot test was conducted (Figure 4.13). The Scree plot test showed a break after the third component, after which the component variance levelled off. According to Rummel (1970:361), “factor variance levels off, when the factors are largely measuring random error”. Based on the above-mentioned tests it was decided to include the third component and to retain a three component structure for further investigation.

**Figure 4.13 Scree Plot for Enduring Involvement Items**



**Table 4.15 Total Variance Explained – Enduring Involvement Items**

| Extraction Sums of Squared Loadings |       |                     |                    |
|-------------------------------------|-------|---------------------|--------------------|
| Component                           | Total | Percent of Variance | Cumulative Percent |
| 1                                   | 5.109 | 42.574              | 42.574             |
| 2                                   | 1.592 | 13.263              | 55.837             |
| 3                                   | 0.983 | 8.193               | 64.030             |

Extraction Method: Principal Component Analysis.

After components extraction a factor rotation was conducted using the varimax technique to aid in the interpretation of the three components. According to Tabachnik and Fidell (2001:595), the goal of varimax rotation is “to maximize the variance of factor loadings by making high loadings higher and low ones lower for each factor” or, in other words, to increase the association of variables with the extracted components. The rotated solution revealed a number of strong loadings for each component with each of the 12 enduring involvement items loading heavily on only one component (Table 4.16).



**Table 4.16 Rotated Component Matrix<sup>a</sup> – Enduring Involvement**

| Enduring Involvement Items  | Component |      |       |
|---|-----------|------|-------|
|   | 1         | 2    | 3     |
| I1 - SCUBA diving is important to me  | .702      | .067 | .350  |
| I2 - I have little or no interest in SCUBA diving                                   | .717      | .067 | -.010 |
| I3 - I enjoy discussing SCUBA diving with my friends                                | .256      | .313 | .628  |
| E1 - Participating in SCUBA diving is one of the most enjoyable things that I do    | .809      | .144 | .225  |
| E2 - Participating in SCUBA diving is one of the most satisfying things that I do   | .782      | .206 | .168  |
| E3 - SCUBA diving offers me relaxation when pressures build up                      | .505      | .257 | .334  |
| C1 - I find a lot of my life is organized around SCUBA diving                       | .338      | .153 | .746  |
| C2 - Most of my friends are in some way connected with SCUBA diving                 | .065      | .205 | .830  |
| S1 - When I participate in SCUBA diving I can really be myself                      | .385      | .528 | .295  |
| S2 - You can tell a lot about a person when you see them SCUBA diving               | .019      | .807 | .247  |
| S3 - When I participate in SCUBA diving others see me the way I want them to see me | .120      | .871 | .078  |
| S4 - SCUBA diving says a lot about who I am   | .247      | .775 | .230  |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

<sup>a</sup> Rotation converged in 4 iterations.

Concerning the cut-off for the size of loadings to be interpreted, Tabachnik and Fidell (2001) state that usually only variables with loadings above 0.32 are interpreted. Comrey and Lee (1992) suggest that loadings in excess of 0.45 are considered fair or above for interpretation. However, according to Tabachnik and Fidell (2001:625) the selection of the cut-off for the size of loadings to be interpreted “is a matter of researcher preference”. This study set the cut-off size of factor loadings at 0.45. Between 0.45 and 1.00, the loading closest to 0.45 was 0.505 for the three named enduring involvement components (Table 4.17).

**Table 4.17 Rotated Component Matrix<sup>a</sup> – Enduring Involvement Items  
Cut-off > 0.45**

| Enduring Involvement Items  | Component  |                 |            |
|---|------------|-----------------|------------|
|   | Attraction | Self-expression | Centrality |
| I1 - SCUBA diving is important to me  | .702       |                 |            |
| I2 - I have little or no interest in SCUBA diving                                   | .717       |                 |            |
| I3 - I enjoy discussing SCUBA diving with my friends                                |            |                 | .628       |
| E1 - Participating in SCUBA diving is one of the most enjoyable things that I do    | .809       |                 |            |
| E2 - Participating in SCUBA diving is one of the most satisfying things that I do   | .782       |                 |            |
| E3 - SCUBA diving offers me relaxation when pressures build up                      | .505       |                 |            |
| C1 - I find a lot of my life is organized around SCUBA diving                       |            |                 | .746       |
| C2 - Most of my friends are in some way connected with SCUBA diving                 |            |                 | .830       |
| S1 - When I participate in SCUBA diving I can really be myself                      |            | .528            |            |
| S2 - You can tell a lot about a person when you see them SCUBA diving               |            | .807            |            |
| S3 - When I participate in SCUBA diving others see me the way I want them to see me |            | .871            |            |
| S4 - SCUBA diving says a lot about who I am   |            | .775            |            |

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

<sup>a</sup> Rotation converged in 4 iterations.

The first factor comprised a mixture of five items, which refer to enjoyment (E1, E2 and E3), and importance (I1 and I2) of SCUBA diving. All five items corresponded to the attraction dimension identified by McIntyre (1989). This first component explained the majority of variation (41.8 %) in the population. Since attraction items predominated this factor was labelled *attraction*.

The second component comprised four items that corresponded to the self-expression dimension identified by McIntyre (1989) and was labelled *self-expression*. McIntyre (1989:174) stated that self-expression “refers to how a person perceives camping as a reflection of his/her personality”. This study also referred to self-expression as self-representation or how an individual perceived SCUBA diving as a reflection of his/her personality.

The third component comprised three items, which referred to centrality (C1 and C2) and importance (I3) and was labelled *centrality*. The centrality component in this study covered the social content related to the activity of SCUBA diving by two items referring to friends

and one item referring to the central role of SCUBA diving in a person’s life. A likewise explanation used for centrality component in this study has also been used in earlier studies by McIntyre (1989), McIntyre and Pigram (1992) and McFarlane (2004).

Regression factor scores were calculated for all respondents for each of the three enduring involvement components. Regression factor scores ranged from -3.45 to 1.59 (mean = 0.00, standard deviation = 1.00) for attraction, from -3.21 to 2.24 (mean 0.00; standard deviation = 1.00) for self-expression and from -2.37 to 2.59 (mean = 0.00; standard deviation= 1.00) for centrality.

It is important to mention that this analysis excluded one respondent that was identified as a multivariate outlier. A multivariate outlier, according to Tabachnik and Fidell (2001:66), is a case “with such an extreme value ... or such a strange combination of scores on two or more variables (...) that they distort statistics”. The outlier (subject ID = 42) had extremely low values on the enduring involvement items E2 (Participating in SCUBA diving is one of the most satisfying things that I do) shown in Table 4.18 and I2 (I have little or no interest in SCUBA diving) shown in Table 4.19. When computed these low values resulted in an extremely low factor regression score on the *attraction* component of enduring involvement, thus this respondent was deleted.

**Table 4.18 Extreme Values for Enduring Involvement Item E2**

|  |         |   | Case Number | Subject ID | Value          |
|--|---------|---|-------------|------------|----------------|
| Participating in SCUBA diving is one of the most satisfying things that I do | Highest | 1 | 1           | 1          | 5              |
|  |         | 2 | 2           | 2          | 5              |
|  |         | 3 | 3           | 3          | 5              |
|  |         | 4 | 4           | 4          | 5              |
|  |         | 5 | 5           | 6          | 5 <sup>a</sup> |
|  | Lowest  | 1 | 38          | 42         | 1              |
|  |         | 2 | 229         | 270        | 3              |
|  |         | 3 | 214         | 252        | 3              |
|  |         | 4 | 192         | 227        | 3              |
|  |         | 5 | 187         | 220        | 3 <sup>b</sup> |

<sup>a</sup> Only a partial list of cases with the value 5 are shown in the table of upper extremes.

<sup>b</sup> Only a partial list of cases with the value 3 is shown in the table of lower extremes.

**Table 4.19 Extreme Values for Enduring Involvement Item I2**

|  |         |   | Case Number | Subject ID | Value          |
|--|---------|---|-------------|------------|----------------|
| I have little or no interest in SCUBA diving | Highest | 1 | 1           | 1          | 5              |
|  |         | 2 | 2           | 2          | 5              |
|  |         | 3 | 3           | 3          | 5              |
|  |         | 4 | 4           | 4          | 5              |
|  |         | 5 | 5           | 6          | 5 <sup>a</sup> |
|  | Lowest  | 1 | 38          | 42         | 2              |
|  |         | 2 | 236         | 279        | 4              |
|  |         | 3 | 233         | 275        | 4              |
|  |         | 4 | 231         | 273        | 4              |
|  |         | 5 | 205         | 242        | 4 <sup>b</sup> |

<sup>a</sup> Only a partial list of cases with the value 5 are shown in the table of upper extremes.

<sup>b</sup> Only a partial list of cases with the value 4 is shown in the table of lower extremes.

#### **4.5.2 Principal Component Analysis – Experience**

Five experience variables (frequency of participation, self-reported skill level as a SCUBA diver, years SCUBA diving, highest SCUBA diving qualification/certification and whether respondents had any additional SCUBA diving qualification/certification) were used in this research to assess respondents' experience level regarding the activity of SCUBA diving. These five variables were combined and a total experience value was calculated for each respondent. The statistical procedures for the combination of the experience variables are explained in the following paragraphs.

A Principal Component Analysis was conducted on the five experience variables. The same statistical procedure applied to enduring involvement items, explained in section 4.5.1, was used to test the data for suitability to be factor-analysed prior to performing PCA. The correlation matrix showed some correlations of  $r = 0.3$  or greater (Table 4.20).

**Table 4.20 Correlation Matrix<sup>a</sup> - Experience Items**

| Experience items                                 | Number of trips undertaken within last 12 months | Self-reported skill level | Years SCUBA diving | Highest SCUBA diving qualification | Additional SCUBA diving qualifications |
|--|--|---------------------------|--------------------|------------------------------------|--|
| Number of trips undertaken within last 12 months | 1.000  | .092                      | -.054              | .146                               | .075                                   |
| Self-reported skill level                        | .092   | 1.000                     | <b>.523</b>        | <b>.566</b>                        | .267                                   |
| Years SCUBA diving                               | -.054  | <b>.523</b>               | 1.000              | <b>.402</b>                        | .247                                   |
| Highest SCUBA diving qualification               | .146   | <b>.566</b>               | <b>.402</b>        | 1.000                              | .276                                   |
| Additional SCUBA diving qualifications           | .075   | .267                      | .247               | .276                               | 1.000                                  |

<sup>a</sup> Determinant = .413

The KMO value was 0.7, which is satisfactory (Tabachnik and Fidell, 2001), and Bartlett's Test of Sphericity was statistically significant ( $p = 0.000$ ) which supported the factorability of the correlation matrix. The PCA revealed a two-component structure with eigenvalues exceeding 1.00, with the first component explaining for 43.7 per cent and the second component explaining for 20.7 per cent of the total variance of experience variables.

The component matrix showed strong factor loadings of all variables but frequency of participation on component one. The loading for frequency of participation, which was measured through the 'number of trips undertaken within the last 12 months' was not substantially high on this component (0.16). However, as all other experience variables loaded significantly on one component with loadings of 0.53 and above (Table 4.21) it was decided to retain a one-component structure for further investigation. A factor rotation was not considered necessary to aid in the interpretation of the components and thus the unrotated solution was used for further analysis.

**Table 4.21 Component Matrix<sup>a</sup> - Experience Items**

| Experience items                                 | Component |       |
|--|-----------|-------|
|  | 1         | 2     |
| Number of trips undertaken within last 12 months | .161      | .951  |
| Self-reported skill level                        | .836      | -.051 |
| Years SCUBA diving                               | .740      | -.332 |
| Highest SCUBA diving qualification               | .793      | .103  |
| Additional SCUBA diving qualifications           | .536      | .099  |

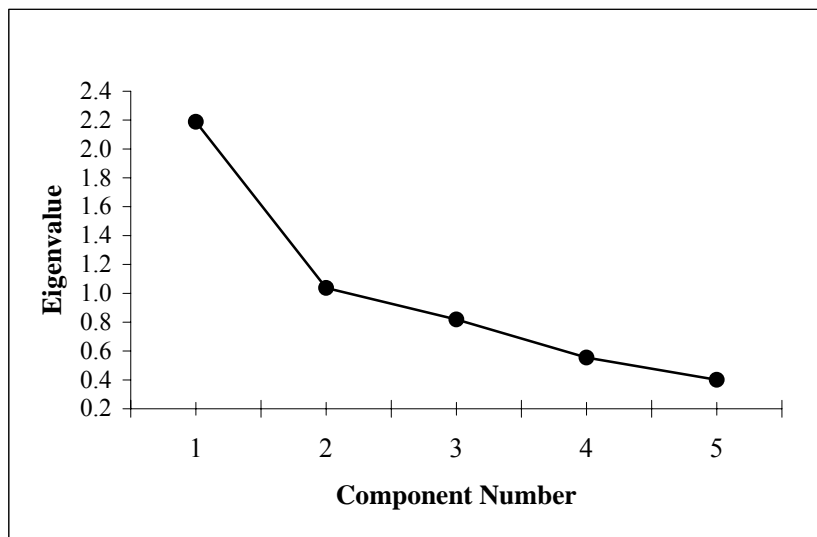
Extraction Method: Principal Component Analysis.

<sup>a</sup> 2 components extracted.

The decision to retain a one-component structure for further analysis was also supported by a Scree plot test, which revealed a clear break after the first component (Figure 4.14). Moreover, the first component contributed the most to the variance (43.7%) in the data (Table 4.22).

Regression factor scores were calculated for all respondents, which ranged from -1.99 to 1.96 (mean = 0.00, standard deviation = 1.00) and were used for further analysis.

**Figure 4.14 Scree Plot for Experience Components**



**Table 4.22 Total Variance Explained – Experience Components**

| Initial Eigenvalues |       |                     |                    |
|---------------------|-------|---------------------|--------------------|
| Component           | Total | Percent of Variance | Cumulative Percent |
| 1                   | 2.188 | 43.769              | 43.769             |
| 2                   | 1.037 | 20.750              | 64.519             |
| 3                   | .819  | 16.374              | 80.893             |
| 4                   | .555  | 11.092              | 91.985             |
| 5                   | .401  | 8.015               | 100.000            |

Extraction Method: Principal Component Analysis.

## **4.6 Cluster Analysis**

Cluster analysis is a statistical technique of grouping objects or individuals based on their similarities across a set of characteristics (Lorr, 1983). As mentioned previously, cluster analysis was conducted in this study as it provides appropriate recognition of the multidimensional construct of enduring involvement. Firstly, a hierarchical cluster analysis was applied, and secondly, as a partitioning algorithm the k-means clustering method was applied. This approach attempted to solve the number of clusters problem as suggested by Dolnicar (2002). The procedure and results of these cluster analyses are discussed in the subsequent paragraphs.

### **4.6.1 Hierarchical Cluster Analysis**

An agglomerative hierarchical cluster analysis was applied on the three components of enduring involvement (attraction, self-expression and centrality) and on the regression factor score of experience, calculated for each respondent, to determine the optimum number of clusters present in the data. The merging of groups was based on furthest-neighbour distance using the Euclidean distance. The dendrogram obtained (Appendix I), which illustrates the stepwise merging process of observations, revealed a five-cluster solution. The indication of a five-cluster structure can also be seen by inspecting the agglomeration schedule. The complete agglomeration schedule contains much information on cluster distances and which cases combine and can be found in Appendix J. As a practical matter, the beginning of the schedule (Table 4.23) and the end of the schedule (Table 4.24) are presented which are of particular interest for interpretation of cluster distances.

**Table 4.23 Beginning of Agglomeration Schedule**

| Stage | Cluster Combined |           | Coefficients | Stage Cluster First Appears |           | Next Stage |
|-------|------------------|-----------|--------------|-----------------------------|-----------|------------|
|       | Cluster 1        | Cluster 2 |              | Cluster 1                   | Cluster 2 |            |
| 1     | 128              | 209       | .003         | 0                           | 0         | 33         |
| 2     | 27               | 241       | .026         | 0                           | 0         | 19         |
| 3     | 102              | 150       | .027         | 0                           | 0         | 82         |
| 4     | 81               | 225       | .029         | 0                           | 0         | 20         |
| 5     | 120              | 216       | .030         | 0                           | 0         | 8          |
| 6     | 94               | 184       | .031         | 0                           | 0         | 145        |
| 7     | 23               | 110       | .045         | 0                           | 0         | 20         |
| 8     | 120              | 178       | .046         | 5                           | 0         | 67         |
| 9     | 15               | 227       | .047         | 0                           | 0         | 177        |
| 10    | 99               | 122       | .048         | 0                           | 0         | 35         |
| 11    | 71               | 135       | .051         | 0                           | 0         | 138        |
| 12    | 32               | 126       | .053         | 0                           | 0         | 81         |
| ⋮     | ⋮                | ⋮         | ⋮            | ⋮                           | ⋮         | ⋮          |
| ⋮     | ⋮                | ⋮         | ⋮            | ⋮                           | ⋮         | ⋮          |

**Table 4.24 End of Agglomeration Schedule**

| Stage | Cluster Combined |           | Coefficients | Stage Cluster First Appears |           | Next Stage |
|-------|------------------|-----------|--------------|-----------------------------|-----------|------------|
|       | Cluster 1        | Cluster 2 |              | Cluster 1                   | Cluster 2 |            |
| ⋮     | ⋮                | ⋮         | ⋮            | ⋮                           | ⋮         | ⋮          |
| ⋮     | ⋮                | ⋮         | ⋮            | ⋮                           | ⋮         | ⋮          |
| 234   | 20               | 76        | 12.337       | 218                         | 213       | 237        |
| 235   | 10               | 12        | 12.498       | 226                         | 217       | 241        |
| 236   | 7                | 63        | 12.986       | 212                         | 223       | 240        |
| 237   | 16               | 20        | 13.392       | 228                         | 234       | 244        |
| 238   | 9                | 22        | 14.736       | 224                         | 229       | 240        |
| 239   | 1                | 4         | 17.808       | 230                         | 231       | 243        |
| 240   | 7                | 9         | 18.950       | 236                         | 238       | 242        |
| 241   | 2                | 10        | 19.126       | 233                         | 235       | 243        |
| 242   | 7                | 8         | 24.121       | 240                         | 232       | 245        |
| 243   | 1                | 2         | 30.205       | 239                         | 241       | 244        |
| 244   | 1                | 16        | 37.321       | 243                         | 237       | 245        |
| 245   | 1                | 7         | 44.249       | 244                         | 242       | 0          |

The coefficient column in Table 4.23 and Table 4.24 show that the distances at which clusters join are greater at the end of the agglomeration schedule than at the beginning. Distances increase from 0.003 to 12.337 for the first 234 stages and from 12.337 to 44.249 for the last 12 stages. When looking at the last few coefficient values, large jumps in coefficient values can be observed at the five-cluster solution (24) and the four-cluster solution (30), relative to the previous steps. Moving from a six-cluster solution to a five-



cluster solution (19) would involve combining groups with coefficient values not much different to previous steps (17, 18). This indicates that there is a clear recommendation in favour of the five-cluster solution.

#### 4.6.2 Non-hierarchical Cluster Analysis

Based on the results of the agglomeration schedule and the dendrogram obtained from the hierarchical cluster analysis the k-means algorithm was used as a clustering method on the three enduring involvement components and on the regression factor score of experience calculated for each respondent. The five-cluster solution that has been revealed previously, was adapted, which means that the number of clusters ( $k = 5$ ) to be fit was specified prior to performing k-means clustering.

A cluster membership variable was created for each respondent. The number of respondents in each cluster (Table 4.25) as constructed by the *k*-means clustering method was well spread ranging from 40 respondents in cluster four to 64 respondents in cluster two.

**Table 4.25 Number of Respondents in each Cluster**

|         |   | Frequency | Percent |
|---------|---|-----------|---------|
| Cluster | 1 | 46        | 18.7    |
|         | 2 | 64        | 26.0    |
|         | 3 | 52        | 21.1    |
|         | 4 | 40        | 16.3    |
|         | 5 | 44        | 17.9    |
| Total   |   | 246       | 100     |

The mean scores for the final cluster centres are shown in Table 4.26 and the graphical distribution of cluster centres is shown in Figure 4.15.

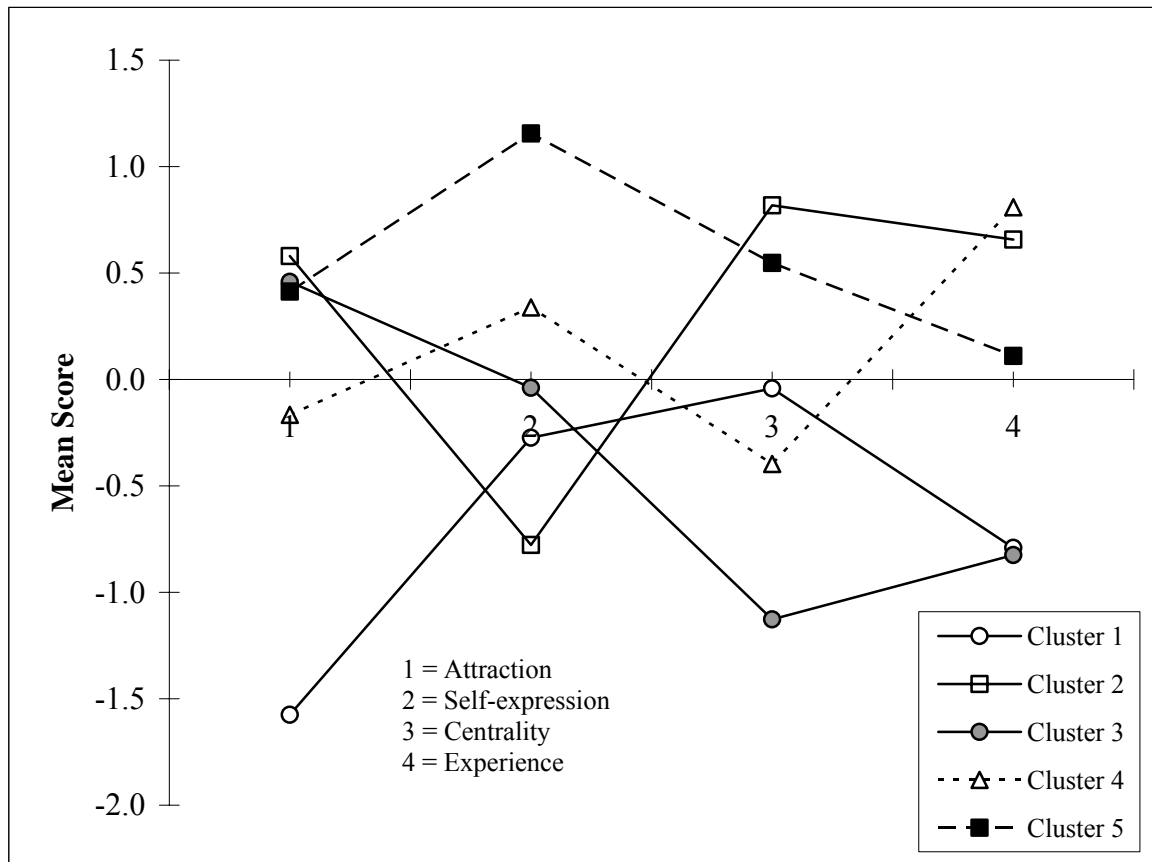
**Table 4.26 Final Cluster Centres**

| Cluster | Component  |            |                 |            |
|---------|------------|------------|-----------------|------------|
|         | Experience | Attraction | Self-expression | Centrality |
| 1       | -.791      | -1.575     | -.274           | -.042      |
| 2       | .657       | .580       | -.778           | .818       |
| 3       | -.825      | .459       | -.039           | -1.127     |
| 4       | .809       | -.166      | .339            | -.397      |
| 5       | .111       | .412       | 1.156           | .547       |

Figure 4.15 shows graphically the distribution of all cluster centres for each of the four variables used for cluster formation. A detailed view of cluster centre distances for attraction, self-expression, centrality and experience variables can be seen in the box plots for each variable (Appendix K).

Univariate Analysis of Variance (ANOVA) tests were conducted on each clustering variable and can be found in Appendix L. ANOVA tests determine whether there are significant differences in the mean scores on the variables across different groups (Pallant, 2005). The clusters in this study, however, were formed with the *prerequisite* that they maximally separate different diver groups. Thus the ANOVA tests conducted cannot be taken seriously as statistical tests and were only conducted for descriptive purposes because they provided information on what variables were important on the formation of clusters.

**Figure 4.15 Final Cluster Centers**



Examination of Figure 4.15 reveals that the mean levels of importance and enjoyment (attraction) which SCUBA diving club members attach to SCUBA diving is very similar for clusters two, three and five and differ from clusters one and four, with lower attraction mean scores for SCUBA diving. Cluster one consists of those SCUBA diving club members which in general attach only low importance and enjoyment to the activity of SCUBA diving indicated through the lowest mean score of all clusters on the attraction component.

Concerning self-expression, cluster one, three and four are not exceptionally different, and lie between the extreme values of cluster five and cluster two. Cluster five consists of respondents, who generally find that participation in SCUBA diving expresses their identity, while for respondents in cluster two the opposite is true.

Regarding the centrality variable, all clusters differ. Cluster three, with the lowest centrality mean score, consists of those SCUBA divers for whom SCUBA diving may be important and enjoyable but, their lives are not organised around SCUBA diving. Cluster four and cluster one consist of those divers who consider the value of SCUBA diving in regard to their lifestyles to be only moderate. Cluster five and cluster two respondents demonstrate relatively high rating on the centrality component. Although respondents in clusters four and one have approximately the same mean scores for centrality, they differ significantly concerning the rating of importance and enjoyment (attachment) of SCUBA diving with cluster four exhibiting the lowest mean scores as mentioned above.

Regarding experience, clusters four and two generally consist of those divers who have conducted several SCUBA diving trips during the past year, have been diving for several years, have an advanced SCUBA diving qualification and ranked themselves advanced regarding their skill level in SCUBA diving, and thus demonstrate high mean scores for experience. Cluster three and cluster one, by contrast, exhibit relatively low mean scores for experience, and consist of those respondents who have undertaken fewer trips, have been diving a lower number of years, have basic SCUBA diving qualifications and ranked themselves novice or intermediate regarding their skill level in SCUBA diving. Cluster five is situated between the upper extremes of the mean scores of clusters four and two and the lower extremes of mean scores of cluster three and one.

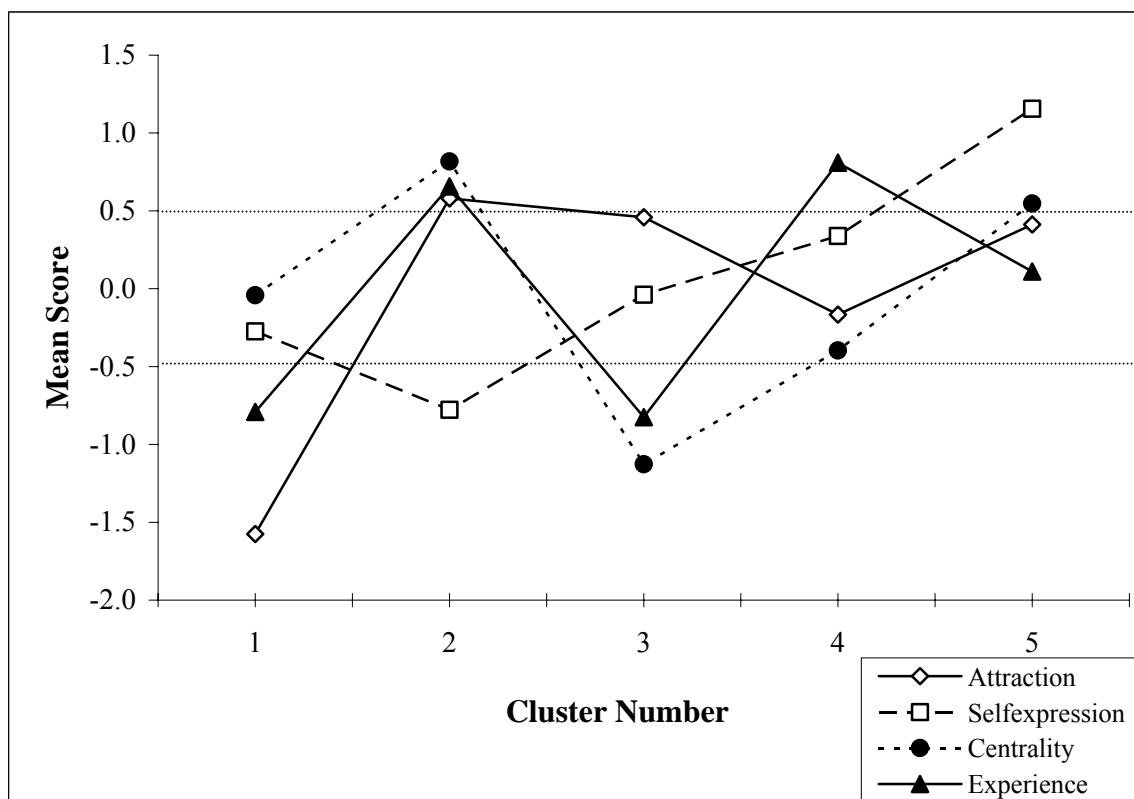
Based on the discussion above it is evident that SCUBA diving club members differ in their experience related to the activity of SCUBA diving and in the importance they attach to the three enduring involvement components. Some view SCUBA diving as a means to express their real identity (self-expression), others see it as an interesting and pleasurable experience (attraction) and for others it is an adventure activity around which their life is organised. Since in this study clusters are analysed and compared to motivational aspects and setting preferences, it is important to obtain a more holistic view of each cluster's characteristics. Thus, a summary for each cluster is provided in the following paragraphs.

Levels of importance for the three enduring involvement components (attraction, self-expression and centrality) were expressed as follows: a 'highly important' rating was used when the mean scores showed values between 1.500 and 0.499, a 'moderately important' rating was used between 0.500 and -0.449 and 'not important' was used between -0.500

and -1.600. This three-point scale structure is shown graphically in Figure 4.16 by the horizontal dotted lines.

Furthermore, the same values of the above-mentioned three-point scale structure were used for expressing SCUBA divers' experience in the activity which was expressed as follows: a 'highly experienced' rating was used when the mean scores showed values between 1.500 and 0.499, a 'moderately experienced' rating was used between 0.500 and -0.449 and 'low experienced' was used between -0.500 and -1.600. This three-point scale structure for experience is also shown graphically in Figure 4.16 by the horizontal dotted lines.

**Figure 4.16 Cluster Centers by Cluster Number**



Reference to Figure 4.16 shows that *cluster one* consists of those SCUBA diving club members who are the least interested in SCUBA diving of the whole sample and derive only low enjoyment from participation in SCUBA diving which is indicated through the

lowest mean score and a 'not important' rating on the attraction component. Divers in cluster one are 'low experienced' and similar to respondents in cluster three, they are the least experienced of the whole sample concerning the activity of SCUBA diving. For respondents in cluster one, SCUBA diving does not seem to be a very important opportunity for self-expression in their lives and SCUBA diving has only a moderate centrality to their lifestyles, both indicated through a 'moderately important' rating.

*Cluster two* comprises those dive club members for whom SCUBA diving is very important and an activity from which they derive pleasure indicated through 'highly important' rating on the attraction component. The experience level indicated by this group is high, which is evidence to suggest that respondents in this group have been participating in SCUBA diving for a long time and hold a more advanced diving qualification than compared to respondents in clusters one and three. SCUBA diving for cluster two respondents also appears to be a 'highly important' medium for social interaction (centrality). However, they do not seem to see SCUBA diving as a means of escaping daily life roles and act their real selves indicated through a 'not important' rating on the self-expression component.

*Cluster three* respondents are similar to respondents in cluster five concerning the importance and enjoyment they attach to SCUBA diving, indicated through a 'moderately important' rating on the attraction component. It should be noted, however, that although having a lower rating on the attraction component, SCUBA diving club members in cluster three are similar to cluster two respondents regarding the importance of the attraction component. Respondents in cluster three, together with respondents in cluster one, are 'low experienced' in SCUBA diving and are the least experienced of the whole sample. The lives of divers in cluster three do not seem to be organised around SCUBA diving shown in Figure 4.16 through the lowest mean rating on the centrality component. Similar to divers in clusters one and four, SCUBA diving for diving club members in cluster three is 'moderately important' in term of self-expression however, it appears to be more of a self-expressive activity for them than for divers in cluster two.

*Cluster four* comprises those SCUBA diving club members who are 'highly experienced' and the most experienced in SCUBA diving of the whole sample. Similar to clusters one and three, SCUBA diving for cluster four members is seen as 'moderately important' in

terms of self-expression. Diving to them appears to be less attractive than to respondents in cluster two, but much more attractive than to respondents in cluster one. SCUBA diving club members in cluster four are similar to divers in cluster one who do not seem to view SCUBA diving as an important source of social interaction indicated through a ‘moderately important’ rating on the centrality component.

Similar to clusters three and four, *cluster five* consists of SCUBA diving club members for whom SCUBA diving is moderately important and enjoyable indicated through a ‘moderately important’ rating on the attraction component. For these divers, this activity is also a ‘highly important’ source of social interaction as can be seen on the relatively high rating of the centrality component in Figure 4.16. They are more experienced divers than respondents in cluster one and three but lesser experienced than members of cluster two and four. Most distinctive for cluster five members is that they view SCUBA diving as a means of escaping the daily life to act the real self, which is indicated through a self-expression mean score that is significantly above all other clusters and rated ‘highly important’.

As can be seen from the above discussion, the cluster analysis revealed a five-cluster solution for the sample in this study. The variables that were decided upon to form the clusters were discussed, followed by a summary of each cluster’s characteristics. A summary of the involvement variables for each cluster as interpreted above is provided in the summary table of socio-demographics, involvement, motivations and settings preferences in chapter five (Table 5.1).

In order to obtain a more meaningful description of these five clusters, the subsequent section (4.6.3) provides a socio-demographic profile of respondents in each cluster. Furthermore, differences between clusters concerning respondents’ motivations to undertake a SCUBA diving trip and respondents’ setting preferences are examined. The statistical procedures and results for the socio-demographic profiles of clusters is presented in section 4.6.3, an investigation of differences in motivations between clusters can be found in section 4.7.2 and an examination of differences in settings preferences between clusters is discussed in section 4.9.

### **4.6.3 Socio-demographic Profile of Respondents in each Cluster**

A descriptive analysis was used to provide a socio-demographic profile of respondents in each cluster. The cross-tabulation was conducted to describe variations of socio-demographic characteristics (gender, age, education, occupation and income) between clusters. Exact Pearson chi-square tests were conducted using the Monte Carlo method to test whether there were significant differences concerning socio-demographic variables across the five clusters. Tables generated from the cross-tabulation and the results of chi-square tests are provided under each socio-demographic variable discussed in the subsequent paragraphs.

#### ***Gender***

The results of the Pearson chi-square test revealed that there was a statistically significant difference ( $p = 0.008$ ) between clusters regarding gender. As can be seen in Table 4.27, cluster five represents the only cluster with more female than male respondents. Furthermore, this cluster encompasses the highest percentage of female respondents (56.8%) of all clusters. Cluster four respondents, like respondents in clusters one, two and three, are mainly male. However, cluster four contains the highest percentage of male respondents (75.0%) of all clusters. These findings also confirm the above-mentioned significance.

The distribution of female respondents within cluster one (32.6%) and cluster three (32.7%) is almost identical and is only somewhat different to cluster two (29.7%). The first three clusters reflect by and large the overall distribution of male (63.8%) and female respondents (35.0%) of the whole sample. This proportion of male and female respondents almost equals earlier studies of SCUBA divers in Australia, for instance Wilks (1991a) and Wilks (1993), where 62.1 per cent and 60.5 per cent of respondents were male. However, as already discussed in section 4.2, a lower percentage of male SCUBA divers responded to this survey than to the Australian-wide SCUBA survey, reported by Davis (1997), where 76.0 per cent were male and to the survey of SCUBA diving club members conducted by Taylor *et al.* (2002), where 73.4 per cent were male.



**Table 4.27 Socio-demographic Profile by Cluster Membership – Gender**

| Gender | Frequencies and percentages | Cluster Number |       |       |       |       | Total | Chi-Square test |
|--------|-----------------------------|----------------|-------|-------|-------|-------|-------|-----------------|
|        |                             | 1              | 2     | 3     | 4     | 5     |       |                 |
| Female | Frequency                   | 15             | 19    | 17    | 10    | 25    | 86    | .008            |
|        | % within total sample       | 17.4           | 22.1  | 19.8  | 11.6  | 29.1  | 100.0 |                 |
|        | % within cluster            | 32.6           | 29.7  | 32.7  | 25.0  | 56.8  | 35.0  |                 |
| Male   | Frequency                   | 31             | 42    | 35    | 30    | 19    | 157   |                 |
|        | % within total sample       | 19.7           | 26.8  | 22.3  | 19.1  | 12.1  | 100.0 |                 |
|        | % within cluster            | 67.4           | 65.6  | 67.3  | 75.0  | 43.2  | 63.8  |                 |
| Total  | Frequency                   | 46             | 64    | 52    | 40    | 44    | 246   |                 |
|        | % within total sample       | 18.7           | 26.0  | 21.1  | 16.3  | 17.9  | 100.0 |                 |
|        | % within cluster            | 100.0          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |                 |

3 non-respondents in cluster 2 (4.7%)

### *Age groups*

The results of Pearson's chi-square test revealed that there was a statistically significant difference ( $p = 0.020$ ) between clusters regarding age groups. Table 4.28 reveals that respondents in clusters three, four and five are all younger than 64 years, and, in cluster four, are all older than 25 years. Clusters one and two are the only clusters with respondents over 65 years of age. Only one respondent (2.2%) in cluster one and two respondents in cluster two (3.1%) indicated that they were over 65 years old, making this age group the lowest represented (1.2%) of the whole sample. Cluster one and cluster three comprise mainly SCUBA diving club members younger than 44 years (78.2% and 76.9%). Cluster one encompasses the highest percentage of SCUBA diving club members that are younger than 25 years (17.4%) followed by respondents in cluster 5 (15.9%). Only a small difference is found in the age group of 55 to 64 year olds across all clusters with a range from 4.5 per cent in cluster 5 to 8.7 per cent in cluster one.

**Table 4.28 Socio-demographic Profile by Cluster Membership – Age Groups**

| Age groups            | Frequencies and percentages | Cluster Number |       |       |       |       | Total | Chi-Square test |
|-----------------------|-----------------------------|----------------|-------|-------|-------|-------|-------|-----------------|
|                       |                             | 1              | 2     | 3     | 4     | 5     |       |                 |
| younger than 25 years | Frequency                   | 8              | 2     | 6     | 0     | 7     | 23    | .020            |
|                       | % within total sample       | 34.8           | 8.7   | 26.1  | 0.0   | 30.4  | 100.0 |                 |
|                       | % within cluster            | 17.4           | 3.1   | 11.5  | 0.0   | 15.9  | 9.3   |                 |
| 25-34 years           | Frequency                   | 14             | 11    | 17    | 9     | 11    | 62    |                 |
|                       | % within total sample       | 22.6           | 17.7  | 27.4  | 14.5  | 17.7  | 100.0 |                 |
|                       | % within cluster            | 30.4           | 17.2  | 32.7  | 22.5  | 25.0  | 25.2  |                 |
| 35-44 years           | Frequency                   | 14             | 19    | 17    | 14    | 10    | 74    |                 |
|                       | % within total sample       | 18.9           | 25.7  | 23.0  | 18.9  | 13.5  | 100.0 |                 |
|                       | % within cluster            | 30.4           | 29.7  | 32.7  | 35.0  | 22.7  | 30.1  |                 |
| 45-54 years           | Frequency                   | 5              | 21    | 8     | 14    | 14    | 62    |                 |
|                       | % within total sample       | 8.1            | 33.9  | 12.9  | 22.6  | 22.6  | 100.0 |                 |
|                       | % within cluster            | 10.9           | 32.8  | 15.4  | 35.0  | 31.8  | 25.2  |                 |
| 55-64 years           | Frequency                   | 4              | 6     | 4     | 3     | 2     | 19    |                 |
|                       | % within total sample       | 21.1           | 31.6  | 21.1  | 15.8  | 10.5  | 100.0 |                 |
|                       | % within cluster            | 8.7            | 9.4   | 7.7   | 7.5   | 4.5   | 7.7   |                 |
| 65-74 years           | Frequency                   | 1              | 2     | 0     | 0     | 0     | 3     |                 |
|                       | % within total sample       | 33.3           | 66.7  | 0.0   | 0.0   | 0.0   | 100.0 |                 |
|                       | % within cluster            | 2.2            | 3.1   | 0.0   | 0.0   | 0.0   | 1.2   |                 |
| Total                 | Frequency                   | 46             | 64    | 52    | 40    | 44    | 246   |                 |
|                       | % within total sample       | 18.7           | 26.0  | 21.1  | 16.3  | 17.9  | 100.0 |                 |
|                       | % within cluster            | 100.0          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |                 |

3 non-respondents in cluster 2 (4.7%)

### ***Education***

With respect to education, the study found a significant difference ( $p = 0.000$ ) between clusters. Generally, as mentioned in section 4.3, respondents in this study were well educated with over 78 per cent of the total population having a tertiary qualification. This is also reflected by respondents in cluster one, two and four where over 60 per cent of divers have either a University or Postgraduate degree and in cluster three with over 50 per cent respectively (Table 4.29). Cluster five, however, is notably different to all other clusters with 31.8 per cent having a University or Postgraduate degree and, when compared to all other clusters, a relatively high percentage of respondents (27.3%) indicating Year 10 as their highest educational level. Compared to the first four clusters, Year 10 as the highest educational level does not exceed 6.0 per cent. The high educational level amongst SCUBA divers found in this study was also observed by other SCUBA diving studies (e.g. Cottrell and Meisel, 2003; Taylor *et al.*, 2002; Todd *et al.*, 2001).

**Table 4.29 Socio-demographic Profile by Cluster Membership – Education**

| Education            | Frequencies and percentages | Cluster Number |       |       |       |       | Total | Chi-Square test |
|----------------------|-----------------------------|----------------|-------|-------|-------|-------|-------|-----------------|
|                      |                             | 1              | 2     | 3     | 4     | 5     |       |                 |
| Year 10              | Frequency                   | 1              | 3     | 3     | 1     | 12    | 20    | .000            |
|                      | % within total sample       | 5.0            | 15.0  | 15.0  | 5.0   | 60.0  | 100.0 |                 |
|                      | % within cluster            | 2.2            | 4.7   | 5.8   | 2.5   | 27.3  | 8.1   |                 |
| Year 12              | Frequency                   | 5              | 3     | 3     | 0     | 5     | 16    |                 |
|                      | % within total sample       | 31.3           | 18.8  | 18.8  | 0.0   | 31.3  | 100.0 |                 |
|                      | % within cluster            | 10.9           | 4.7   | 5.8   | 0.0   | 11.4  | 6.5   |                 |
| Apprenticeship       | Frequency                   | 3              | 5     | 3     | 2     | 2     | 15    |                 |
|                      | % within total sample       | 20.0           | 33.3  | 20.0  | 13.3  | 13.3  | 100.0 |                 |
|                      | % within cluster            | 6.5            | 7.8   | 5.8   | 5.0   | 4.5   | 6.1   |                 |
| College/TAFE Diploma | Frequency                   | 8              | 10    | 15    | 11    | 11    | 55    |                 |
|                      | % within total sample       | 14.5           | 18.2  | 27.3  | 20.0  | 20.0  | 100.0 |                 |
|                      | % within cluster            | 17.4           | 15.6  | 28.8  | 27.5  | 25.0  | 22.4  |                 |
| University degree    | Frequency                   | 20             | 26    | 21    | 11    | 7     | 85    |                 |
|                      | % within total sample       | 23.5           | 30.6  | 24.7  | 12.9  | 8.2   | 100.0 |                 |
|                      | % within cluster            | 43.5           | 40.6  | 40.4  | 27.5  | 15.9  | 34.6  |                 |
| Postgraduate degree  | Frequency                   | 9              | 14    | 7     | 15    | 7     | 52    |                 |
|                      | % within total sample       | 17.3           | 26.9  | 13.5  | 28.8  | 13.5  | 100.0 |                 |
|                      | % within cluster            | 19.6           | 21.9  | 13.5  | 37.5  | 15.9  | 21.1  |                 |
| Total                | Frequency                   | 46             | 64    | 52    | 40    | 44    | 246   |                 |
|                      | % within total sample       | 18.7           | 26.0  | 21.1  | 16.3  | 17.9  | 100.0 |                 |
|                      | % within cluster            | 100.0          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |                 |

3 non-respondents in cluster 2 (4.7%)

### **Occupation**

No statistically significant difference ( $p = 0.207$ ) was found concerning respondents' occupations. Reference to Table 4.30 shows that an almost equivalent distribution can be observed for all clusters except for cluster five. This cluster comprises the lowest percentage of respondents (27.3%) in the category 'professional and related', whereas the same category is predominant in clusters one (45.7%), two (42.2%), three (42.3%) and four (42.5%). Furthermore, cluster five is different in so far that it encompasses the highest percentage of full-time students (20.5%). The category 'manager/administrator' is most strongly represented in cluster three (25.0%) and least represented in cluster five (13.6%). Cluster five was the only cluster in which 'manual' was given as a respondent's occupation (one respondent).

**Table 4.30 Socio-demographic Profile by Cluster Membership – Occupation**

| Occupation               | Frequencies and percentages | Cluster Number |       |       |       |       | Total | Chi-Square test |
|--------------------------|-----------------------------|----------------|-------|-------|-------|-------|-------|-----------------|
|                          |                             | 1              | 2     | 3     | 4     | 5     |       |                 |
| Manager/administrator    | Frequency                   | 11             | 12    | 13    | 7     | 6     | 49    | .207            |
|                          | % within total sample       | 22.4           | 24.5  | 26.5  | 14.3  | 12.2  | 100.0 |                 |
|                          | % within cluster            | 23.9           | 18.8  | 25.0  | 17.5  | 13.6  | 19.9  |                 |
| Manual                   | Frequency                   | 0              | 0     | 0     | 0     | 1     | 1     |                 |
|                          | % within total sample       | 0.0            | 0.0   | 0.0   | 0.0   | 100.0 | 100.0 |                 |
|                          | % within cluster            | 0.0            | 0.0   | 0.0   | 0.0   | 2.3   | 0.4   |                 |
| Professional and related | Frequency                   | 21             | 27    | 22    | 17    | 12    | 99    |                 |
|                          | % within total sample       | 21.2           | 27.3  | 22.2  | 17.2  | 12.1  | 100.0 |                 |
|                          | % within cluster            | 45.7           | 42.2  | 42.3  | 42.5  | 27.3  | 40.2  |                 |
| Clerical                 | Frequency                   | 1              | 3     | 1     | 0     | 2     | 7     |                 |
|                          | % within total sample       | 14.3           | 42.9  | 14.3  | 0.0   | 28.6  | 100.0 |                 |
|                          | % within cluster            | 2.2            | 4.7   | 1.9   | 0.0   | 4.5   | 2.8   |                 |
| Tradesperson             | Frequency                   | 2              | 6     | 4     | 5     | 3     | 20    |                 |
|                          | % within total sample       | 10.0           | 30.0  | 20.0  | 25.0  | 15.0  | 100.0 |                 |
|                          | % within cluster            | 4.3            | 9.4   | 7.7   | 12.5  | 6.8   | 8.1   |                 |
| Sales/service            | Frequency                   | 1              | 2     | 1     | 2     | 4     | 10    |                 |
|                          | % within total sample       | 10.0           | 20.0  | 10.0  | 20.0  | 40.0  | 100.0 |                 |
|                          | % within cluster            | 2.2            | 3.1   | 1.9   | 5.0   | 9.1   | 4.1   |                 |
| Full-time student        | Frequency                   | 4              | 3     | 6     | 1     | 9     | 23    |                 |
|                          | % within total sample       | 17.4           | 13.0  | 26.1  | 4.3   | 39.1  | 100.0 |                 |
|                          | % within cluster            | 8.7            | 4.7   | 11.5  | 2.5   | 20.5  | 9.3   |                 |
| Other                    | Frequency                   | 6              | 8     | 5     | 8     | 7     | 34    |                 |
|                          | % within total sample       | 17.6           | 23.5  | 14.7  | 23.5  | 20.6  | 100.0 |                 |
|                          | % within cluster            | 13.0           | 12.5  | 9.6   | 20.0  | 15.9  | 13.8  |                 |
| Total                    | Frequency                   | 46             | 64    | 52    | 40    | 44    | 246   |                 |
|                          | % within total sample       | 18.7           | 26.0  | 21.1  | 16.3  | 17.9  | 100.0 |                 |
|                          | % within cluster            | 100.0          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |                 |

3 non-respondents in cluster 2 (4.7%)

**Income**

The results of the chi-square test revealed a statistically significant difference ( $p = 0.011$ ) between clusters regarding income. As mentioned in section 4.3, over 60 per cent of SCUBA diving club members reported earning more than \$60,000 in yearly household income. Concerning clusters, diving club members with the highest income are in cluster two and cluster three with 71.9 per cent and 73.2 per cent reporting a yearly household income of more than \$60,000 (Table 4.31). Cluster five is once again (as already discussed in level of education, occupation and gender) different from all other clusters. SCUBA diving club members in this cluster have the lowest income with 61.3 per cent reporting earning less than \$60,000 in yearly household income.

**Table 4.31 Socio-demographic Profile by Cluster Membership – Income**

| Total household income | Frequencies and percentages | Cluster Number |       |       |       |       | Total | Chi-Square test |
|------------------------|-----------------------------|----------------|-------|-------|-------|-------|-------|-----------------|
|                        |                             | 1              | 2     | 3     | 4     | 5     |       |                 |
| Less than \$20,000     | Frequency                   | 2              | 5     | 3     | 2     | 5     | 17    | .011            |
|                        | % within total sample       | 11.8           | 29.4  | 17.6  | 11.8  | 29.4  | 100.0 |                 |
|                        | % within cluster            | 4.3            | 7.8   | 5.8   | 5.0   | 11.4  | 6.9   |                 |
| \$20,000 to \$39,999   | Frequency                   | 3              | 2     | 5     | 2     | 5     | 17    |                 |
|                        | % within total sample       | 17.6           | 11.8  | 29.4  | 11.8  | 29.4  | 100.0 |                 |
|                        | % within cluster            | 6.5            | 3.1   | 9.6   | 5.0   | 11.4  | 6.9   |                 |
| \$40,000 to \$59,999   | Frequency                   | 14             | 5     | 6     | 10    | 15    | 50    |                 |
|                        | % within total sample       | 28.0           | 10.0  | 12.0  | 20.0  | 30.0  | 100.0 |                 |
|                        | % within cluster            | 30.4           | 7.8   | 11.5  | 25.0  | 34.1  | 20.3  |                 |
| \$60,000 to \$79,999   | Frequency                   | 10             | 14    | 11    | 12    | 5     | 52    |                 |
|                        | % within total sample       | 19.2           | 26.9  | 21.2  | 23.1  | 9.6   | 100.0 |                 |
|                        | % within cluster            | 21.7           | 21.9  | 21.2  | 30.0  | 11.4  | 21.1  |                 |
| \$80,000 to \$99,999   | Frequency                   | 5              | 5     | 7     | 6     | 1     | 24    |                 |
|                        | % within total sample       | 20.8           | 20.8  | 29.2  | 25.0  | 4.2   | 100.0 |                 |
|                        | % within cluster            | 10.9           | 7.8   | 13.5  | 15.0  | 2.3   | 9.8   |                 |
| \$100,000 +            | Frequency                   | 10             | 27    | 20    | 8     | 11    | 76    |                 |
|                        | % within total sample       | 13.2           | 35.5  | 26.3  | 10.5  | 14.5  | 100.0 |                 |
|                        | % within cluster            | 21.7           | 42.2  | 38.5  | 20.0  | 25.0  | 30.9  |                 |
| Total                  | Frequency                   | 46             | 64    | 52    | 40    | 44    | 246   |                 |
|                        | % within total sample       | 18.7           | 26.0  | 21.1  | 16.3  | 17.9  | 100.0 |                 |
|                        | % within cluster            | 100.0          | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |                 |

2 non-respondents in cluster 1 (4.3%)

6 non-respondents in cluster 2 (9.4%)

2 non-respondents in cluster 5 (4.5%)

A summary of the socio-demographics profile for each cluster as interpreted above is provided in the summary table of socio-demographics, involvement, motivations and settings preferences in chapter five (Table 5.1).

#### 4.7 Results Motivations

As mentioned in section 3.8.2, a set of 24 motivational statements was adopted from Todd *et al.* (2001) who investigated North American SCUBA divers' level of development in relationship to their motivations to dive.

Considering all responses regardless of cluster membership, motivations related to the diving environment, escape from the normal life roles, relaxation and the excitement of diving itself were ranked most important (Table 4.32). Similar to the findings of Todd *et*

*al.* (2001), the most important motives were ‘to look at underwater animal and plant life’ (mean of 4.6), followed by ‘to explore things’ (4.4). Furthermore, ‘because it is stimulating and exciting’ (4.3), and ‘to learn more about the underwater environment’ (4.3), were among the top-five motivations respondents indicated being most important in deciding to go on a SCUBA diving trip.

This ranking of motivations is similar to that found by Todd *et al.* (2001). Motivations related to the adventure of SCUBA diving (‘for the adventure of it’ [4.1]) and related to improvement of diving skills (‘to develop my diving skills and abilities’ [4.0]) were among the top-ten motivations. However, the ranking order differed from that reported by Todd *et al.* (2001), with each of these motivations being considered less important by respondents.

Further similarities to Todd *et al.*’s (2001) study were reasons rated least important by divers such as ‘it’s sort of an impressive thing to do’ (2.5), ‘to collect interesting artefacts’ (1.9) and ‘because of the risk involved’ (2.0). The motivation named ‘to go hunting (spearfishing and catch prawns, crabs, crayfish, etc.)’ which was added to the list of items for the main study, to make 25 items, was ranked lowest by SCUBA diving club members (1.9).

**Table 4.32 Motivations to go on a SCUBA Diving Trip**

| Motivation   | Mean <sup>a</sup> | Mean in Todd <i>et al.</i> 's (2001) study |
|--|-------------------|--|
| To look at underwater animal and plant life                          | 4.6               | 4.2  |
| To explore things  | 4.4               | 4.1  |
| Because it is stimulating and exciting                               | 4.3               | 3.8  |
| To learn more about the underwater environment                       | 4.3               | 3.7  |
| To experience peace and tranquillity                                 | 4.2               | 3.4  |
| For a change from everyday life                                      | 4.2               | 3.4  |
| For relaxation   | 4.1               | 3.6  |
| For the adventure of it  | 4.1               | 3.9  |
| To develop my diving skills and abilities                            | 4.0               | 3.6  |
| To gain an experience I can look back on                             | 4.0               | 3.3  |
| So I can do things with my friends and/or family                     | 3.7               | 3.0  |
| To meet new people   | 3.7               | 2.8  |
| To see historically significant shipwrecks                           | 3.6               | 3.2  |
| To share my skill and knowledge with others                          | 3.5               | 2.7  |
| To do something creative, such as take pictures or videos            | 3.5               | 2.7  |
| Because I think it is a challenge                                    | 3.5               | 3.0  |
| To help keep me physically fit                                       | 3.5               | 2.8  |
| To give me a feeling of confidence in myself                         | 3.3               | 2.8  |
| To use my equipment  | 3.2               | 2.6  |
| To study underwater geological formations                            | 3.1               | 2.6  |
| To show myself that I can do it                                      | 2.9               | 2.7  |
| It's sort of an impressive thing to do                               | 2.5               | 2.1  |
| Because of the risk involved   | 2.0               | 1.7  |
| To collect interesting artefacts                                     | 1.9               | 2.4  |
| To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.) | 1.4               |  |

<sup>a</sup>Items have been ordered by mean scores from most to least; values are mean scores on a 5-point Likert scale with 1=very unimportant; 2=unimportant; 3=neutral; 4=important; 5=very important

#### 4.7.1 Principal Component Analysis on Motivations

A Principal Component Analysis (PCA) was conducted on the 25 motivational items to investigate the underlying constructs, which accounted for the foremost sources of variation in the set of correlations (Stevens, 1992). Prior to performing the PCA, data was tested for suitability to be factor-analysed. The correlation matrix that was computed showed correlations of  $r = 0.3$  or greater (Appendix M) and internal consistency reliability for the scale was satisfactory with a value of 0.85. The KMO measure of sampling adequacy was 0.8 and Bartlett's Test of Sphericity was statistically significant ( $p = 0.000$ ) which supported the factorability of the correlation matrix.

The PCA revealed a seven-component structure with eigenvalues exceeding 1.00 that explained 59.5 per cent of the variance (Table 4.33). A graphical illustration of all component variances can be found in a Scree plot located in Appendix N.

**Table 4.33 Total Variance Explained – Motivation Items**

| Component | Extraction Sums of Squared Loadings |                     |                    |
|-----------|-------------------------------------|---------------------|--------------------|
|           | Total                               | Percent of Variance | Cumulative Percent |
| 1         | 5.794                               | 23.175              | 23.175             |
| 2         | 2.365                               | 9.458               | 32.633             |
| 3         | 1.722                               | 6.887               | 39.520             |
| 4         | 1.524                               | 6.096               | 45.616             |
| 5         | 1.290                               | 5.159               | 50.775             |
| 6         | 1.123                               | 4.490               | 55.265             |
| 7         | 1.066                               | 4.263               | 59.528             |

Extraction Method: Principal Component Analysis.

After component extraction a factor rotation was conducted using the varimax technique to increase the association of motivational variables and thus to aid in their interpretation. Following the above-mentioned suggestions of Tabachnik and Fidell (2001) and Lee (1992) concerning the cut-off for the size of loadings to be interpreted, the cut-off for the size of loadings to be interpreted was set at 0.44 (Table 4.34).

The first component was the strongest, explaining for over 23 per cent of the variance. It was labelled *Personal Challenge* (Table 4.34) and is made up of the following motivations:

- Mot 2: To give me a feeling of confidence in myself
- Mot 3: It's sort of an impressive thing to do
- Mot 12: To show myself that I can do it
- Mot 18: Because I think it is a challenge
- Mot 19: To help keep me physically fit.



**Table 4.34 Principal Component Analysis Motivation Items**

| Motivations   | Component                   |                 |                  |               |               |             |             |
|---|-----------------------------|-----------------|------------------|---------------|---------------|-------------|-------------|
|   | 1.<br>Personal<br>Challenge | 2.<br>Adventure | 3.<br>Relaxation | 4.<br>Novelty | 5.<br>Stature | 6.<br>Learn | 7.<br>Hunt  |
| Mot 1 - For relaxation  | -.071                       | .047            | <b>.644</b>      | .187          | -.138         | .180        | .078        |
| Mot 2 - To give me a feeling of confidence in myself                          | <b>.732</b>                 | .008            | .267             | .056          | .005          | .174        | -.091       |
| Mot 3 - It's sort of an impressive thing to do                                | <b>.724</b>                 | .120            | .033             | .026          | .223          | -.128       | .073        |
| Mot 4 - Because it is stimulating and exciting                                | .280                        | <b>.704</b>     | .203             | -.143         | -.103         | .111        | -.072       |
| Mot 5 - To see historically significant shipwrecks                            | .023                        | <b>.484</b>     | .368             | -.045         | .432          | -.043       | .146        |
| Mot 6 - To experience peace and tranquillity                                  | -.032                       | .426            | <b>.580</b>      | .266          | .090          | .132        | -.034       |
| Mot 7 - To share my skill and knowledge with others                           | .249                        | .035            | <b>.668</b>      | .022          | .324          | .036        | .004        |
| Mot 8 - To use my equipment   | .331                        | .029            | .287             | .208          | <b>.554</b>   | -.131       | -.255       |
| Mot 9 - To collect interesting artefacts                                      | .194                        | -.092           | .177             | .048          | <b>.560</b>   | -.220       | .421        |
| Mot 10 - Because of the risk involved   | .427                        | .037            | .012             | -.064         | <b>.528</b>   | -.025       | .162        |
| Mot 11 - To do something creative, such as take pictures or videos            | .011                        | .219            | -.233            | .107          | <b>.549</b>   | .327        | -.121       |
| Mot 12 - To show myself that I can do it                                      | <b>.777</b>                 | .024            | -.157            | .272          | .155          | .103        | .039        |
| Mot 13 - To gain an experience I can look back on                             | .357                        | .280            | -.083            | <b>.497</b>   | -.073         | .311        | .039        |
| Mot 14 - To study underwater geological formations                            | .125                        | .113            | .102             | .012          | <b>.501</b>   | <b>.464</b> | .349        |
| Mot 15 - For the adventure of it  | .122                        | <b>.695</b>     | -.108            | .394          | .095          | .017        | .081        |
| Mot 16 - To meet new people   | .060                        | -.003           | .336             | <b>.613</b>   | .158          | .100        | -.108       |
| Mot 17 - To learn more about the underwater environment                       | .029                        | .051            | .211             | .186          | .025          | <b>.749</b> | .089        |
| Mot 18 - Because I think it is a challenge                                    | <b>.692</b>                 | .346            | -.102            | .149          | .122          | -.021       | .180        |
| Mot 19 - To help keep me physically fit                                       | <b>.484</b>                 | -.097           | .337             | .126          | .042          | .168        | .240        |
| Mot 20 - To look at underwater animal and plant life                          | .076                        | .116            | .072             | .009          | -.042         | <b>.759</b> | -.159       |
| Mot 21 - To develop my diving skills and abilities                            | .343                        | .227            | .241             | .427          | .294          | .190        | -.162       |
| Mot 22 - To explore things  | -.047                       | <b>.599</b>     | .065             | .310          | .209          | .318        | .082        |
| Mot 23 - For a change from everyday life                                      | .158                        | .167            | .074             | <b>.706</b>   | -.039         | .004        | -.018       |
| Mot 24 - So I can do things with my friends and/or family                     | .073                        | -.111           | .250             | .399          | .029          | .075        | <b>.441</b> |
| Mot 25 - To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.) | .101                        | .136            | -.046            | -.147         | .049          | -.053       | <b>.747</b> |

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.  
 Rotation converged in 22 iterations.

The second component, explaining for 9.4 per cent of the variance, was labelled *Adventure* and encompasses the following motivations:

- Mot 4: Because it is stimulating and exciting
- Mot 5: To see historically significant shipwrecks
- Mot 15: For the adventure of it
- Mot 22: To explore things

The following motivations loaded strongly on the third component, which was labelled *Relaxation*:

- Mot 1: For relaxation
- Mot 6: To experience peace and tranquillity
- Mot 7: To share my skill and knowledge with others

The strong loading of motivation seven on the *Relaxation* component indicates that apparently, sharing their skills with others is also important for those divers that seek relaxation when going on a SCUBA diving trip. The *Relaxation* component explained 6.8 per cent of the variance.

Component four, which explained 6.0 per cent of the variance, was named *Novelty* according to the common characteristics of the items listed below, which were all related to experiencing something new:

- Mot 13: To gain an experience I can look back on
- Mot 16: To meet new people
- Mot 23: For a change from everyday life

The fifth component encompassed the following motivations:

- Mot 8: To use my equipment
- Mot 9: To collect interesting artefacts
- Mot 10: Because of the risk involved
- Mot 11: To do something creative, such as take pictures or videos
- Mot 14: To study underwater geological formations

Since four of these five motivations that loaded strongly on one component in this study also loaded strongly on one component in the study of Todd *et al.* (2001) the same label that these authors assigned to this component was adopted for this study, namely *Stature*. Todd *et al.* (2001:109) explained this component as being characterised through the “visible outcomes of diving, the external tangible results about which a diver could possibly brag”.

Motivation 14 (to study underwater geological formations) constitutes a complex variable with high loadings on the *Stature* component and on the sixth component, which is named *Learn* and is explained in the following paragraph. These double loadings indicate that apparently for SCUBA divers in this research, studying underwater geological formations were important in the context of learning something new, which is indicated through a high loading (0.464) on the *Learn* component, but that apparently to them it is even more important to tell others about what they have seen, which is indicated through a higher loading (0.501) on the *Stature* component. The *Stature* component explained 5.1 per cent of the variance.

Component six, which explained 4.4 per cent of the variance, was made up of the following motivations, which related to learn about the underwater environment and thus were assigned the label *Learn*:

- Mot 14: To study underwater geological formations
- Mot 17: To learn more about the underwater environment
- Mot 20: To look at underwater animal and plant life

Component seven was named *Hunt* according to the significant loading (0.747) of the motivation related to hunting/spearfishing. This component explained 4.2 per cent of the variance and encompassed the following motivations:

- Mot 24: So that I can do things with my friends and/or family
- Mot 25: To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.)

The one item that does not load on any of the seven components is motivation 21 (to develop my diving skills and abilities). This motivation did not contribute in ascertaining

labels for the components but was close to the cut-off for loading on the *Novelty* component.

Regression factor scores were calculated for all respondents for each of the seven motivation components and were used for the Analyses of Variance as discussed in section 4.7.2.

#### **4.7.2 Analysis of Variance on Clusters and Motivation Components**

A repeated measures ANOVA was conducted, using the Bonferroni method for multiple comparisons, not only to compare marginal mean scores of the seven motivation components (Personal Challenge, Adventure, Relaxation, Novelty, Stature, Learn and Hunt) between the five clusters but also to test whether a significant difference exists between cluster mean scores on those motivation components. The results of the ANOVA are presented in the following paragraphs.

To aid the interpretation, Table 4.35 presents a summary of cluster mean scores, motivation component mean scores and significance values. A complete table of the descriptive statistics and significance tests is in Appendix O. Table 4.35 reveals that this study found no statistically significant difference in the mean scores of the seven motivation components ( $p = 0.977$ ). However, a significant difference ( $p = 0.000$ ) was found between cluster mean scores on the motivation components.

Pairwise comparisons were carried out using the Bonferroni method to test whether there were differences between clusters concerning the means of the seven motivation components. As can be seen in Table 4.36, all motivation components but two were significantly different ( $p < 0.033$ ) between the five clusters. The motivation components for which no statistical significant difference was found between the five clusters were *Adventure* ( $p = 0.138$ ) and *Stature* ( $p = 0.055$ ).

**Table 4.35 Summary of Cluster and Motivation Component Mean Scores**

| Clusters              | Components            |              |               |            |            |          |         | Cluster mean scores | Sig.     |
|-----------------------|-----------------------|--------------|---------------|------------|------------|----------|---------|---------------------|----------|
|                       | 1. Personal Challenge | 2. Adventure | 3. Relaxation | 4. Novelty | 5. Stature | 6. Learn | 7. Hunt |                     |          |
| Cluster 1             | .246                  | -.206        | -.499         | -.227      | .097       | -.311    | .224    | -.096               | p = .000 |
| Cluster 2             | -.465                 | .139         | .326          | -.102      | -.229      | .081     | .203    | -.007               |          |
| Cluster 3             | .314                  | .171         | -.285         | .081       | -.139      | .044     | -.237   | -.007               |          |
| Cluster 4             | -.201                 | -.235        | -.128         | -.233      | .107       | -.172    | .041    | -.117               |          |
| Cluster 5             | .230                  | .024         | .500          | .502       | .299       | .311     | -.288   | .225                |          |
| Component mean scores | .025                  | -.021        | -.017         | .004       | .027       | -.009    | -.011   |                     |          |
| Sig.                  | p = .997              |              |               |            |            |          |         |                     |          |

Effect sizes were calculated to assess the importance of the statistically significant differences on the motivation components. For interpretation of effect sizes the guidelines suggested by Pallant (2005 referring to Cohen, 1988) were used where an eta squared ( $\eta^2$ ) value of 0.01 is expressed as a small effect,  $\eta^2 = 0.06$  as moderate effect and  $\eta^2 = 0.14$  as large effect. A moderate to large effect size was found for *Personal Challenge* ( $\eta^2 = 0.10$ ), a large effect size for *Relaxation* ( $\eta^2 = 0.14$ ) and moderate effect sizes were found for *Novelty* ( $\eta^2 = 0.07$ ), *Learn* ( $\eta^2 = 0.04$ ) and *Hunt* ( $\eta^2 = 0.05$ ).

Figure 4.17 shows graphically the mean scores of all seven motivation components for the five clusters. Graphs of the mean scores of each motivation component for the five clusters separately are provided in Appendix P. The mean scores in Table 4.35 and Figure 4.17 are based on factor regression scores calculated for the motivation components as indicated earlier in section 4.7.1

Levels of importance of the motivation components for each cluster were expressed as follows: a ‘highly important’ rating was used when the mean scores showed values between 0.600 and 0.199, a ‘moderately important’ rating was used between 0.200 and -0.199, and ‘not important’ was used between -0.200 and -0.600. This three-point scale structure is also shown graphically in Figure 4.17 by the horizontal dotted lines.

**Table 4.36 One-way ANOVA on Motivation Components and Clusters**

| Motivation Component  |                  | df  | Mean Square | F     | Sig. | $\eta^2$ |
|-----------------------|------------------|-----|-------------|-------|------|----------|
| 1. Personal Challenge | Between clusters | 4   | 6.428       | 7.064 | .000 | 0.10     |
|                       | Within clusters  | 241 | .910        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 2. Adventure          | Between clusters | 4   | 1.736       | 1.758 | .138 |          |
|                       | Within clusters  | 241 | .988        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 3. Relaxation         | Between clusters | 4   | 8.526       | 9.744 | .000 | 0.14     |
|                       | Within clusters  | 241 | .875        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 4. Novelty            | Between clusters | 4   | 4.160       | 4.391 | .002 | 0.07     |
|                       | Within clusters  | 241 | .948        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 5. Stature            | Between clusters | 4   | 2.294       | 2.344 | .055 |          |
|                       | Within clusters  | 241 | .979        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 6. Learn              | Between clusters | 4   | 2.605       | 2.676 | .033 | 0.04     |
|                       | Within clusters  | 241 | .973        |       |      |          |
|                       | Total            | 245 |             |       |      |          |
| 7. Hunt               | Between clusters | 4   | 2.899       | 2.993 | .019 | 0.05     |
|                       | Within clusters  | 241 | .968        |       |      |          |
|                       | Total            | 245 |             |       |      |          |

As can be seen in Figure 4.17, cluster one respondents were primarily motivated to go on a SCUBA diving trip by motivation components *Personal Challenge* (mean score of 0.246) and *Hunt* (0.224) which were both ranked ‘highly important’. It appeared that cluster one respondents were also motivated by the motivation component *Stature* (0.097) but to a lesser degree. For SCUBA diving club members in cluster one, ‘not important’ motivators to go on a diving trip were *Adventure* (-0.206), *Relaxation* (-0.499), *Novelty* (-0.227) and *Learn* (-0.311). Cluster one constituted the only cluster where club members ranked the component *Learn* ‘not important’.

**Figure 4.17 Mean Scores of Motivation Components on Clusters**

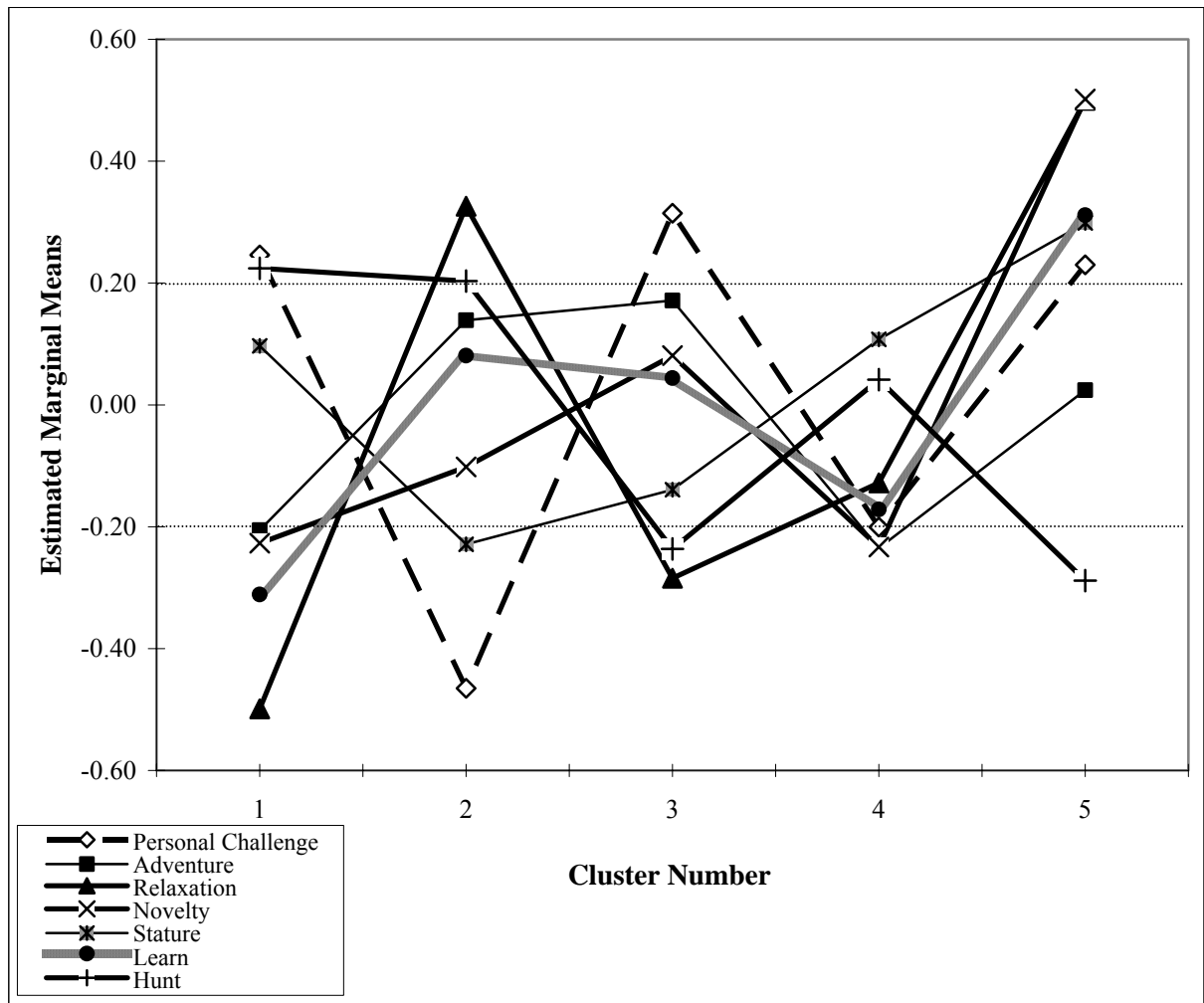


Figure 4.17 indicates that respondents in cluster two considered *Relaxation* (0.326) and *Hunt* (0.203) as ‘highly important’ motivation components to go on a SCUBA diving trip. Cluster two and cluster one were the only clusters in which club members considered the component *Hunt* a ‘highly important’ motivator. It appeared that those SCUBA diving club members were only reasonably motivated by motivation components *Adventure* (0.139), *Novelty* (-0.102) and *Learn* (0.081) which were all ranked ‘moderately important’. Motivations to go on a diving trip that related to the component *Personal Challenge* (-0.465) and *Stature* (-0.229) were ranked ‘not important’ by cluster two respondents.

Reference to Figure 4.17 shows that SCUBA diving club members in cluster three were mainly motivated to go on a SCUBA diving trip by motivations related to the component *Personal Challenge* (0.314), which was ranked ‘highly important’. It appeared that

respondents in this cluster were motivated to a lesser degree by motivation components *Adventure* (0.171), *Novelty* (0.081), *Stature* (-0.139) and *Learn* (0.044), which were all ranked 'moderately important'. Cluster three respondents indicated that they were least motivated to go on a diving trip by motivation components *Relaxation* (-0.285) and *Hunt* (-0.237), which were ranked 'not important'.

As can be seen in Figure 4.17, it appeared that respondents in cluster four were not 'highly motivated' by any of the seven motivation components. Club members in this cluster ranked components *Relaxation* (-0.128), *Stature* (0.107), *Learn* (-0.172) and *Hunt* (0.041) 'moderately important' motivators to go on a SCUBA diving trip. For SCUBA diving club members in cluster four, 'not important' motivators to go on a diving trip were *Personal Challenge* (-0.201), *Adventure* (-0.235) and *Novelty* (-0.233). Cluster four represented the only cluster in which respondents ranked both *Personal Challenge* and *Adventure* as 'not important' motivators.

Cluster five respondents were mainly motivated to go on a diving trip by motivations related to *Personal Challenge* (0.230), *Relaxation* (0.500), *Novelty* (0.502), *Stature* (0.299) and *Learn* (0.311) which were all ranked 'highly important'. Moreover, *Relaxation*, *Novelty*, *Stature* and *Learn* represented the highest mean scores of all clusters related to these motivations components. SCUBA diving club members in cluster five were also motivated by *Adventure* (0.024) but to a lesser degree. The only motivation component which apparently was 'not important' for cluster five respondents was *Hunt* (-0.288) which was also found for respondents in cluster three. Furthermore, cluster five showed the lowest mean score of all clusters for the motivation component *Hunt*.

A summary of the motivational components for each cluster as interpreted above is provided in the summary table of socio-demographics, involvement, motivations and settings preferences in chapter five (Table 5.1).



## 4.8 Results Setting Preferences

As already discussed in chapter three, setting preferences in this study referred to where (the place) and how (the surrounding circumstances) the activity of SCUBA diving takes place. Setting preferences investigated comprised components such as respondents' environmental and social orientation, preferred physical risk and the importance they attach to equipment. A descriptive analysis was conducted to show differences in the way SCUBA diving club member rated statements related to the above-mentioned components. The results of the descriptive analysis are presented in the following paragraphs.

### 4.8.1 Social Orientation

In order to measure the social orientation or the social context in which SCUBA diving club members participate in SCUBA diving, they were asked how often they usually go SCUBA diving for instance with friends, organised groups, instructors or alone. A 5-point Likert scale was used with 1 = never and 5 = very often with each of these five anchors receiving answers (Table 4.37; Figure 4.18).

**Table 4.37 Descriptive Analysis of Social Orientation (n=246)**

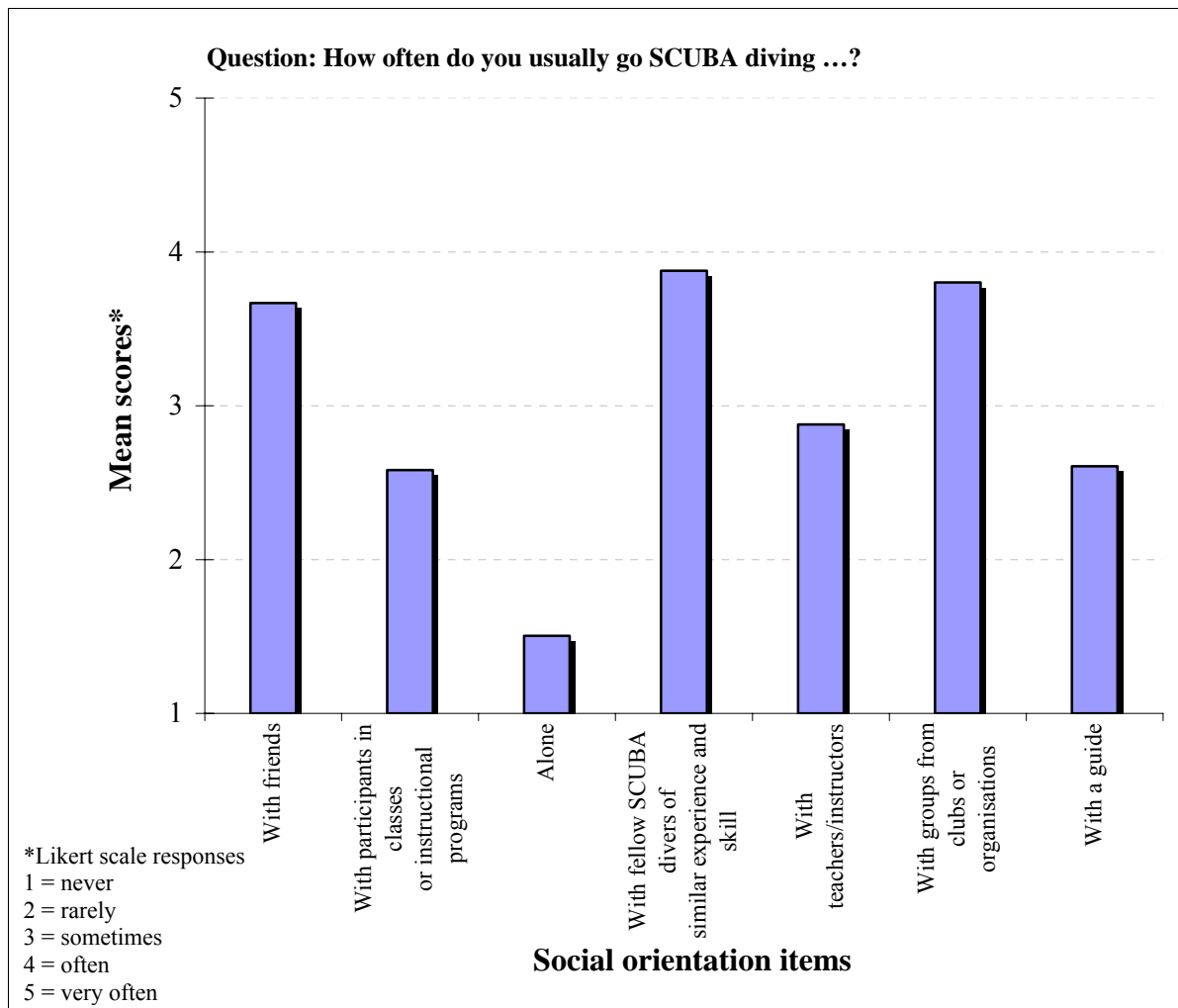
| Question:  | How often do you usually go SCUBA diving ...* |                    |          |           |            |           |            |
|--|---|--------------------|----------|-----------|------------|-----------|------------|
| Items  | Mean  | Standard Deviation | Variance | Skewness  |            | Kurtosis  |            |
|  |   |                    |          | Statistic | Std. Error | Statistic | Std. Error |
| With friends   | 3.67  | 1.10               | 1.211    | -.513     | .155       | -.477     | .309       |
| With participants in classes or instructional programs   | 2.58  | 1.11               | 1.232    | .326      | .155       | -.532     | .309       |
| Alone  | 1.50  | 0.88               | .782     | 1.685     | .155       | 2.055     | .309       |
| With fellow SCUBA divers of similar experience and skill | 3.88  | 0.79               | .622     | -.485     | .155       | .275      | .309       |
| With teachers/instructors                                | 2.88  | 1.05               | 1.112    | .120      | .155       | -.423     | .309       |
| With groups from clubs or organisations                  | 3.80  | 1.05               | 1.099    | -.751     | .155       | -.048     | .309       |
| With a guide   | 2.61  | 1.02               | 1.040    | .293      | .155       | -.436     | .309       |

\* Likert scale responses with 1=never, 2=rarely, 3=sometimes, 4=often, 5=very often)

Based on the categories used to measure social orientation it appeared that SCUBA diving club members in this study most often go SCUBA diving with 'fellow SCUBA divers of similar experience and skill' (mean of 3.88), 'with groups from clubs or organisations'

(3.80) and ‘with friends’ (3.67). They tend to go SCUBA diving only rarely or sometimes ‘with participants in classes or instructional programs’ (2.58), ‘with teachers/instructors’ (2.88) or ‘with a guide’ (2.61). Respondents indicated that they hardly ever go SCUBA diving ‘alone’ (1.50).

**Figure 4.18 Mean Results Social Orientation**



#### 4.8.2 Preferred Physical Risk

Respondents were asked about their preferences concerning the physical risk associated with SCUBA diving and the risk that problems (mechanical, equipment, and organisation) might occur when they are diving. A 5-point Likert scale was used where 1 = strongly disagree and 5 = strongly agree (Table 4.38; Figure 4.19).

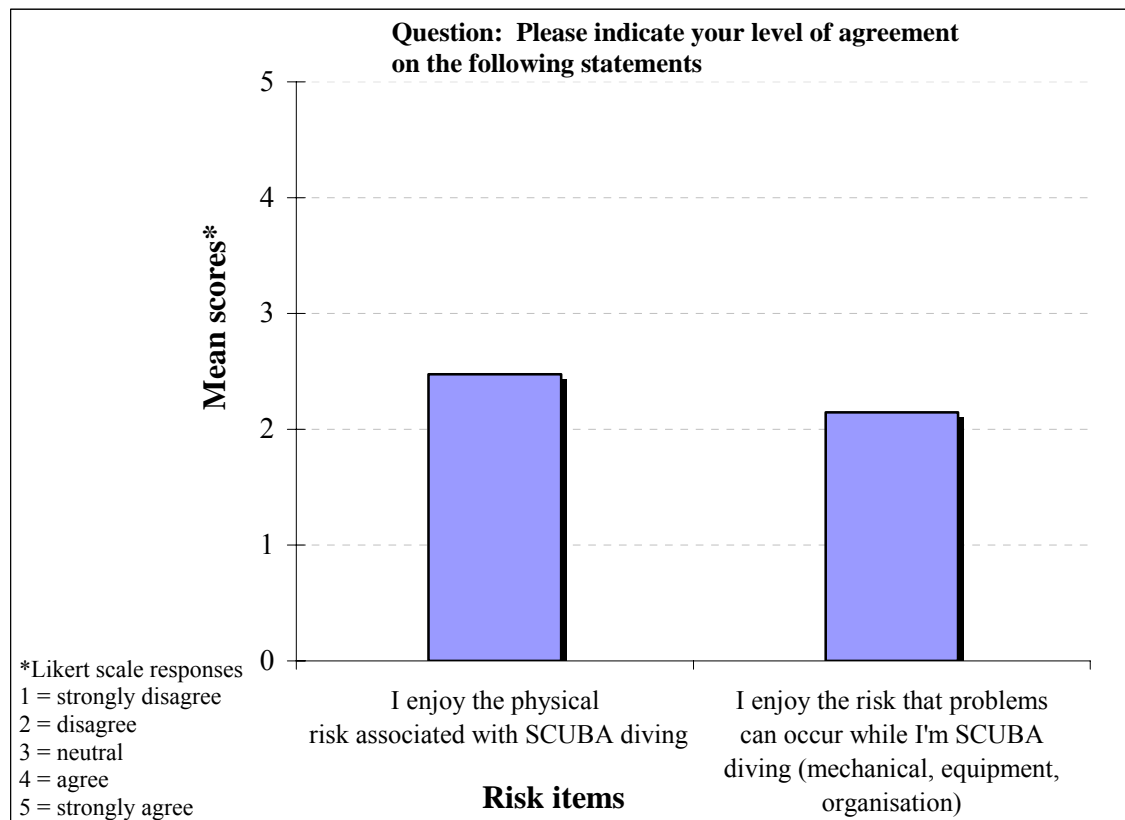
**Table 4.38 Descriptive Analysis of Risk (n=246)**

| Question:   | Question: Please indicate your level of agreement on the following statements |                    |          |           |            |           |            |
|---|---|--------------------|----------|-----------|------------|-----------|------------|
| Items   | Mean  | Standard Deviation | Variance | Skewness  |            | Kurtosis  |            |
|   |   |                    |          | Statistic | Std. Error | Statistic | Std. Error |
| I enjoy the physical risk associated with SCUBA diving  | 2.48  | 1.09               | 1.197    | .213      | .155       | -.794     | .309       |
| I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation) | 2.15  | 1.06               | 1.113    | .608      | .155       | -.494     | .309       |

\* Likert scale responses with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

Overall, divers in this study rather disagreed with the statement that they enjoy the physical risk associated with SCUBA indicated through a mean score of 2.48. The results also indicated that respondents disagreed even more with the statement that was concerned with the enjoyment of the risk that problems (mechanical, equipment, organisation) can occur while SCUBA diving. The mean score for this item was 2.15.

**Figure 4.19 Mean Results Preferred Physical Risk**



### 4.8.3 Environmental Orientation

Six items measured environmental orientation in this study. These related to SCUBA divers' preferences regarding naturalness at the activity site and their attitudes towards developed structures on or near diving sites (Table 4.39; Figure 4.20).

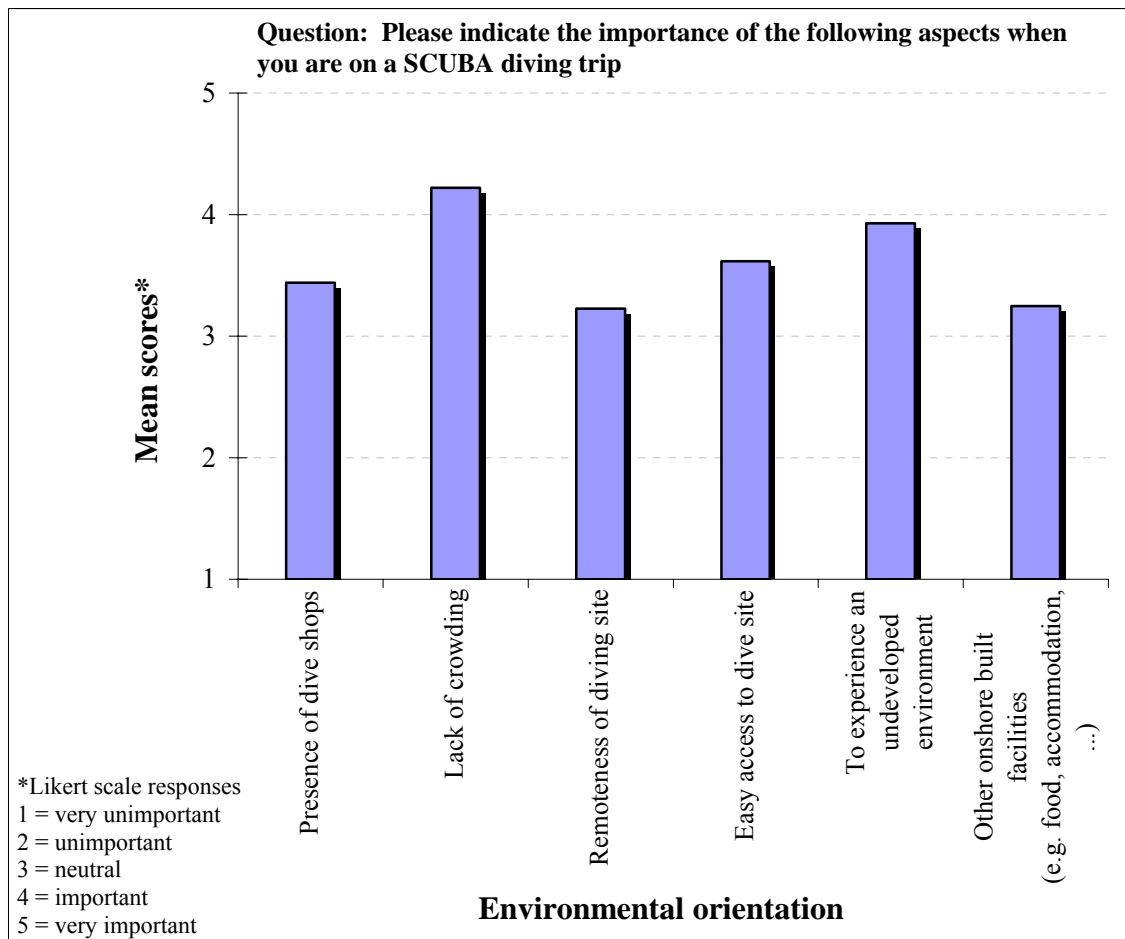
The items that were ranked most important by SCUBA diving club members when they are on a SCUBA diving trip were 'lack of crowding' (4.22) and 'to experience an undeveloped environment' (3.93). Only somewhat less important ranked were the items 'easy access to dive site' (3.62) and 'presence of dive shops' (3.44). Respondents indicated that the 'remoteness of the diving site' (3.23) and 'other onshore built facilities (e.g. food, accommodation, ...)' (3.25) were least important aspects when they are on a SCUBA diving trip.

**Table 4.39 Descriptive Analysis of Environmental Orientation (n=246)**

| Question   | Please indicate the importance of the following aspects when you are on a SCUBA diving trip |                    |          |           |            |           |            |
|--|---|--------------------|----------|-----------|------------|-----------|------------|
| Items  | Mean  | Standard Deviation | Variance | Skewness  |            | Kurtosis  |            |
|  |   |                    |          | Statistic | Std. Error | Statistic | Std. Error |
| Presence of dive shops   | 3.44  | 1.04               | 1.088    | -.457     | .155       | -.530     | .309       |
| Lack of crowding   | 4.22  | .72                | .523     | -.946     | .155       | 1.714     | .309       |
| Remoteness of diving site                                      | 3.23  | .88                | .772     | .120      | .155       | -.146     | .309       |
| Easy access to dive site                                       | 3.62  | .87                | .751     | -.387     | .155       | -.134     | .309       |
| To experience an undeveloped environment                       | 3.93  | .85                | .729     | -.612     | .155       | .479      | .309       |
| Other onshore built facilities (e.g. food, accommodation, ...) | 3.25  | .91                | .832     | -.349     | .155       | -.121     | .309       |

\*Likert scale response with 1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important

**Figure 4.20 Mean Results Environmental Orientation**



#### 4.8.4 Equipment

The factor equipment in this study was measured by asking respondents how strongly they agreed or disagreed to two statements. The latter related to the importance of specialised equipment utilisation and the importance to communicate to others about equipment. Equipment items were ranked on a 5-point Likert scale with 1 = strongly disagree and 5 = strongly agree (Table 4.40; Figure 4.21).

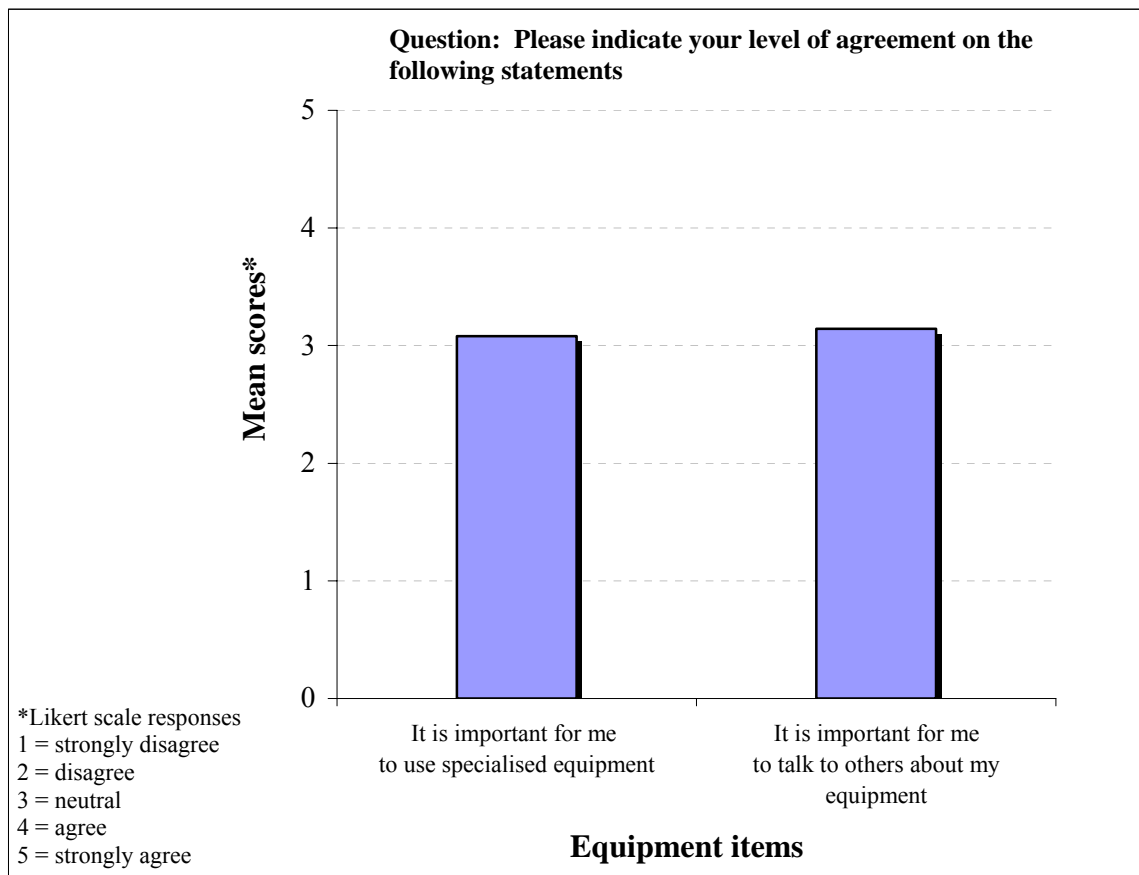
**Table 4.40 Descriptive Analysis of Equipment (n=246)**

| Question  | Please indicate your level of agreement on the following statements* |                    |          |           |            |           |            |
|---|--|--------------------|----------|-----------|------------|-----------|------------|
| Items   | Mean   | Standard Deviation | Variance | Skewness  |            | Kurtosis  |            |
|   |  |                    |          | Statistic | Std. Error | Statistic | Std. Error |
| It is important for me to use specialised equipment         | 3.08   | 1.15               | 1.316    | -.029     | .155       | -.885     | .309       |
| It is important for me to talk to others about my equipment | 3.14   | 1.16               | 1.355    | -.171     | .155       | -.938     | .309       |

\* Likert scale responses with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

SCUBA diving club members in this study indicated that for them it is only moderately important to use specialised equipment indicated through a mean score of 3.08. Almost no difference in the importance for divers to *use* specialised equipment was found for the importance they attached to *talking* to others about their equipment. The latter item showed a mean score of 3.14.

**Figure 4.21 Mean Results Equipment**



#### **4.9 Analysis of Variance on Clusters and Setting Preferences**

One-way ANOVAs were conducted on variables related to setting preferences using the Bonferroni method to test whether there were statistically significant differences between the five clusters. Setting preferences comprised variables measuring environmental and social orientation of respondents, preferred physical risk associated with the activity of SCUBA diving and the importance respondents attached to equipment. Dependent variables were those related to setting preferences, whereas the independent variable was 'cluster'.

The one-way ANOVAs revealed mean scores of setting preference variables for each of the five clusters. The results of one-way ANOVAs are presented in the following paragraphs.

#### 4.9.1 Social Orientation

As can be seen in Table 4.41 and Table 4.42, statistically significant differences ( $p < 0.05$ ) were found for six variables related to social orientation. No significant difference was found for ‘with participants in classes or instructional programs’ ( $p = 0.263$ ). Effect sizes were calculated to assess the importance of the statistically significant differences on social orientation variables. Large effect sizes were found for ‘with friends’ ( $\eta^2 = 0.12$ ) and ‘alone’ ( $\eta^2 = 0.11$ ), whereas medium effect sizes were found for ‘with fellow SCUBA divers of similar experience and skill’ ( $\eta^2 = 0.05$ ), ‘with teachers/instructors’ ( $\eta^2 = 0.05$ ), ‘with groups from clubs or organisations’ ( $\eta^2 = 0.04$ ) and ‘with a guide’ ( $\eta^2 = 0.05$ ).

**Table 4.41 One-way ANOVA on Social Orientation Variables and Clusters**

| Question   | How often do you usually go SCUBA diving ... |     |             |       |       |          |
|--|--|-----|-------------|-------|-------|----------|
|  | Variables                                    | df  | Mean Square | F     | Sig.  | $\eta^2$ |
| With friends   | Between clusters                             | 4   | 8.733       | 8.041 | 0.000 | 0.12     |
|  | Within clusters                              | 241 | 1.086       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| With participants in classes or instructional programs   | Between clusters                             | 4   | 1.619       | 1.321 | 0.263 |          |
|  | Within clusters                              | 241 | 1.226       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| Alone  | Between clusters                             | 4   | 5.170       | 7.294 | 0.000 | 0.11     |
|  | Within clusters                              | 241 | 0.709       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| With fellow SCUBA divers of similar experience and skill | Between clusters                             | 4   | 1.995       | 3.331 | 0.011 | 0.05     |
|  | Within clusters                              | 241 | 0.599       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| With teachers/instructors                                | Between clusters                             | 4   | 3.994       | 3.755 | 0.006 | 0.05     |
|  | Within clusters                              | 241 | 1.064       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| With groups from clubs or organisations                  | Between clusters                             | 4   | 2.778       | 2.594 | 0.037 | 0.04     |
|  | Within clusters                              | 241 | 1.071       |       |       |          |
|  | Total  | 245 |             |       |       |          |
| With a guide   | Between clusters                             | 4   | 3.297       | 3.289 | 0.012 | 0.05     |
|  | Within clusters                              | 241 | 1.002       |       |       |          |
|  | Total  | 245 |             |       |       |          |

Table 4.42 indicates how often SCUBA diving club members in each cluster go SCUBA diving within different social contexts based on calculated mean scores. Differences in mean scores of social orientation were based on a 5-point Likert scale with the anchors 1 = never, 2 = rarely, 3 = sometimes, 4 = often and 5 = very often. Following this 5-point scale



structure the frequency of participation was expressed as follows: a ‘never’ rating was used for a mean score between 1.00 and 1.49, a ‘rarely’ rating was used between 1.50 and 2.49, a ‘sometimes’ rating was used between 2.50 and 3.49, an ‘often’ rating was used between 3.50 and 4.49 and a ‘very often’ rating was used when the mean score was between 4.50 and 5.00.

**Table 4.42 Social Orientation of SCUBA Diving Club Members in Clusters<sup>a</sup>**

| Question: How often do you usually go SCUBA diving ...   |             |           |           |           |           |       |
|--|-------------|-----------|-----------|-----------|-----------|-------|
| Variables  | Mean Scores |           |           |           |           | Sig.  |
|  | Cluster 1   | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 |       |
| With friends   | 3.435       | 4.219     | 3.269     | 3.375     | 3.841     | 0.000 |
| With participants in classes or instructional programs   | 2.696       | 2.438     | 2.442     | 2.550     | 2.864     | 0.263 |
| Alone  | 1.196       | 1.922     | 1.231     | 1.650     | 1.409     | 0.000 |
| With fellow SCUBA divers of similar experience and skill | 3.609       | 4.031     | 3.731     | 3.900     | 4.091     | 0.011 |
| With teachers/instructors                                | 3.043       | 2.500     | 3.096     | 2.750     | 3.114     | 0.006 |
| With groups from clubs or organisations                  | 3.696       | 3.984     | 3.442     | 3.900     | 3.977     | 0.037 |
| With a guide   | 2.652       | 2.328     | 2.923     | 2.400     | 2.773     | 0.012 |

<sup>a</sup> measured on a 5-point Likert scale with 1=never, 2=rarely, 3= sometimes, 4=often, 5=very often

With regard to the frequency with which respondents go SCUBA diving ‘with friends’, a statistically significant difference ( $p = 0.000$ ) was found between the clusters. A large effect size ( $\eta^2 = 0.12$ ) was calculated using eta squared. Post-hoc comparisons using the Bonferroni method indicated that the mean score for cluster two (4.22) was significantly different ( $p < 0.001$ ) from clusters one, three and four, but not significantly different from cluster five. Furthermore, cluster five was not significantly different from all other clusters. As can be seen in Table 4.42, SCUBA diving club members in cluster two and cluster five indicated that they go SCUBA diving with friends ‘often’ (mean score of 4.22), while respondents in cluster one (3.44), cluster three (3.27) and cluster four (3.38) indicated that they only go SCUBA diving with friends ‘sometimes’.

Concerning the regularity of going SCUBA diving ‘with participants in classes or instructional programs’ no statistically significant difference ( $p = 0.263$ ) was found between the clusters. It appeared that respondents in clusters one (2.70), four (2.55) and five (2.86) went SCUBA diving with participants in classes or instructional programs

‘sometimes’, whereas respondents in cluster two (2.44) and cluster three (2.44) only ‘rarely’ participate in SCUBA diving within this social context.

With regard to the frequency of going SCUBA diving ‘alone’, a statistically significant difference was found between the clusters ( $p = 0.000$ ). A large effect size ( $\eta^2 = 0.11$ ) was calculated using eta squared. Post-hoc comparisons indicated that the mean score of cluster two (1.92) was significantly different ( $p < 0.021$ ) to clusters one, three and five, but not significantly different from cluster four. Cluster four was not significantly different from clusters one, two, three and five. Respondents in cluster two (mean score of 1.92) and cluster four (1.66) indicated that they ‘rarely’ go SCUBA diving on their own, while SCUBA diving club members in clusters one (1.20), three (1.23) and five (1.41) indicated that they ‘never’ went SCUBA diving alone. As can be seen in Table 4.42, the frequency of going SCUBA diving ‘alone’ showed the lowest mean scores of all social orientation variables across all clusters. The relatively low mean scores this variable received is believed to relate to safety issues in the activity of SCUBA diving, which have already been discussed in section 4.7 and 4.8.1.

A statistically significant difference ( $p = 0.011$ ) was found between clusters with respect to going SCUBA diving ‘with fellow SCUBA divers of similar experience and skill’. Despite reaching statistical significance, the differences in the mean scores of this variables was actually quite small ranging from 3.61 for cluster one to 4.09 for cluster five. The effect size calculated using eta squared was moderate ( $\eta^2 = 0.05$ ). Post-hoc comparisons using the Bonferroni method indicated that the mean score of cluster one (3.61) was significantly different ( $p = 0.034$ ) from cluster five (4.09), but not significantly different from clusters two, three and four. Reference to Table 4.42 shows that respondents across all clusters usually go ‘often’ SCUBA diving ‘with fellow SCUBA divers of similar experience and skill’, which is indicated through mean scores between 3.61 (cluster one) and 4.09 (cluster five).

Concerning the frequency of going diving with teachers/instructors a statistically significant difference ( $p = 0.006$ ) was found between clusters. The effect size calculated was moderate ( $\eta^2 = 0.05$ ). Post-hoc comparisons indicated that the mean score of cluster two (2.50) was significantly different ( $p < 0.026$ ) from clusters three and five, but did not differ significantly from clusters one and four. As can be seen in Table 4.42, it appeared

that respondents in all five clusters generally go ‘sometimes’ SCUBA diving ‘with teachers/instructors’, indicated through mean scores between 2.50 (cluster two) and 3.11 (cluster five).

This study found a statistically significant difference ( $p = 0.037$ ) between clusters regarding how often club members usually go SCUBA diving ‘with groups from clubs or organisations’. Despite reaching statistical significance, the differences in the mean scores of this variable was quite small ranging from 3.70 for cluster one to 3.98 for cluster two and cluster five. The effect size calculated was moderate ( $\eta^2 = 0.04$ ). Post-hoc comparisons, indicated that cluster two (3.98) was different ( $p = 0.054$ ) from cluster three (3.44), however, this difference was not statistically significant at the significance level of  $p = 0.05$  used for this study. SCUBA diving club members in clusters one, two, four and five indicated that they ‘often’ go SCUBA diving ‘with groups from clubs or organisations’, while cluster three respondents only ‘sometimes’ go diving within this social context.

With regard to participation ‘with a guide’ a statistically significant difference ( $p = 0.012$ ) was found between the clusters. The effect size calculated was moderate ( $\eta^2 = 0.05$ ). Post-hoc comparisons indicated that the mean score of cluster two (2.33) was significantly different ( $p = 0.016$ ) from cluster three (2.92), but was not significantly different from clusters one, four and five. Respondents in clusters one (2.65), three (2.92) and five (2.77) indicated that they ‘sometimes’ go SCUBA diving ‘with a guide’, while respondents in clusters two (2.33) and four (2.40) only ‘rarely’ go diving ‘with a guide’.

#### **4.9.2 Preferred Physical Risk**

As can be seen in Table 4.43 and Table 4.44, no statistically significant differences between clusters were found for variables used to measure respondents’ preferred physical risk associated with SCUBA diving.

**Table 4.43 One-way ANOVA on Preferred Physical Risk and Clusters**

| Question  | Please indicate your level of agreement on the following statements ... |     |             |       |       |
|---|---|-----|-------------|-------|-------|
| Variables   |   | df  | Mean Square | F     | Sig.  |
| I enjoy the physical risk associated with SCUBA diving  | Between Clusters  | 4   | .618        | 0.512 | 0.727 |
|   | Within Clusters   | 241 | 1.207       |       |       |
|   | Total   | 245 |             |       |       |
| I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation) | Between Clusters  | 4   | 1.135       | 1.020 | 0.398 |
|   | Within Clusters   | 241 | 1.113       |       |       |
|   | Total   | 245 |             |       |       |

Two statements related to the physical risk associated with SCUBA diving and the risk that problems (mechanical, equipment, and organisation) might occur when they (club members) are diving measured preferred physical risk in this study. Table 4.44 indicates the mean scores of respondents' preferred physical risk associated with SCUBA diving in each cluster.

Mean scores of preferred physical risk items were based on a 5-point Likert scale with the anchors 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. Following this 5-point scale structure the level of agreement related to preferred physical risk items was expressed as follows: a 'strongly disagree' rating was used for a mean score between 1.00 and 1.49, a 'disagree' rating was used between 1.50 and 2.49, a 'neutral' rating was used between 2.50 and 3.49, an 'agree' rating was used between 3.50 and 4.49 and a 'strongly agree' rating was used when mean scores resulted in between 4.50 and 5.00.

**Table 4.44 Preferred Physical Risk of SCUBA Diving Club Members in Clusters<sup>a</sup>**

| Question: Please indicate your level of agreement on the following statements                         |             |           |           |           |           |       |
|---|-------------|-----------|-----------|-----------|-----------|-------|
| Variables   | Mean Scores |           |           |           |           | Sig   |
|   | Cluster 1   | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 |       |
| I enjoy the physical risk associated with SCUBA diving  | 2.435       | 2.438     | 2.404     | 2.700     | 2.455     | 0.727 |
| I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation) | 2.196       | 2.109     | 1.923     | 2.325     | 2.250     | 0.398 |

<sup>a</sup> measured on a 5-point Likert scale with 1=strongly disagree, 2=disagree, 3= neutral, 4= agree, 5=strongly agree

Reference to Table 4.44 shows that differences in the mean scores between the clusters were actually quite small for the first statement ‘I enjoy the physical risk associated with SCUBA diving’ ranging from 2.40 for cluster three to 2.70 for cluster four. SCUBA diving club members in clusters one (mean score of 2.44), two (2.44), three (2.40), and five (2.46) all disagreed with this statement. The only cluster that showed a ‘neutral’ ranking for these variables was cluster four (2.70). Similar to the first statement, differences in the mean scores for the second statement ‘I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation)’ were as well quite small with a range from 1.92 for cluster three to 2.33 for cluster four. It appeared that SCUBA diving club members in all five clusters disagreed with this statement, and thus, based on the rating used for the mean scores mentioned above, did not differ from each other.

The above-mentioned findings indicate that generally SCUBA diving club members of all clusters apparently enjoy neither the physical risk associated with SCUBA diving, nor the risk that problems can occur while diving. As previously discussed in sections 4.7 and 4.8.2, possible reasons for this might among other things be related to safety issues in SCUBA diving. Physical risk is an inherent element in the activity of SCUBA diving. However, as an investigation of divers’ motivations to go on a diving trip (section 4.7) has shown, risk is not a prime motivator for respondents in this study. This is possibly also because risky or hazardous situations that might occur while SCUBA diving easily can lead to injury or even participant death.

### **4.9.3 Equipment**

As can be seen in Table 4.45 and Table 4.46, statistically significant differences ( $p < 0.05$ ) were found for both variables used to measure the importance respondents attach to SCUBA diving equipment. Effect sizes were calculated to assess the importance of the statistically significant differences on equipment variables. Medium effect sizes were found for ‘It is important for me to use specialised equipment’ ( $\eta^2 = 0.05$ ) and for ‘It is important for me to talk to others about my equipment’ ( $\eta^2 = 0.04$ ).

**Table 4.45 One-way ANOVA on Importance of Equipment and Clusters**

| Question  | Please indicate your level of agreement on the following statements |     |             |       |       |          |
|---|---|-----|-------------|-------|-------|----------|
| Variables   |   | df  | Mean Square | F     | Sig.  | $\eta^2$ |
| It is important for me to use specialised equipment         | Between clusters  | 4   | 4.428       | 3.502 | 0.008 | 0.05     |
|   | Within clusters   | 241 | 1.264       |       |       |          |
|   | Total   | 245 |             |       |       |          |
| It is important for me to talk to others about my equipment | Between clusters  | 4   | 3.512       | 2.662 | 0.033 | 0.04     |
|   | Within clusters   | 241 | 1.319       |       |       |          |
|   | Total   | 245 |             |       |       |          |

Similarly to the investigation of preferred physical risk items, as discussed above (section 4.9.2), mean scores of equipment items were based on a 5-point Likert scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. Following this 5-point scale structure, respondents' level of agreement on the items used for measuring the importance they attached to equipment was expressed as follows: a 'strongly disagree' rating was used for a mean score between 1.00 and 1.49, a 'disagree' rating was used between 1.50 and 2.49, a 'neutral' rating was used between 2.50 and 3.49, an 'agree' rating was used between 3.50 and 4.49 and a 'strongly agree' rating was used when mean scores resulted in between 4.50 and 5.00.

Table 4.46 indicates the mean scores of the importance respondents attached to SCUBA diving equipment in each cluster. With regard to the importance to use specialised equipment, a statistically significant difference ( $p = 0.008$ ) was found between the clusters. The effect size was moderate ( $\eta^2 = 0.05$ ). Post-hoc comparisons indicated that the mean score of cluster two (2.84) was not statistically different from clusters one, three and four but significantly different ( $p = 0.008$ ) from cluster five (3.60). It appeared that for SCUBA diving club members in clusters one, two, three and four it was neither important nor unimportant to use specialised equipment indicated through mean scores that fall into the 'neutral' rating. Cluster five respondents, however, agreed to the first statement, which indicates that for them it is important to use specialised equipment when SCUBA diving.

A statistically significant difference ( $p = 0.033$ ) was found between clusters for the second statement 'It is important for me to talk to others about my equipment'. The effect size calculated using eta squared was moderate ( $\eta^2 = 0.04$ ). Post-hoc comparisons indicated that

the mean score of cluster three (3.42) was different ( $p = 0.078$ ) to cluster four (2.78). This difference however, was not statistically significant at the significance level of  $p = 0.05$  used for this study.

SCUBA diving club members across all clusters did not differ in their level of agreement to the second statement used to measure the importance they attached to equipment. Respondents indicated that for them it was neither important nor unimportant to talk to others about their equipment, indicated through a ‘neutral’ ranking of this statement.

**Table 4.46 Importance of Equipment of SCUBA Diving Club Members in Clusters<sup>a</sup>**

| Question: Please indicate your level of agreement on the following statements |             |           |           |           |           |       |
|---|-------------|-----------|-----------|-----------|-----------|-------|
|   | Mean Scores |           |           |           |           |       |
| Variables   | Cluster 1   | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Sig   |
| It is important for me to use specialised equipment                           | 2.957       | 2.844     | 3.192     | 2.900     | 3.591     | 0.008 |
| It is important for me to talk to others about my equipment                   | 3.152       | 2.969     | 3.423     | 2.775     | 3.386     | 0.033 |

<sup>a</sup> measured on a 5-point Likert scale with 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

#### 4.9.4 Environmental Orientation

Six variables were used to measure respondents’ environmental orientation. Table 4.47 and Table 4.48 revealed that regarding these variables, the only statistically significant difference ( $p < 0.005$ ) between clusters was found for ‘presence of dive shops’. The effect size for the latter item was moderate ( $\eta^2 = 0.06$ ).

Table 4.48 shows mean scores for SCUBA diving club members in each cluster which express their preferences regarding developed structures on or near diving sites and their preferences regarding the naturalness at the activity site. Differences in mean scores of social orientation were based on a 5-point Likert scale with the anchors 1 = very unimportant, 2 = unimportant, 3 = neutral, 4 = important and 5 = very important. Following this 5-point scale structure the frequency of participation was expressed as follows: a ‘very unimportant’ rating was used for a mean score between 1.00 and 1.49, an ‘unimportant’ rating was used between 1.50 and 2.49, a ‘neutral’ rating was used between

2.50 and 3.49, an ‘important’ rating was used between 3.50 and 4.49 and a ‘very important’ rating was used when the mean score was between 4.50 and 5.00.

**Table 4.47 One-way ANOVA on Environmental Orientation of SCUBA Diving Club Members and Clusters**

| Question   | Please indicate the importance of the following aspects when you are on a SCUBA diving trip |     |             |       |       |          |
|--|---|-----|-------------|-------|-------|----------|
| Variables  |   | df  | Mean Square | F     | Sig.  | $\eta^2$ |
| Presence of dive shops   | Between clusters  | 4   | 4.026       | 3.873 | 0.005 | 0.06     |
|  | Within clusters   | 241 | 1.039       |       |       |          |
|  | Total   | 245 |             |       |       |          |
| Lack of crowding   | Between clusters  | 4   | 0.299       | 0.567 | 0.687 |          |
|  | Within clusters   | 241 | 0.527       |       |       |          |
|  | Total   | 245 |             |       |       |          |
| Remoteness of diving site                                      | Between clusters  | 4   | 1.273       | 1.666 | 0.158 |          |
|  | Within clusters   | 241 | 0.764       |       |       |          |
|  | Total   | 245 |             |       |       |          |
| Easy access to dive site                                       | Between clusters  | 4   | 1.757       | 2.391 | 0.051 |          |
|  | Within clusters   | 241 | 0.735       |       |       |          |
|  | Total   | 245 |             |       |       |          |
| To experience an undeveloped environment                       | Between clusters  | 4   | 0.276       | 0.374 | 0.827 |          |
|  | Within clusters   | 241 | 0.737       |       |       |          |
|  | Total   | 245 |             |       |       |          |
| Other onshore built facilities (e.g. food, accommodation, ...) | Between clusters  | 4   | 1.245       | 1.509 | 0.200 |          |
|  | Within clusters   | 241 | 0.825       |       |       |          |
|  | Total   | 245 |             |       |       |          |

With regard to the presence of dive shops, a statistically significant difference ( $p = 0.005$ ) was found between the clusters. Post-hoc comparisons indicated that the mean score of cluster four (3.00) was significantly different ( $p < 0.016$ ) from clusters two (3.66) and five (3.75), but did not differ significantly from clusters one and three. Reference to Table 4.48 shows that for SCUBA diving club members in cluster one (3.37), three (3.31) and four (3.00) the ‘presence of dive shops’ is neither important nor unimportant when they are on a SCUBA diving trip, indicated through a ‘neutral’ ranking. It appeared that for respondents in clusters two (3.66) and five (3.75), however, the presence of dive shops is ‘important’.

This study found no statistically significant difference ( $p = 0.66$ ) between clusters concerning the importance of ‘lack of crowding’. SCUBA diving club members across all clusters indicated that for them the lack of crowding is an ‘important’ aspect when they are



on a SCUBA diving trip. Moreover, this variable showed the highest mean scores of all six items that measured respondents' environmental orientation. Interestingly, 'lack of crowding' was rated more important than compared to other research about SCUBA diving (e.g. Davis, 1997; Howard, 1999). Howard (1999) in his study about Vanuatu's dive industry for instance found that lack of crowding was an important factor in the choice of dive sites by divers. However, with a mean score of 3.52 on a 5-point scale, respondents in Howard's (1999) study rated the lack of crowding less important than in this study. Davis (1997), who investigated recreational SCUBA diving in Australia, found that almost half of the respondents considered crowding a problem. Moreover, the same author found that the lack of crowding was only a moderately important factor that influenced the choice of the dive site by divers, indicated through a mean score of 3.16 on a 5-point scale.

**Table 4.48 Environmental Orientation of SCUBA Diving Club Members in Clusters<sup>a</sup>**

| Question: Please indicate the importance of the following aspects when you are on a SCUBA diving trip |             |           |           |           |           |       |
|---|-------------|-----------|-----------|-----------|-----------|-------|
| Variables   | Mean Scores |           |           |           |           |       |
|   | Cluster 1   | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Sig   |
| Presence of dive shops  | 3.370       | 3.656     | 3.308     | 3.000     | 3.750     | 0.005 |
| Lack of crowding  | 4.174       | 4.172     | 4.192     | 4.225     | 4.364     | 0.687 |
| Remoteness of diving site   | 3.152       | 3.297     | 3.019     | 3.225     | 3.455     | 0.158 |
| Easy access to dive site  | 3.674       | 3.406     | 3.692     | 3.500     | 3.886     | 0.051 |
| To experience an undeveloped environment  | 3.978       | 3.938     | 3.808     | 3.925     | 4.000     | 0.827 |
| Other onshore built facilities (e.g. food, accommodation ...)   | 3.348       | 3.391     | 3.000     | 3.225     | 3.250     | 0.200 |

<sup>a</sup> Likert scale response with 1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important

Concerning the 'remoteness of the diving site' no statistically significant difference ( $p = 0.158$ ) was found between clusters. It appeared that respondents in all five clusters did not consider the remoteness of the diving site as particularly important aspect when on a SCUBA diving trip, indicated through a 'neutral' rating.

No statistically significant difference ( $p = 0.051$ ) between clusters was found for 'easy access to dive site'. As can be seen in Table 4.48, 'easy access to dive site' was rated more important by SCUBA diving club members than the 'remoteness of diving site'. It appeared that respondents in clusters one, three, four and five considered an 'easy access to

the dive' site 'important', while dive club members in cluster two did not consider this aspect particularly important, which was indicated through a 'neutral' rating. The findings of this research are similar to Howard's (1999) study, where the importance of the factor 'access to the site' showed a mean rating of 3.60. For respondents in this study, easy access to the dive site as an influencing factor in the choice of a dive site, however, was more important than compared to respondents in the study of Davis (1997), where this factor showed a mean score of 3.09.

With regard to the importance of experiencing an undeveloped environment, no statistically significant difference was found between clusters. It appeared that respondents across all clusters considered this aspect 'important' when going on a SCUBA diving trip. This corresponds to respondents' high ratings of motivations to go on a SCUBA diving trip such as 'to look at underwater animal and plant life' (mean of 4.6), 'to explore things' (4.4) and 'to experience peace and tranquillity' (4.2) as discussed previously in section 4.7.

Reference to Table 4.48 shows that no statistically significant difference ( $p = 0.200$ ) was found between clusters regarding the importance of 'other onshore built facilities (e.g. food, accommodation ...)'. It appeared that SCUBA diving club members across all clusters did not consider this aspect to be either particularly important or particularly unimportant, indicated through a 'neutral' rating.

A summary of the setting preferences for each cluster as interpreted above is provided in the summary table of socio-demographics, involvement, motivations and settings preferences in chapter five (Table 5.1).

#### **4.10 Chapter Summary**

In summary, this chapter presented and analysed the results of this research related to socio-demographic characteristics, involvement, motivations and setting preferences of SCUBA diving club members in QLD and NSW who participate in the adventure tourism activity of SCUBA diving. Firstly, socio-demographics of respondents were presented and their experience in SCUBA diving was outlined using descriptive analysis. Secondly, diving club members' involvement in SCUBA diving was determined using PCAs. Clusters of SCUBA diving club members that differ in their activity involvement were formed using agglomerative hierarchical cluster analysis and the k-means clustering method. Thirdly, participation motives were outlined and underlying constructs of these motivations were investigated by using a PCA. Differences and similarities in motivational components between the clusters were presented using Analyses of Variance (ANOVAs). Fourthly, SCUBA diving club members' setting preferences were provided and differences and similarities between the clusters regarding setting preferences were highlighted using ANOVAs.

The following chapter (chapter five) will discuss the main findings of the results.

## **CHAPTER FIVE**

### **Discussion and Conclusion**

#### **5.1 Introduction**

Chapter four provided the findings of the results through utilisation of appropriate analysis methods and statistical techniques.

This chapter discusses the main findings of the results in order to answer the research aim which is ‘to investigate similarities and differences of involvement, motivations and setting preferences of SCUBA diving club members participating in the adventure tourism activity of SCUBA diving in Eastern Australia’. This was achieved by addressing objectives two, three, four, five and six which are:

- 2) To identify SCUBA diving club members’ socio-demographics;
- 3) To investigate SCUBA diving club members’ involvement in SCUBA diving and to segment them by their involvement;
- 4) To investigate SCUBA diving club members’ motivations for participation in SCUBA diving;
- 5) To investigate SCUBA diving club members’ setting preferences regarding participation in SCUBA diving;
- 6) To examine the differences and similarities between SCUBA diving club members’ motivations and setting preferences by their involvement in SCUBA diving.

Furthermore, the chapter will provide conclusions and recommendations for further research and thus addresses objective seven which is:

- 7) To develop a set of conclusions concerning socio-demographics, motivations, and setting preferences of SCUBA diving club members regarding their involvement in the activity and to provide recommendations for further research in adventure tourism.

The findings are discussed by interpreting the results and comparing the results of the whole sample to findings of previous studies in adventure recreation and tourism. Furthermore specific differences and similarities concerning motivations and setting preferences across the five clusters are analysed.

## **5.2 Discussion regarding the whole Sample**

### **5.2.1 Socio-demographics**

#### ***Gender***

In relation to socio-demographics of SCUBA divers, findings of this study mostly correlated with previous studies. More particularly in regard to gender, this study found that the percentage of male SCUBA diver participants was higher than that of female participants in the sample. This confirms previous findings about SCUBA participation by Burke (2002), Cottrell and Meisel (2003), Davis (1997), Taylor *et al.* (2002), Todd *et al.* (2001) and Wilks (1991a; 1993). All of these studies found that male participation in SCUBA diving is higher than female participation. Findings of this study, in which 63.8 per cent were male divers, were most similar to those of Wilks (1991a) and Wilks (1993) where 62.1 per cent and 60.5 per cent were male divers respectively. Most of the other studies had a slightly higher male participation rate than this research.

#### ***Age***

The sample of divers in this research was generally older than found in the Australian-wide survey of recreation SCUBA diving conducted by Davis (1997), where most divers were between 25 and 34 years of age. This study found that the majority of divers was younger than 44 years and that participation was highest for middle-aged divers (between 35 and 44 years old) and lowest for divers who were younger than 25 years. The relatively low percentage of divers under the age of 25 years was found to be similar to other studies (e.g. Davis, 1997; Davis, Banks and Davey, 1996) and is assumed to be influenced by the fact that SCUBA diving is cost-intensive and thus often people prior to their mid-20s cannot afford to dive. Findings were also similar to previous research regarding the decline of participation in SCUBA diving with increasing age, particularly of divers over the age of 55 years (e.g. Davis, 1997; Davis, Banks and Davey, 1996; Ditton and Baker, 1999; Mundet and Ribera, 2001). Reasons for the decreasing number of divers over the age of 55

years might among others relate to physical fitness or medical conditions of divers. SCUBA diving equipment is bulky and heavy and as participants grow older, they might become less active and less medically able to participate in this activity.

### ***Education, Occupation, Income***

Generally, the characteristics of the sample in this study compares well with profiles of divers in other SCUBA studies. A wide cross-section of the community seemed to participate in SCUBA diving, although a high percentage of divers (more than 75%) have some tertiary education. Moreover, SCUBA divers in this research had lucrative jobs (more than 40% of respondents were professionals or managers/administrators) and a high level of income (more than 40% of respondents earned more than AUD 80,000). The predominance of managerial and professional employment categories among divers was also found by several previous studies that included an investigation of SCUBA divers' socio-demographics (e.g. Taylor *et al.*, 2002; Wilks, 1991a, 1991b, 1993). Furthermore, the relatively high income profile of SCUBA divers revealed in this study also correlated with previous research (e.g. Davis, 1997; Ditton and Baker, 1999; Todd *et al.*, 2001). The high income profile of divers revealed by the later studies as well as by this research reflects the fact that participation in SCUBA diving is generally cost-intensive and mainly those with a higher income can afford to dive. This is also supported by the above-mentioned findings regarding the low percentages of divers who are younger than 25 years.

### **5.2.2 Motivations**

The most important motivations to go on a SCUBA diving trip for divers in this study were related to the diving environment, escape, relaxation and the excitement of diving. This was found to be similar to divers' motivations in the study conducted by Todd *et al.* (2001) upon which the motivational items in this study were based. Moreover, a range of previous SCUBA studies also found that motivations which relate to the diving environment and relaxation were most important for divers (e.g. Burke, 2002; Davis *et al.*, 1996; Ditton and Baker, 1999). Davis *et al.* (1996) for instance found that the top-ranked factors that influenced divers' choices of the dive site were the variety and abundance of marine life and coral and geologic formations. Looking at fish and experiencing tranquillity were reasons for diving rated very or extremely important in Ditton and Baker's (1999) study.

Furthermore, experiencing the beauty of nature was the most important reason for SCUBA diving tourists to dive at the Great Barrier Reef in Burke's (2002) study.

This study revealed that motivations to go on a diving trip such as 'it's sort of an impressive thing to do', 'to collect interesting artefacts' and 'because of the risk involved' were rated at the bottom of the motivational list. These motivations were also rated least important by divers in Todd *et al.*'s (2001) study. Todd *et al.* (2001) stated that these motivations might be influenced by societal pressures and norms as they are related to 'showing off' (*it's sort of an impressive thing to do*) or are likely to evoke an image by the public's perception that SCUBA divers want to abolish (e.g. *because of the risk involved* and *to collect interesting artefacts*). These reasons might also be influencing factors in regard to the low ranked items in this study.

Interestingly, this study found differences regarding importance of hunting (spearfishing and catch prawns, crabs, crayfish, etc.) as a motivator to go on a SCUBA diving trip between the sample of divers involved in the pilot study (WA) and the final study (NSW and QLD). As hunting was frequently mentioned to be an important motivator by divers in WA, the final study incorporated this aspect. The final study however revealed that hunting was rated least important by SCUBA diving club members. This difference between respondents from participating clubs in NSW and QLD compared to respondents from WA may among others be based on rather different rules and regulations that apply to spearfishing in these Australian states.

In WA, spearfishing is generally prohibited in rivers and dams, while spearfishing in ocean waters is generally permitted on compressed air diving with the exception of marine parks or reserves where special regulations apply (Department of Fisheries, 2005; Department of Fisheries, 2006). Similarly, to WA, in QLD spearfishing is prohibited in all fresh waters. However, spearfishing is also not allowed, "while using or wearing underwater breathing apparatus other than a snorkel" (Department of Primary Industries and Fisheries (2005:2). Special regulations in regard to spearfishing also apply in NSW where it is illegal to use a SCUBA or a *hookah apparatus*<sup>3</sup> to take fish or lobsters and a range of further specific regulations apply (New South Wales Department of Primary Industries, 2005).

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<sup>3</sup> *hookah apparatus*: also a type of underwater breathing apparatus, however different to SCUBA in so far that air is supplied from the surface and thus no or only little gear is worn by the diver

### 5.2.3 Setting Preferences

#### *Social Orientation*

Considering the whole sample this study revealed that SCUBA divers most often go SCUBA diving *with fellow SCUBA divers of similar experience and skill, with friends and with groups from clubs or organisations*. These results are not surprising considering the fact that respondents in this study are members of a SCUBA diving club. This means that findings in relation to this specific variable might be influenced by the sample used in this study. Interestingly, findings revealed that going diving *alone* is not at all common amongst the divers. The low rating of going diving alone indicates that respondents like the socialising factor of SCUBA diving. This is also supported by relatively high ranked motivations related to social interaction such as ‘so I can do things with my friends and/or family’ (mean score of 3.70) and ‘to meet new people’ (3.70) as shown in Table 4.32 in section 4.7.

The low rating of going diving alone may also be influenced by another important aspect of SCUBA diving which is safety. Going SCUBA diving with a partner or ‘buddy’ is usually considered to be safer than solo-diving. This is as the buddy carries an independent air supply with regulator that can be used in case of an emergency. A solo diver will have to deal alone with problems of any kind that crop up under water. The safety issue of diving with a partner is also evident from the fact that many SCUBA diving certification organisations certify divers on a buddy team concept (e.g. PADI, NAUI, and SSI). To this author’s knowledge, SCUBA Diving International (SDI) is the only diver certification organisation worldwide that offers a solo diver certification (SDI, 2006).



### ***Preferred Physical Risk and Importance of Equipment***

As mentioned in chapter two, the focus of risk in this study was on the functional dimension of risk which includes physical risk as previously identified by Cheron and Ritchie (1982). Relatively low mean scores on the two risk items (Table 4.38) indicate that respondents apparently do not participate in the activity of SCUBA diving to experience risky or hazardous situations, but rather prefer a low level of physical risk. The assumption that the low level of preferred physical risk may relate to safety issues in this activity is also supported by the findings discussed in section 4.8.1, that divers never or only rarely go diving alone which can among other be linked to safety issues.

The low level of preferred physical risk also corresponds to respondents' motivations, discussed above and in section 4.7. The motivation to go SCUBA diving 'because of the risk involved' was ranked at the bottom of the list with a mean score of 2.2.

### ***Equipment***

As discussed previously in chapter two and in section 3.8.3.4, SCUBA diving is an adventure activity that requires specialised equipment. In the Australian context, Davis (1997) states that the recreational SCUBA diving industry is based heavily on equipment. The importance of specialised equipment in the adventure recreation context is also stressed by Ewert and Hollenhorst (1994:181) who argue, "without specialized equipment, the adventure recreationist is placed at a severe disadvantage and exposed to much higher risk levels". This indicates that equipment and preferred risk in the context of adventure tourism and recreation may be strongly interconnected.

Findings of this study, however, revealed that the use of specialised equipment and furthermore the desire to communicate with others about equipment was only of moderate importance. This may indicate that divers in this study regard SCUBA diving equipment primarily as a necessary means to perform this activity and to reduce the risk associated with SCUBA diving. This assumption is supported by the findings in Ewert and Hollenhorst's (1994) study. Ewert and Hollenhorst's (1994:188) research, involving white-water boaters, found that most boaters seemed to use equipment "as a means of optimizing performance". However, findings of their research also revealed that an equivalent group of boaters existed who viewed their equipment "primarily as a safety apparatus or as a way to ameliorate the risk" (Ewert and Hollenhorst, 1994:188). The latter

might also apply for this study. This is because safety issues, as mentioned above and discussed in section 4.7, 4.8.1 and 4.8.2, were found to be considerably important concerning participation in SCUBA diving.

### ***Environmental Orientation***

The findings of this study show that the divers desire a natural experience and do not prefer crowds when on a SCUBA diving trip. Although not highly important for divers, the presence of dive shops and comfort facilities is also recognised. The importance of experiencing an undeveloped environment indicated by respondents in this study is only slightly lower than indicated by SCUBA diving tourists in Burke's (2002) study and thus quite comparable. The lack of crowding was found to be considerably more important for divers in this study than the importance of this aspect regarding the choice of dive sites by dive tour operators as found by Tabata (1992). This finding is interesting regarding the assumption that dive tour operators develop their product according to their clients' preferences in regard to setting attributes. It may therefore be assumed that SCUBA diving tourists that participate in a commercial context consider the lack of crowding as a less important setting preference. This assumption is also supported by findings of Howard's (1999) study on divers participating in commercial diving trips in Vanuatu, who considered the lack of crowding less important than respondents in this study. However, more research is needed that explicitly investigates SCUBA diving tourists that participate in a commercial context to confirm this suggestion.

The presence of on shore built facilities (e.g. food, accommodation) and the presence of commercial outfitters (dive shops) appeared to be only moderately important for divers in this study. These findings differed to those in Schuett's (1991) study about white-water kayakers. Schuett (1991) revealed that kayakers rather prefer not to see the presence of commercial outfitters on or near the rivers they kayak and furthermore had only limited interest in comfort facilities. It is important to mention that kayakers in Schuett's (1991) study were participants from an outdoor centre kayak programme and thus were not participating in this activity independently, but rather in a commercial context. As in the latter context adventure activities are organised by a provider, which generally also supplies the equipment necessary to participate in the respective activity, it may be assumed that participants in this commercial context do not consider the presence of outfitters as important as individuals who participate in this activity independently. This

may explain for the difference found between Schuett's (1991) study and this research regarding the importance individuals attach to the presence of commercial outfitters.

## 5.3 Discussion regarding Clusters

### 5.3.1 Involvement

Concerning SCUBA diving club members' involvement in diving, findings of this study revealed that five clusters could be derived which showed differences in the involvement components used, namely *experience*, *self-expression*, *centrality* and *attraction*. The results of the cluster analysis suggest that the different involvement variables do not progress in a linear way. The multidimensional nature of involvement becomes evident when considering some of the involvement variables as summarised in Table 5.1. To illustrate, for cluster two, in which respondents are highly experienced, SCUBA diving as a mean for self-expression appeared to be not important, while for moderately experienced divers in cluster five, self-expression was highly important. This indicates that self-expression does not necessarily increase with increasing experience or vice versa. Another example for differences in the involvement variables was revealed for those divers with low experience, who are in clusters one and three. For divers in cluster one, the attraction component was not important and the centrality component was only moderately important. For divers in cluster three, however, the attraction component was moderately important and centrality not important.

Similar to the findings of McIntyre and Pigram's (1992) study on campers, this research revealed that divers differ in the importance they attach to the various involvement components. Some see SCUBA diving as a means to express who they are (self-expression), others as an enjoyable activity from which they derive pleasure (attraction) and for others it is an important medium for social interaction (centrality). Although the involvement components reveal a rather complex structure across the clusters, it is nevertheless evident that these involvement components in the context of SCUBA diving do not generally increase linear in the same direction. In other words, more experience in the activity of SCUBA diving does not necessarily imply higher importance of the components attraction, self-expression and centrality.

These results support the approach used in this research of creating clusters of SCUBA divers without assuming linearity in the involvement components rather than creating a composite index of involvement that combines scores across involvement indicators. At this point this author would like to mention that the use of single additive index to

determine participants' involvement in an activity would have been more convenient in terms of its simplicity. A single additive index has been used previously by other recreation studies in the context of specialisation (for instance Wellman *et al.*, 1982; Virden and Schreyer, 1988; Bricker and Kerstetter, 2000; Kerstetter *et al.*, 2001). However, as mentioned in chapter two, several studies have criticised the use of summative indices regarding the limited information they provide (e.g. Bricker and Kerstetter, 2000; Kapferer and Laurent, 1985; Kuentzel and McDonald, 1992; McFarlane, 1994; McIntyre and Pigram, 1992).

Findings of this study support the suggestions of previous research (e.g. Kuentzel and Herberlein, 1992; McFarlane, 2004; McIntyre and Pigram, 1992) to establish an involvement profile rather than an additive index. As mentioned above, the use of a single summative index to determine divers' involvement in this research would not have adequately acknowledged the role or the importance of each single component in the construct and therefore would not have recognised the multidimensional nature of involvement in SCUBA diving.

### **5.3.2 Socio-demographics, Involvement, Motivations and Setting Preferences**

Reference to Table 5.1 shows that, although this study revealed differences across the five clusters concerning SCUBA divers' socio-demographics, particular relationships between the latter and the involvement variables could not be observed. However, it appeared that older divers in this sample were generally more experienced in the activity of SCUBA diving. This may have been influenced by the nature of one experience variable used in this research. One question to determine divers' experience was related to how many years a respondent had been diving. This means the more years a diver had been diving, the higher he scored on the overall experience variable. In turn, more years diving experience is likely to indicate a higher age of the respondent.

Concerning setting preferences, similar structures were observed across all five clusters regarding SCUBA diving club members' involvement in SCUBA diving. In other words, divers' preferences for specific settings when on a SCUBA diving trip did not vary greatly when compared to socio-demographics, involvement variables and motivations. This is

particularly true for the setting preference variables *preferred physical risk* and *equipment* as shown in Table 5.1.

The low level of preferred physical risk as indicated by divers in this research is believed to relate to the fact that risky or hazardous situations that might occur while diving may easily lead to serious injury or even participant death. This is more so in SCUBA diving than in other activities that are commonly regarded as hard adventure activities mentioned in chapter two such as mountaineering, rock climbing or white-water rafting. This fact might account for the difference in findings to the studies of Kuentzel and McDonald (1992) who investigated specialisation of white-water paddlers and Ewert and Hollenhorst (1989) who tested the adventure model on a sample of students participating in outdoor courses such as rock climbing, caving, backcountry camping and wilderness canoeing.

Kuentzel and McDonald (1992) found that those river users who scored high on the commitment component were, among other things, mainly motivated by risk and excitement. Ewert and Hollenhorst (1994) revealed that committed adventurers have a preference for higher risk levels. It may be interesting to compare the findings of the current study regarding preferred physical risk to other adventure activities in which risky or hazardous situations are likely to lead to serious injury or even death as may be the case in SCUBA diving.

Concerning the importance of equipment, divers responded in a similar way as they did regarding the preferred levels of risk. Although not rated highly important, almost all respondents recognised that equipment is necessary to participate in SCUBA diving. Moreover, similar to the findings of Ewert and Hollenhorst (1994) the importance divers attach to equipment usage is assumed to relate to the reduction of the risk associated with SCUBA diving and thus to safety issues in this adventure activity.

As mentioned before in the discussion regarding the whole sample it appeared that divers most often participate in SCUBA diving with divers of similar skill and experience and groups from clubs or organisations. The social context in which divers participate in SCUBA diving appeared to be almost the same across all clusters regardless of divers' involvement in SCUBA diving which was believed to be influenced by the sample used in this research.

**Table 5.1 Summary for Socio-demographics, Involvement, Motivations and Setting Preferences of SCUBA Diving Club Members by Clusters**

|  | Cluster 1            | Cluster 2            | Cluster 3            | Cluster 4            | Cluster 5              |
|--|----------------------|----------------------|----------------------|----------------------|------------------------|
| <b>Socio-demographic Variables</b>   |                      |                      |                      |                      |                        |
| Gender <sup>1</sup>  | more male            | more male            | more male            | more male            | more female            |
| Age <sup>2</sup>   | younger              | older                | younger              | older                | younger                |
| Education Level <sup>3</sup>   | highly educated      | highly educated      | less highly educated | highly educated      | less highly educated   |
| Income <sup>4</sup>  | moderate income      | high income          | high income          | high income          | moderate income        |
| <b>Involvement Variables</b>   |                      |                      |                      |                      |                        |
| Attraction   | not important        | highly important     | moderately important | moderately important | moderately important   |
| Self-expression  | moderately important | not important        | moderately important | moderately important | highly important       |
| Centrality   | moderately important | highly important     | not important        | moderately important | highly important       |
| Experience   | low experienced      | highly experienced   | low experienced      | highly experienced   | moderately experienced |
| <b>Motivational components</b>   |                      |                      |                      |                      |                        |
| Personal Challenge   | highly important     | not important        | highly important     | not important        | highly important       |
| Adventure  | not important        | moderately important | moderately important | not important        | moderately important   |
| Relaxation   | not important        | highly important     | not important        | moderately important | highly important       |
| Novelty  | not important        | moderately important | moderately important | not important        | highly important       |
| Stature  | moderately important | not important        | moderately important | moderately important | highly important       |
| Learn  | not important        | moderately important | moderately important | moderately important | highly important       |
| Hunt   | highly important     | highly important     | not important        | moderately important | not important          |
| <sup>1</sup> <i>more male</i> = more than 60% of respondents were male; <i>more female</i> = more than 60% of respondents were female<br><sup>2</sup> <i>younger</i> = more than 60% of respondents under the age of 44; <i>older</i> = more than 60% of respondents over the age of 44<br><sup>3</sup> <i>highly educated</i> = more than 60% of respondents have a University or Postgraduate degree; <i>less highly educated</i> = less than 60% of respondents have a University or Postgraduate degree<br><sup>4</sup> <i>high income</i> = 60% or more of respondents with an income above AUD 60,000 ; <i>moderate income</i> = less than 60% of respondents with an income above AUD 60,000<br><sup>5</sup> Likert scale responses (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often)<br><sup>6</sup> Likert scale responses (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)<br><sup>7</sup> Likert scale responses (1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important) |                      |                      |                      |                      |                        |

**Table 5.1 continued Summary for Socio-demographics, Involvement, Motivations and Setting Preferences of SCUBA Diving Club Members by Clusters**

| Setting Preferences   |           |           |           |           |           |
|---|-----------|-----------|-----------|-----------|-----------|
| <b>• Social Orientation<sup>5</sup></b>   |           |           |           |           |           |
| With Friends  | sometimes | often     | sometimes | sometimes | often     |
| With participants in classes or instructional programs  | sometimes | rarely    | rarely    | sometimes | sometimes |
| Alone   | never     | rarely    | never     | never     | never     |
| With fellow SCUBA divers of similar experience and skill  | often     | often     | often     | often     | often     |
| With teachers/instructors   | sometimes | sometimes | sometimes | sometimes | sometimes |
| With groups from clubs or organisations   | often     | often     | sometimes | often     | often     |
| With a guide  | sometimes | rarely    | sometimes | rarely    | sometimes |
| <b>• Preferred Physical Risk<sup>6</sup></b>  |           |           |           |           |           |
| I enjoy the physical risk associated with SCUBA diving  | disagree  | disagree  | disagree  | neutral   | disagree  |
| I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation)   | disagree  | disagree  | disagree  | disagree  | disagree  |
| <b>• Environmental Orientation<sup>7</sup></b>  |           |           |           |           |           |
| Presence of dive shops  | neutral   | important | neutral   | neutral   | important |
| Lack of crowding  | important | important | important | important | important |
| Remoteness of diving site   | neutral   | neutral   | neutral   | neutral   | neutral   |
| Easy access to dive site  | important | neutral   | important | important | important |
| To experience an undeveloped environment  | important | important | important | important | important |
| Other onshore built facilities (e.g. food, accommodation, ...)  | neutral   | neutral   | neutral   | neutral   | neutral   |
| <b>• Equipment<sup>6</sup></b>  |           |           |           |           |           |
| It is important for me to use specialised equipment   | neutral   | neutral   | neutral   | neutral   | agree     |
| It is important for me to talk to others about my equipment   | neutral   | neutral   | neutral   | neutral   | neutral   |
| <sup>1</sup> <i>more male</i> = more than 60% of respondents were male; <i>more female</i> = more than 60 % of respondents were female<br><sup>2</sup> <i>younger</i> = more than 60% of respondents under the age of 44; <i>older</i> = more than 60% of respondents over the age of 44<br><sup>3</sup> <i>highly educated</i> = more than 60% of respondents have a University or Postgraduate degree; <i>less highly educated</i> = less than 60% of respondents have a University or Postgraduate degree<br><sup>4</sup> <i>high income</i> = 60% or more of respondents with an income above AUD 60,000 ; <i>moderate income</i> = less than 60% of respondents with an income above AUD 60,000<br><sup>5</sup> Likert scale responses (1=never, 2=rarely, 3=sometimes, 4=often, 5=very often)<br><sup>6</sup> Likert scale responses (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)<br><sup>7</sup> Likert scale responses (1=very unimportant, 2=unimportant, 3=neutral, 4=important, 5=very important) |           |           |           |           |           |



This study found that divers' motivations are complex, and this concurs with previous studies (e.g. Cottrell and Meisel, 2003; Todd *et al.*, 2001). Although this research revealed a rather complex structure for the seven motivational components in regard to involvement, some distinct differences between the latter and motivational components were found across the clusters. In this context particularly interesting were the differences between divers' experience and motivations such as 'to give me a feeling of confidence in myself', 'to show myself that I can do it' and 'because I think it is a challenge' which were included in the motivational component named *Personal Challenge*. For highly experienced SCUBA divers (in clusters two and four) it appeared that *Personal Challenge* was not an important motivator to go on a SCUBA diving trip. All other clusters, with lower experience in SCUBA diving however, considered *Personal Challenge* a highly important motivator. This finding reveals some parallels to the study of Davis (1997), Wilks (1992) and Todd *et al.* (2001). Wilks (1992) investigated reasons why divers recently conducted an introductory dive on the Great Barrier Reef, which means that they had no or only limited experience in SCUBA diving. His study also found that for those low experienced divers, major motivations to participate in an introductory dive included those related to the challenge of a unique experience (Wilks, 1992). Further comparisons regarding motivations of less experienced divers can be made between this current research and the study of Davis (1997). Davis (1997) examined the reasons why people *first* learned to dive, which implicates that at this time, these divers had no or limited experience in this adventure activity. Similar to the findings of this study and to those revealed by Wilks (1992), Davis (1997) reported that the most important motivations of low experienced divers were related to the diving environment but importantly also the seeking of adventure which may also include facets of challenging oneself.

The notion that more experienced divers are not primarily motivated by aspects related to personal challenge was also found by Todd *et al.* (2001). He revealed that diving beginners scored higher on the motivational themes related to personal challenge than divers with a higher level of development. However, concerning Todd *et al.*'s (2001) study it is important to mention that level of development was operationalised by one single self-rating measure which might be limited in terms of the information it provides of divers' experience in SCUBA diving.

In addition to the finding mentioned above that highly experienced divers in this research are not primarily motivated by aspects related to *Personal Challenge*, this research also revealed differences in the motivational component *Relaxation* between divers with varying experience in SCUBA diving. Those divers who are less experienced appeared to consider motivations such as ‘to experience peace and tranquillity’ and ‘for relaxation’ and ‘to share my skill and knowledge with others’, which were included in the motivational component named *Relaxation*, not important. In contrast, highly experienced divers considered the *Relaxation* aspects of participating in SCUBA diving as considerably important. Interesting in the context of motivational components and divers’ experience was the finding that less experienced divers appeared to attach more importance to *Personal Challenge* than their more involved counterparts, however they attached much less importance on motivations related to *Relaxation*.

Again these findings compare well with other studies in adventure recreation (e.g. Carr, 2001; McInyre, 1991). McIntyre (1991), for instance, found that highly involved climbers (involvement in his study also included experience variables similar to those in this study such as number of years climbing, climbing frequency, etc.) placed more importance on competence and relaxation than less involved climbers. Furthermore, in the context of guided mountain climbers, Carr (2001) also found that more experienced guided climbers attached more importance on motivations related to relaxation than their less experienced counterparts.

Interestingly, despite the aforementioned complex structure that was revealed for the seven motivational components on involvement, similarities between self-expression and the motivational component *Stature* could be observed. As discussed in chapter four some motivations that loaded highly on the *Stature* component in this study also showed strong loadings on this component in Todd *et al.*’s (2001) study. The *Stature* component was thus interpreted in a similar way than it has been determined by Todd *et al.* (2001).

Todd *et al.* (2001:109) explained that motivations in the stature component such as *to use my equipment, to do something creative such as take pictures or videos* and *to collect interesting artefacts* related to the “visible outcomes of diving, the external tangible results about which a diver could possibly brag”. Interestingly, divers in this study who saw SCUBA diving as an important mean to escape normal life roles and to act their real self

(self-expression) also attached more importance to the motivational component *Stature*. In contrast, to those divers who did not consider SCUBA diving as an important activity to express themselves, motivations that related to the *Stature* component were also not important. In other words, this study revealed some linearity (from low to high) in the importance divers attach to self-expression and motivations related to *Stature*.

## 5.4 Conclusion

Adventure tourism is regarded as a fast-growing market sector of the tourism industry worldwide. In Australia, the adventure tourism market is also rapidly growing. This destination offers a rich adventure tourism product including soft and hard adventure activities and moreover remote and wilderness areas where some of these adventure tourism activities can take place. SCUBA diving is a popular hard adventure activity in Australia, however to date only limited information exists about those who undertake SCUBA diving trips in an Australian context.

Those who participate in adventure activities may be motivated by various reasons, such as escaping the ‘humdrum’ of every day life, challenge, social interaction and need for self-expression. Motivations are crucial in the decision-making process of adventure tourists. Motivations sometimes vary with involvement in an activity and may influence adventure tourists’ behaviour and preferences for specific activities and settings. Knowledge about adventure tourists’ participation motives and their setting preferences under consideration of their involvement in the activity is important for tourism industry planners and natural resource managers. Considering these aspects and addressing the above-mentioned gap in research the aim of this study was:

to investigate similarities and differences of involvement, motivations and setting preferences of SCUBA diving club members participating in the adventure tourism activity of SCUBA diving in Eastern Australia.

To achieve this aim, seven objectives were addressed which are listed in chapter one. In order to address this topic, a total of 246 people who have undertaken at least one SCUBA diving trip within the last 12 months were surveyed via a web-based survey. The activity of SCUBA diving has been identified previously as an example of adventure tourism. Respondents were members of SCUBA diving clubs in New South Wales and Queensland. SCUBA diving club members were considered an appropriate research population for this research as it was assumed that they had an interest in SCUBA diving and were to some extent actively involved in this activity which has also been discussed in chapter three. Information was gathered regarding divers’ socio-demographics, involvement in SCUBA diving, motivations to go on a diving trip and their setting preferences. Based on club

members' involvement in SCUBA diving five clusters were derived that differed in the involvement components.

#### **5.4.1 Summary of Main Findings related to the whole Sample**

Concerning socio-demographic characteristics of the whole sample this research revealed similar findings to previous studies in SCUBA diving. For instance it was revealed that more male than female divers participate in SCUBA diving. A higher proportion of male participants in SCUBA diving was also reported by all SCUBA studies discussed in this research, not only in an Australian context but also in North America. Thus, the higher proportion of males who participate in SCUBA diving may be assumed to be a characteristic of this adventure activity.

Further socio-demographics of divers in this research such as education, occupation, income levels and age were found to compare well to profiles of divers in other SCUBA studies. In this context findings revealed that SCUBA diving club members were generally highly educated, had lucrative jobs, a high income level and that the majority of active divers was younger than 44 years. Importantly, it was found that participation rates in SCUBA diving are lowest for those divers under the age of 25 years. This fact was also found by previous research, and thus was believed to be a further particular characteristic of this adventure activity. Regarding the latter, an important aspect mentioned that may explain the low percentage of divers who are younger than 25 years was that participation in SCUBA diving is generally cost-intensive and often people prior to their mid-20s cannot afford to dive. This facet of SCUBA diving participation is also reflected by the high income profile of those who participate in SCUBA diving.

Findings of this research revealed that SCUBA divers participate in SCUBA diving for a range of diverse reasons. Consistent to other SCUBA studies it was found that divers are primarily motivated to go on a SCUBA diving trip by experiencing the diving environment (e.g. underwater animal and plant life) and relaxation but also by experiencing the excitement of diving. Least important motivators appeared to be those reasons that are believed to relate to 'impressing others' and 'showing off' or are likely to evoke a public image that SCUBA divers want to abolish. Interestingly, findings also revealed that

hunting and spearfishing were not at all important motivators to go on a SCUBA diving trip. A difference in the importance of hunting/spearfishing as a motivation was revealed between the pilot study which involved diving club members in Western Australia and the main study. This difference was believed to relate to differing rules and regulations that apply in Western Australia, New South Wales and Queensland.

This research found that SCUBA diving club members most frequently go diving with friends of similar experience in diving and with groups from clubs or organisations and thus apparently like the socialising aspect of this activity. This finding was assumed to be influenced partially by the fact that divers in this study were diving club members, which indicates that they may go more frequently diving in the social context of their dive club. This study found that divers generally do not go diving alone. This was believed to relate to safety issues in SCUBA diving, that is, that SCUBA diving usually takes place in the context of a buddy system (diving in pairs).

Findings revealed that divers prefer only low levels of physical risk while on a diving trip. Again, this was assumed to relate to safety issues in SCUBA diving as in this activity, dangerous or hazardous situations, probably more likely than in other hard adventure activities, can easily lead to serious injury or even to the death of the participant. Safety was also an aspect believed to influence the importance divers attached to equipment. Although equipment usage and communicating with other about SCUBA diving was not highly important, the importance of equipment was recognised by divers as necessary for participation. Furthermore the importance of specialised equipment usage was related to optimising performance and as safety apparatus to reduce the risks associated with SCUBA diving.

Regarding SCUBA diving club members environmental orientation it was revealed that the experience of an undeveloped environment and the lack of crowding were most important aspects when on a diving trip. The presence of dive shops and built onshore facilities appeared to be moderately important for club members.

#### **5.4.2 Summary of Main Findings related to the Clusters**

Findings from this study indicate that SCUBA diving club members are not a homogenous group of divers regarding their involvement in this activity. In this context it was revealed that divers could be clustered in five groups that differed in their involvement in SCUBA diving. A complex structure of involvement components was revealed across the clusters. Furthermore, it was found that variables of involvement did not increase in a lock step fashion as other studies suggest (e.g. Ewert and Hollenhorst, 1989, 1994). For instance the importance divers attached to SCUBA diving as a means for self-expression did not appear to increase with higher experience in diving. Thus, in this context, the necessity of measuring involvement by means of creating groups or clusters rather than using composite indices which assume linearity among involvement variables was highlighted.

Although findings of this study revealed differences in socio-demographics across the clusters, for interpretation no valuable relationships between socio-demographics and involvement variables could be observed. However, it was revealed that highly experienced divers were generally older. This was partially related to one of the variables used to measure experience in diving.

Regarding SCUBA diving club members' setting preferences similar structures were observed across all clusters, which means that they did not differ with varying activity involvement. Consistent with research on divers in general, findings from this study indicate that divers strongly desire to experience an undeveloped environment when diving and do not prefer crowds when on a SCUBA diving trip. An easy access to the dive site was also found to be an important aspect, while the remote location of the diving site was less important. Findings also revealed that the presence of dive shops was generally accepted by divers but did not appear to be highly important.

Again, as found for setting preferences in general, the social context in which SCUBA diving club members go on a diving trip was not found to vary greatly across the clusters and thus also did not differ regarding divers' involvement in SCUBA diving. Divers appeared to most often go on diving trips with divers of similar skill and experience and groups from clubs or organisations and least often alone. The two social contexts in which divers mostly go diving was believed to be influenced by the sample decided upon, which

consisted of SCUBA diving club members. The fact that divers never or only rarely go diving alone was assumed to relate to safety issues associated with this activity.

A particular consistency was found in regard to importance of equipment and preferred physical risk. It appeared that divers only preferred a low level of physical risk when on a diving trip. This was related to safety issues in SCUBA diving which are of particular importance in this activity in order to minimise the risk of serious injury or even death of the diver.

Furthermore, it was revealed that communication with others about equipment and usage of specialised equipment was recognised by divers across all clusters. This was believed to reflect the fact that participation in SCUBA diving simply requires specialised equipment. However, findings indicated that these aspects did not appear to be highly important for divers.

In contrast to divers' setting preferences, which were found not to vary to a great extent across the clusters, findings from this study indicated that divers' motivations to go on a SCUBA diving trip were rather diverse and showed a complex structure across the clusters when considering divers' involvement in diving. For instance, it appeared that highly experienced SCUBA divers do not go on a diving trip to challenge themselves and thus differ from their less involved counterparts who consider *Personal Challenge* as a highly important motivator. Furthermore, it was found that *Relaxation* was important for highly experienced divers. Experiencing peace and tranquillity and *Relaxation* however, were not found to be important motivators for divers with low experience in diving. Similarities between this research and studies that investigated different adventure activities were found concerning experience levels and motivations related to *Relaxation*.

Despite a rather complex structure for motivational components in regard to involvement, it was found that the importance divers attach to self-expression was related to the motivational component *Stature*. Findings indicated that the more importance divers attached to SCUBA diving as a means to escape the humdrum of every day life and to act the real self (self-expression), they also attached more importance on the motivational component *Stature*. The latter included motivations like doing something creative such as



taking pictures or videos and to collect interesting artefacts which can be interpreted to relate to 'showing off' and impressing others.

## **5.5 Recommendations for Future Research**

This research sought to contribute to knowledge about those who participate in SCUBA diving in an Australian context. It identified and examined significant variables and concepts relevant to participation in adventure tourism activities. In this context, similarities and differences of SCUBA diving club members' socio-demographics, involvement in SCUBA diving, motivations and setting preferences were examined. A holistic approach was used to explore involvement, motivations and setting preferences together. It is suggested that a holistic examination of motivations and setting preferences based on the concept of involvement is important for theory development and segmentation of adventure tourists and thus contributes to a better understanding of adventure tourists. This holistic approach is also suggested to be valuable for examination of other tourism activities more broadly (e.g. heritage tourism, events tourism) to better understand tourist behaviour. Considering the limitations of this study as mentioned in chapter three, this researcher suggests that additionally further research should be conducted in the following areas.

Researchers in future studies should consider a larger sample size of SCUBA diving club members to allow for broader generalisations of the findings. In this context, it is suggested that SCUBA diving club members from all Australian states and territories could be surveyed. Moreover, comparisons between club members on a national basis would allow for a determination of divers' differences in the above-mentioned aspects regarding diverse locations in Australia. Furthermore, comparisons between involvement, motivations and setting preferences between SCUBA divers and participants in various other hard adventure activities would allow for cross comparisons of activity-specific motivations and preferences. In this context, comparisons between SCUBA diving and other water-based hard adventure activities such as sea kayaking, white-water kayaking or rafting, but also to land-based hard adventure activities such as rock climbing or hang gliding are suggested.

Secondly, as to date only limited information and research exists about those who participate in SCUBA diving, researchers need to consider individuals that conduct the activity of SCUBA diving and have no membership in a diving club or participate in SCUBA diving in a commercial context. Comparisons of involvement, motivations and setting preferences of these groups would be valuable not only for commercial dive tour

operators for marketing directions of their products, but knowing what motivates these adventure recreationists and insight in their activity or setting preferences would be also valuable for natural resource managers. In this context it is suggested to make use of both quantitative as well as qualitative data collection methods.

An additional application of qualitative data collection methods could provide further insight in specific setting preferences such as the importance of equipment and SCUBA divers' preferred level of risk and thus reject or confirm interpretations made in this research. Furthermore, as the investigation of risk preferences in this study was limited to physical risk, researchers need to include the various other types of risk (financial risk, performance risk, psychological risk, social risk and time loss risk) that have been identified in previous research (e.g. Cheron and Ritchie, 1982). In the context of a more holistic investigation of preferred levels of risk it is suggested to examine effects of the various dimensions of risk on the overall level of adventure tourists' preferred levels of risk.

In summary, this research has contributed in a small way to a deeper understanding of adventure tourists' behaviour in a more holistic and thorough way, which will assist future theory development as well as marketing and product development by managers.

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## **APPENDICES**

## Appendix A Invitation E-mail SCUBA Diving Clubs

Dear Sir or Madam,

### Invitation to participate in Master of Arts research project

Topic: *Motivations and preferred setting attributes of SCUBA diving club members participating in the adventure tourism activity of SCUBA diving*



As part of my Master of Arts in Tourism candidature at the University of Canberra, I am investigating the motivations and setting preferences of SCUBA divers in Australia. The results of this research will assist tourism planners and resource managers in regard to planning and promotion of diving sites and enable them to provide SCUBA divers like your club members with a better diving product which meets their needs.

I identified your SCUBA diving club as a particular valuable source for informants for this research and would appreciate if you would consider participating. In addition to your club I have approached other SCUBA diving clubs in New South Wales and Queensland.

For this research project I established a questionnaire which comprises questions on socio-demographics, motivations and setting preferences of SCUBA divers. This questionnaire is located at a website on the internet specifically created for this project. Through this web-based survey method completed questionnaires will remain anonymous. Results will be reported in aggregate and confidentiality of potential respondents is guaranteed at all times. **Participating clubs will receive a summary of the results.**

If you are happy to participate in this research project I will send you an invitation email to be forwarded to your club members. This email will include a hyperlink that directly leads your members to the survey. The survey should take 5 to 10 minutes only to complete. Please find attached an outline of the questions.

If you are happy to participate in this project please let me know by replying to this email by Tuesday, **17 January 2006**. Please note that your participation in this project is entirely voluntary.

This survey and the survey process have been reviewed and approved by the University of Canberra Committee for Ethics in Human Research, which functions under the 'National Statement on Ethical Conduct in Research Involving Humans'. If you have any questions or concerns with this project, please feel free to contact myself or my supervisor, Dr. Brent Ritchie (see contact details below) via e-mail or phone.

Thank you for your time and consideration.

Yours sincerely,

Michael Tschapka  
**Principal Researcher**  
Master of Arts in Tourism (research) candidate  
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Ph. (02) 6201 5016

## Appendix B Invitation E-mail SCUBA Diving Club Members



January 2006

Dear SCUBA diving club member,

I invite you to take part in a study of SCUBA divers' motivations and setting preferences which is being conducted by the Master of Arts in Tourism candidate Michael Tschapka from the University of Canberra. The study seeks to contribute to a better understanding of motivations and setting preferences of SCUBA divers in Australia. The information gathered in this study will assist tourism planners and resource managers in regard to future planning and promotion of diving sites and thus to more successfully facilitate divers' needs and experiences.

As a member of a SCUBA diving club in New South Wales your participation in this study would be highly appreciated. Your participation is voluntary. If you agree to take part in this study, please complete the questionnaire which is provided at the following URL

<http://www.surveymonkey.com/s.asp?u=274621619555> by **Monday, 13 February 2006**. The questionnaire will take about 5 to 10 minutes to complete. Any information you provide will be anonymous. To ensure this, you are asked not to record your name anywhere on the questionnaire. You can withdraw at any stage of completing the questionnaire.

The results of this study will be made available to your diving club on request after completion of the research and will also be available in printed form at the University of Canberra Library after July 2006.

If you have any concerns about this project please feel free to contact me or my supervisor (see contact details below). If you wish to discuss with an independent person a complaint relating to this project please refer to the contacts form provided at the following URL:

[http://www.canberra.edu.au/secretariat/ethics/human\\_ethics/contacts.rtf](http://www.canberra.edu.au/secretariat/ethics/human_ethics/contacts.rtf).

Thank you for your time and consideration.

Yours sincerely,

Michael Tschapka

**Principal Researcher**

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## Appendix C      Participating SCUBA Diving Clubs\* - Pilot Study

|                   |   |
|-------------------|---|
| Western Australia | <ul style="list-style-type: none"><li>• Perth Diving Academy Dive Club</li><li>• SCUBA 2</li><li>• Underwater Explorers of W.A. (Inc.)</li><li>• University of Western Australia Underwater Club Inc.</li></ul> |
|-------------------|---|

\* A club was considered as participant in this study, if it confirmed the forwarding of the invitation email including the hyperlink to the survey to its members

## Appendix D Participating SCUBA Diving Clubs\* - Main Study

|                              |   |
|------------------------------|---|
| <p>Queensland (n=10)</p>     | <ul style="list-style-type: none"> <li>• Always Diving</li> <li>• Aqua X-treme Scuba Club</li> <li>• AW Redcliffe Dive Centre</li> <li>• Downs Diving Team</li> <li>• Moreton Bay Trailer Boat Club – Diving Sub-Group</li> <li>• Nautilus Scuba</li> <li>• North Queensland Underwater Explorers Club Inc.</li> <li>• QAC Underwater Club</li> <li>• Scuba Zone</li> <li>• Underwater Research Group Queensland</li> </ul> |
| <p>New South Wales (n=6)</p> | <ul style="list-style-type: none"> <li>• Deep 6</li> <li>• DOUTS – Diving Organisation, University of Technology, Sydney</li> <li>• Port Hacking Dive Club Inc.</li> <li>• Pro-Dive Explorers (Central Coast Branch)</li> <li>• St George Scuba Club</li> <li>• Sydney Dive Academy</li> </ul>  |

\* A club was considered as participant in this study, if it confirmed the forwarding of the invitation email including the hyperlink to the survey to its members

## **Appendix E      Final Questionnaire**

The study seeks to contribute to a better understanding of motivations and setting preferences of SCUBA divers in Australia. The information gathered in this study will assist tourism planners and resource managers in regard to future planning and promotion of diving sites and thus to more successfully facilitate divers' needs and experiences.

Please note that responses are fully anonymous.

### **Question 1**

In which State is your SCUBA diving club located?

- Queensland
- New South Wales

### **Question 2**

Have you undertaken a SCUBA diving trip within the last 12 months? (a SCUBA diving trip in this study is defined as a trip that involves a travel distance of at least 40 km)

- Yes
- No

### **Question 3**

How many SCUBA diving trips have you undertaken within the last 12 months (a SCUBA diving trip in this study is defined as a trip that involves a travel distance of at least 40 km)?

- 0
- 1 to 3
- 4 to 6
- 7 to 9
- 10 or more

**Question 4**

Please indicate which of the following categories best describes your skill level in SCUBA diving

- Advanced
- Intermediate
- Novice

**Question 5**

How many years have you been SCUBA diving?

- less than 1 year
- 1 to 5 years
- 6 to 10 years
- 11 to 15 years
- 16 to 20 years
- 21 to 25 years
- 26 to 30 years
- more than 30 years

**Question 6**

Please indicate your highest SCUBA diving qualification/certification

- No qualification
- Open Water Diver (or equivalent)
- Advanced Open Water Diver
- Rescue Diver
- Master SCUBA Diver
- Divemaster
- Instructor

**Question 7**

Do you have any additional diving qualifications/certifications not mentioned above?

- No
- Yes (please specify)  
\_\_\_\_\_



### Question 8

Please indicate your level of agreement with the following statements

|   | Strongly disagree        | Disagree                 | Neutral                  | Agree                    | Strongly Agree           |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| SCUBA diving is important to me   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Participating in SCUBA diving is one of the most enjoyable things that I do   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Participating in SCUBA diving is one of the most satisfying things that I do  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I have little or no interest in SCUBA diving                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SCUBA diving offers me relaxation when pressures build up                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I find a lot of my life is organized around SCUBA diving                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I enjoy discussing SCUBA diving with my friends                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Most of my friends are in some way connected with SCUBA diving                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| When I participate in SCUBA diving I can really be myself                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| You can tell a lot about a person when you see them SCUBA diving              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| When I participate in SCUBA diving other see me the way I want them to see me | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| SCUBA diving says a lot about who I am  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| When I participate in SCUBA diving I can really be myself                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| You can tell a lot about a person when you see them SCUBA diving              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 9

Please indicate the importance of the following motivations/reasons to go on a SCUBA diving trip

|  | Very Unimportant         | Unimportant              | Neutral                  | Important                | Very Important           |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| To see historically significant shipwrecks                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To meet new people   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To use my equipment  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To learn more about the underwater environment                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To show myself that I can do it                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| For the adventure of it  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To gain an experience I can look back on                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To collect interesting artefacts                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Because of the risk involved   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To do something creative, such as take pictures or videos            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| It's sort of an impressive thing to do                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To study underwater geological formations                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| For a change from everyday life                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To develop my diving skills and abilities                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| For relaxation   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Because I think it is a challenge                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To look at underwater animal and plant life                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To help keep me physically fit                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| So I can do things with my friends and/or family                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To share my skill and knowledge with others                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To explore things  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To experience peace and tranquility                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Because it is stimulating and exciting                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To give me a feeling of confidence in myself                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 10

How often do you usually go SCUBA diving

|  | Never                    | Rarely                   | Sometimes                | Often                    | Very Often               |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| with friends   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| with participants in classes or instructional programs   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| alone  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| with fellow SCUBA divers of similar experience and skill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| with teachers/instructors                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| with groups from clubs or organisations                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| with a guide   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 11

Please indicate your level of agreement on the following statements

|   | Strongly disagree        | Disagree                 | Neutral                  | Agree                    | Strongly agree           |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| I enjoy the physical risk associated with SCUBA diving  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| I enjoy the risk that problems can occur while I'm SCUBA diving (mechanical, equipment, organisation) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 12

Please indicate your level of agreement on the following statements

|   | Strongly disagree        | Disagree                 | Neutral                  | Agree                    | Strongly agree           |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| It is important for me to use specialised equipment         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| It is important for me to talk to others about my equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 13

Please indicate the importance of the following aspects when you are on a SCUBA diving trip

|  | Very Unimportant         | Unimportant              | Neutral                  | Important                | Very Important           |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Presence of dive shops   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Lack of crowding   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Remoteness of diving site                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Easy access to dive site                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| To experience an undeveloped environment                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other onshore built facilities (e.g. food, accommodation, ...) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Question 14

Are you

- Female?
- Male?

### Question 15

In which of the following age brackets do you belong?

- Younger than 25 years
- 26-35 years
- 36-45 years
- 46-54 years
- 55-64 years
- 66-74 years
- 75 years and over

### Question 16

What is your highest level of education?

- Year 10
  - Year 12
  - Apprenticeship
  - College/TAFE Diploma
  - University degree
  - Postgraduate degree
  - Other (please specify)
-

**Question 17**

17. What is/was your usual occupation?

- Manager/administrator
- Manual
- Professional and related
- Clerical
- Tradesperson
- Sales/service Manager/administrator
- Full-time student Clerical
- Other (please specify)

**Question 18**

In which of the following categories would your total household income fit into (before tax in Australian dollars)?

- Less than \$20,000
- \$40,000 to \$59,999
- \$80,000 to \$99,999
- \$20,000 to \$39,999
- \$60,000 to \$79,999
- \$100,000 +

**Question 19**

19. Do you live in Australia?

- No – please proceed with question 20
- Yes - please indicate your post code

**Question 20**

20. In which country do you live?

\_\_\_\_\_

Thank you. This concludes the survey.

Please press the 'DONE' button. Again, thank you very much for taking part in this study!

## Appendix F      Other Occupations

| Occupation                   | Frequency | Percent of Total | Cumulative Percent |
|------------------------------|-----------|------------------|--------------------|
| Bus driver                   | 1         | 0.4              | 0.4                |
| Business owner               | 2         | 0.8              | 1.2                |
| Chef                         | 1         | 0.4              | 1.6                |
| Coral Reef Aquarist          | 1         | 0.4              | 2.0                |
| Driving Instructor           | 1         | 0.4              | 2.4                |
| Engineer                     | 3         | 1.2              | 3.6                |
| Hospitality                  | 1         | 0.4              | 4.0                |
| Law enforcement              | 1         | 0.4              | 4.4                |
| Marine Biologist             | 1         | 0.4              | 4.8                |
| Marine Technician            | 1         | 0.4              | 5.2                |
| Marketing                    | 1         | 0.4              | 5.6                |
| Medical/nursing              | 3         | 1.2              | 6.8                |
| Minister                     | 1         | 0.4              | 7.2                |
| Photographer                 | 1         | 0.4              | 7.6                |
| Researcher                   | 1         | 0.4              | 8.0                |
| Retire                       | 3         | 1.2              | 9.2                |
| Scuba Rep                    | 1         | 0.4              | 9.6                |
| Secretarial/Customer Service | 1         | 0.4              | 10.0               |
| Self employed                | 3         | 1.2              | 11.2               |
| Student                      | 1         | 0.4              | 11.6               |
| Swim Coach                   | 1         | 0.4              | 12.0               |
| Wholesale travel             | 1         | 0.4              | 12.4               |
| Total                        | 31        | 12               |                    |

## **Appendix G      Additional SCUBA Diving Qualifications/Certifications of SCUBA Diving Club Members**

AAUS Scientific Diver  
Advanced Nitrox Diver  
Advanced Resuscitation for Oceanic Conditions (Norwegian)  
Advanced Trimix Tech Diver  
Advanced Wreck Diver  
Adventure Diver  
Assistant Instructor  
Boat Diver  
BSAC Diver Coxn (BSAC Boathandling)  
Cave Diver  
CDAA Cave Diver  
Closed Circuit Rebreather Diver  
Commercial Diver  
Computer Diver  
Decompression Procedures  
Deep Diver  
DPV (Diver Propulsion Vehicle)  
Drift Diver  
EANx (Enriched Air Nitrox)  
Equipment Specialist  
Equipment Technician  
Extended Range Diver  
First Aider BSAC  
Gas Blender  
Hard-Hat Helmet Diving  
Ice Diver  
Instructor Trainer  
Marine Biology Speciality  
Master Scuba Diver Trainer  
Mixed Gas Diver  
National Geographic Speciality Diver  
Night Diver  
Night/ Limited Visibility Diver  
Nitrox Diver  
Oxygen Resuscitation  
Professional Underwater Videographer  
Rebreather  
Scientific Diver  
Search and Recovery Diver  
Shark Diver Speciality  
Solo Diver  
St Johns Diver First Aid Course  
Sub Aqua Bronze Certificate  
Surface Supplied Diver  
TDI Advanced Nitrox Advanced Wreck  
TDI Certified Extended Range Diver  
Technical Diver  
Underwater Navigator  
Underwater Photographer  
Wreck Diver

## Appendix H Descriptives Enduring Involvement Items – Total Sample

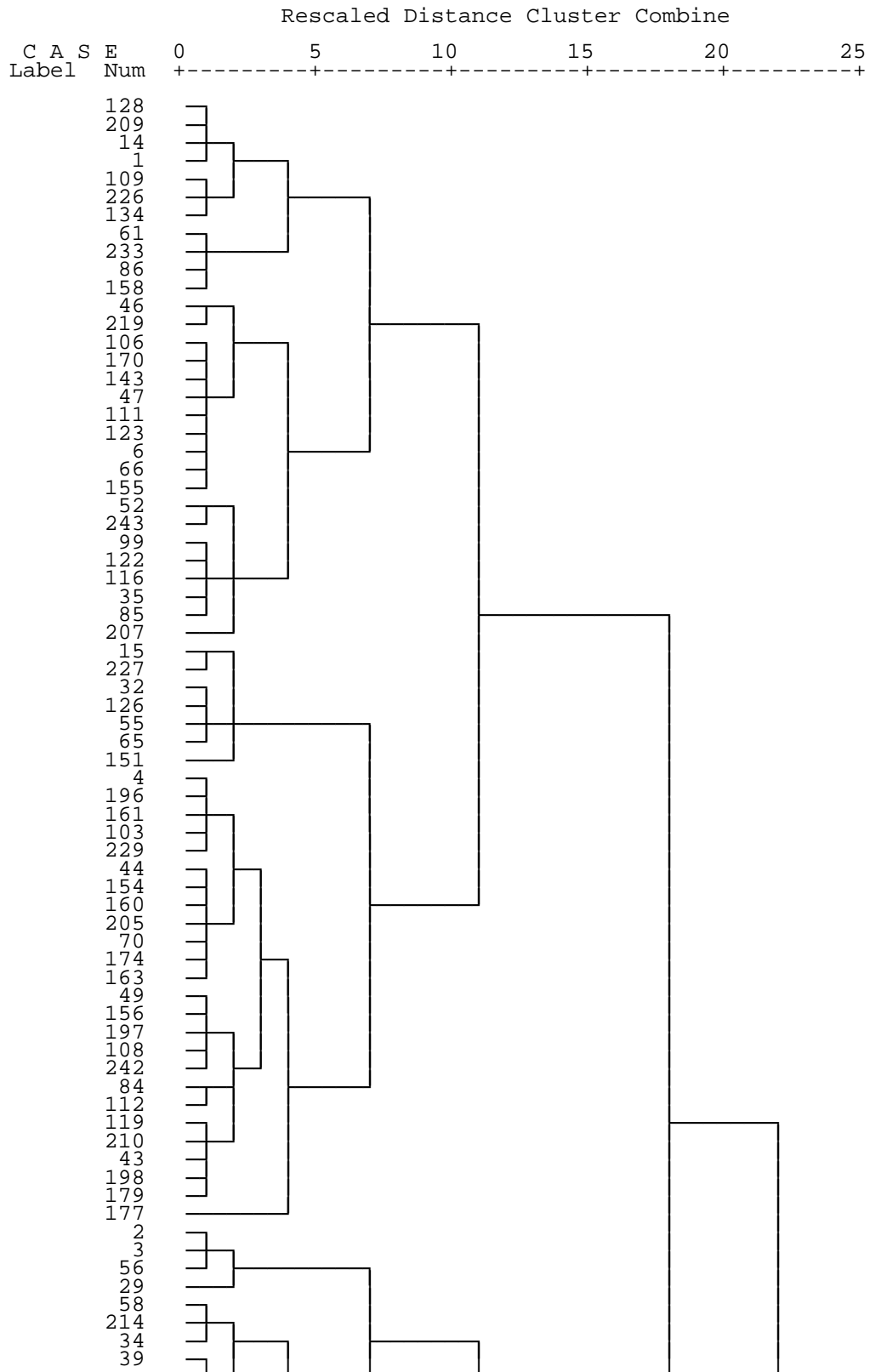
| Items  | Mean  | Std. Deviation | Variance | Skewness  |            | Kurtosis  |            |
|--|-------|----------------|----------|-----------|------------|-----------|------------|
|  |       |                |          | Statistic | Std. Error | Statistic | Std. Error |
| SCUBA diving is important to me  | 4.537 | .583           | .339     | -.955     | .155       | .608      | .309       |
| Participating in SCUBA diving is one of the most enjoyable things that I do  | 4.622 | .526           | .277     | -.925     | .155       | -.296     | .309       |
| Participating in SCUBA diving is one of the most satisfying things that I do | 4.451 | .654           | .428     | -.787     | .155       | -.450     | .309       |
| I have little or no interest in SCUBA diving                                 | 1.138 | .346           | .120     | 2.109     | .155       | 2.470     | .309       |
| SCUBA diving offers me relaxation when pressures build up                    | 4.154 | .833           | .694     | -.681     | .155       | -.273     | .309       |
| I find a lot of my life is organized around SCUBA diving                     | 3.232 | 1.057          | 1.118    | .152      | .155       | -.821     | .309       |
| I enjoy discussing SCUBA diving with my friends                              | 4.171 | .702           | .493     | -.964     | .155       | 2.226     | .309       |
| Most of my friends are in some way connected with SCUBA diving               | 2.874 | 1.048          | 1.098    | .276      | .155       | -.588     | .309       |
| When I participate in SCUBA diving I can really be myself                    | 3.646 | .935           | .874     | -.175     | .155       | -.438     | .309       |
| You can tell a lot about a person when you see them SCUBA diving             | 3.122 | 1.054          | 1.112    | -.120     | .155       | -.585     | .309       |
| When I participate in SCUBA diving others see me the way I want them to      | 3.134 | .927           | .859     | -.084     | .155       | .275      | .309       |
| SCUBA diving says a lot about who I am                                       | 3.415 | 1.018          | 1.036    | -.317     | .155       | -.301     | .309       |

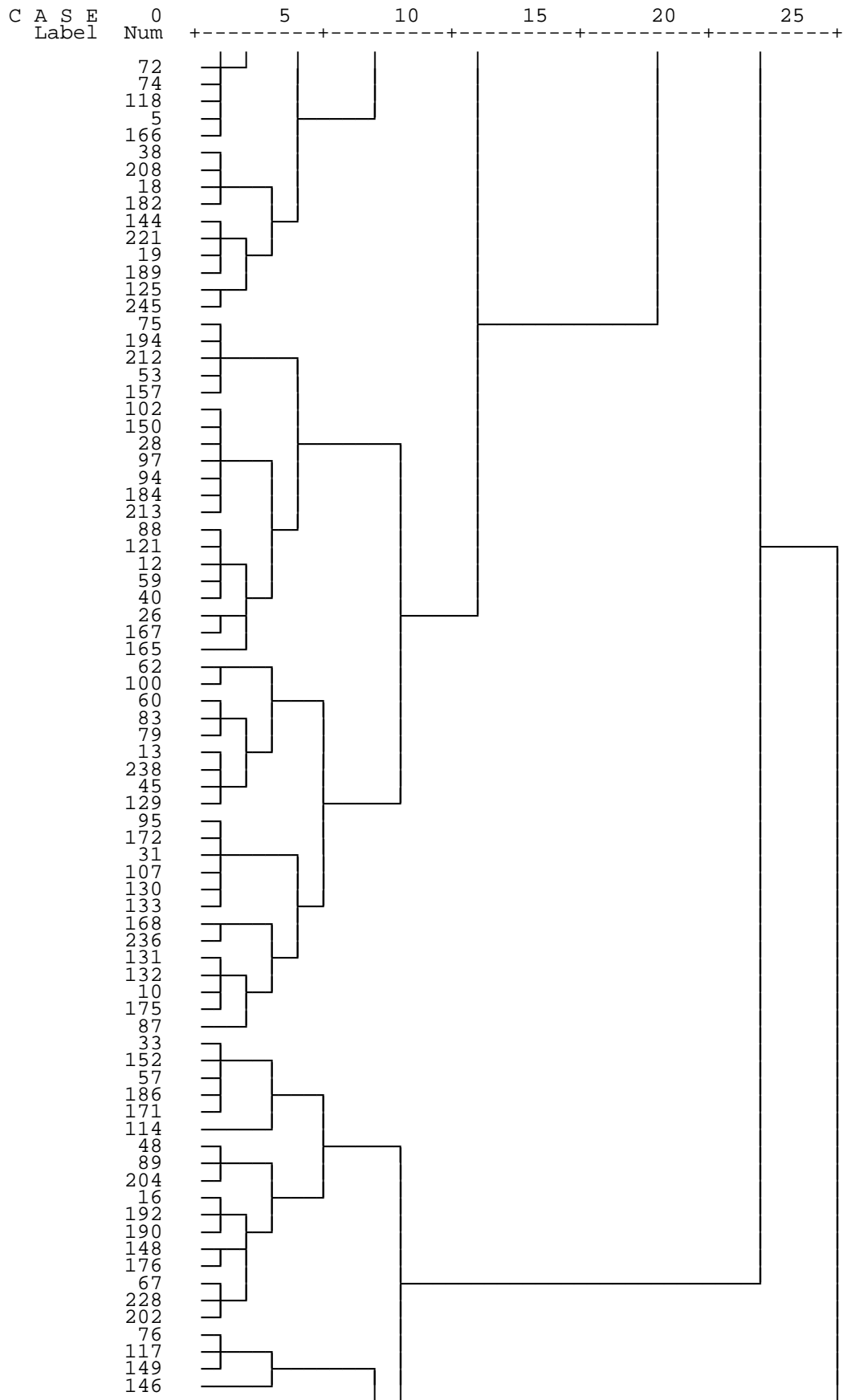


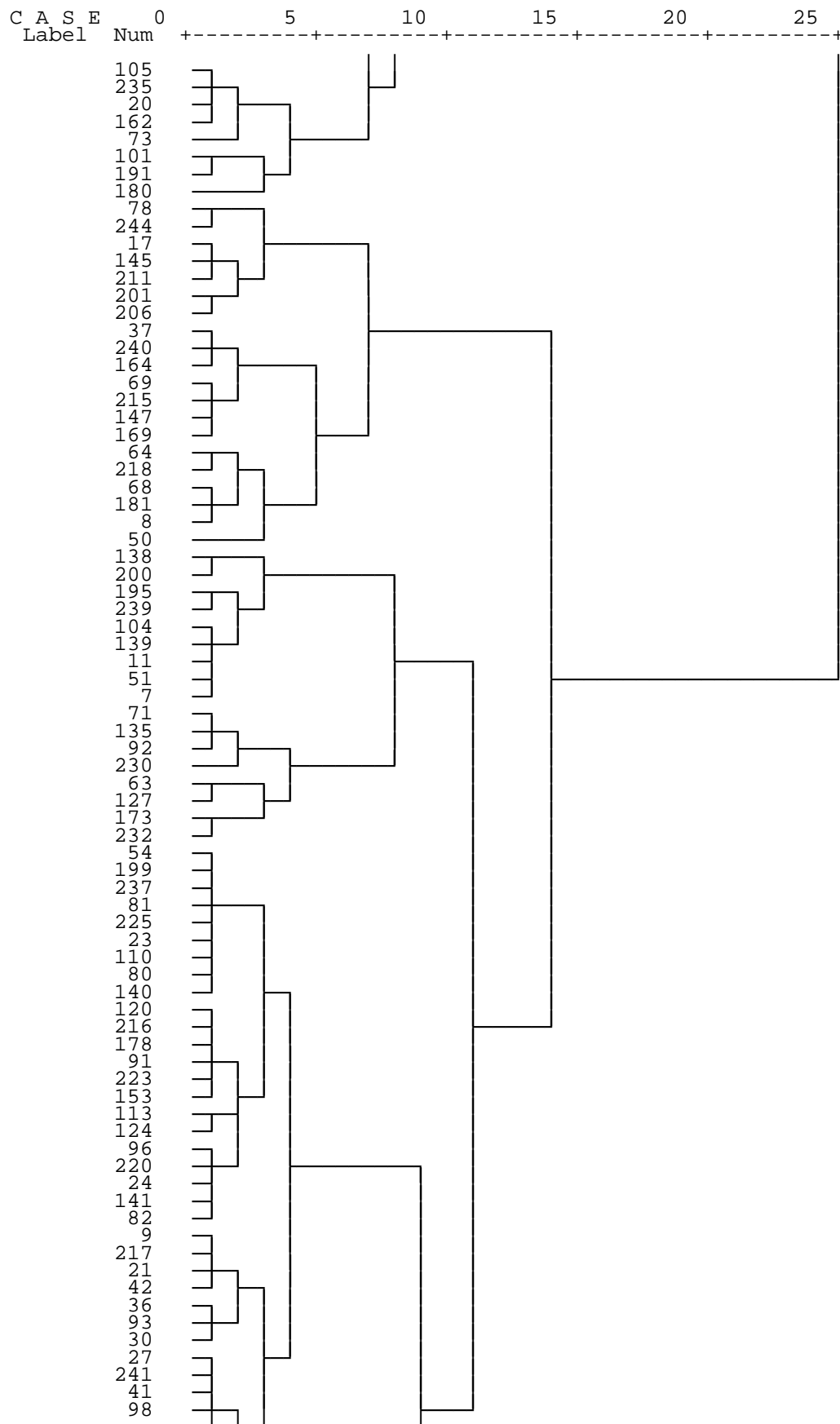
# Appendix I Dendrogram

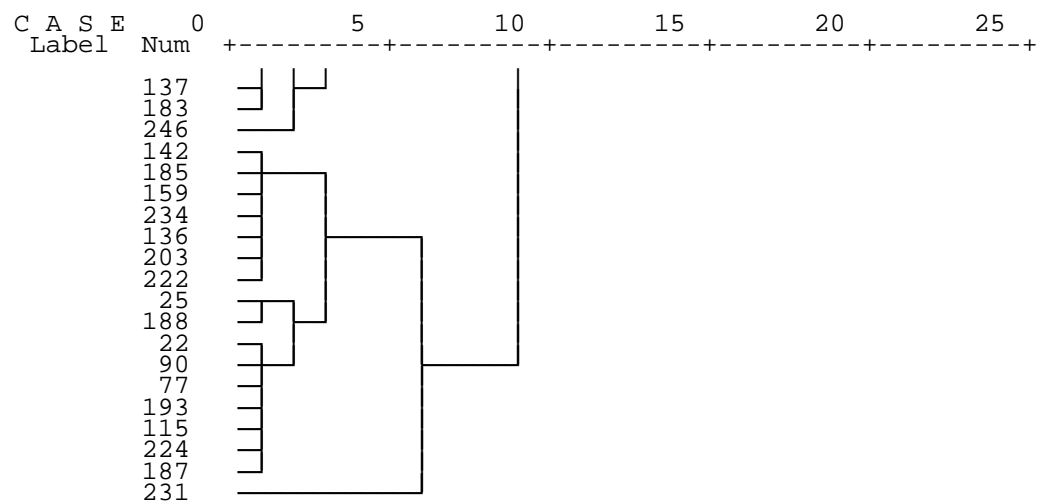
\* \* \* \* \* H I E R A R C H I C A L C L U S T E R A N A L Y S I S \* \*

Dendrogram using Complete Linkage









## Appendix J Agglomeration Schedule

| Stage | Cluster Combined |           | Coefficients | Stage Cluster First Appears |           | Next Stage |
|-------|------------------|-----------|--------------|-----------------------------|-----------|------------|
|       | Cluster 1        | Cluster 2 |              | Cluster 1                   | Cluster 2 |            |
| 1     | 128              | 209       | .003         | 0                           | 0         | 33         |
| 2     | 27               | 241       | .026         | 0                           | 0         | 19         |
| 3     | 102              | 150       | .027         | 0                           | 0         | 82         |
| 4     | 81               | 225       | .029         | 0                           | 0         | 20         |
| 5     | 120              | 216       | .030         | 0                           | 0         | 8          |
| 6     | 94               | 184       | .031         | 0                           | 0         | 145        |
| 7     | 23               | 110       | .045         | 0                           | 0         | 20         |
| 8     | 120              | 178       | .046         | 5                           | 0         | 67         |
| 9     | 15               | 227       | .047         | 0                           | 0         | 177        |
| 10    | 99               | 122       | .048         | 0                           | 0         | 35         |
| 11    | 71               | 135       | .051         | 0                           | 0         | 138        |
| 12    | 32               | 126       | .053         | 0                           | 0         | 81         |
| 13    | 41               | 98        | .065         | 0                           | 0         | 19         |
| 14    | 74               | 118       | .074         | 0                           | 0         | 120        |
| 15    | 84               | 112       | .090         | 0                           | 0         | 186        |
| 16    | 4                | 196       | .093         | 0                           | 0         | 34         |
| 17    | 75               | 194       | .095         | 0                           | 0         | 37         |
| 18    | 144              | 221       | .100         | 0                           | 0         | 102        |
| 19    | 27               | 41        | .102         | 2                           | 13        | 71         |
| 20    | 23               | 81        | .104         | 7                           | 4         | 133        |
| 21    | 136              | 203       | .114         | 0                           | 0         | 50         |
| 22    | 77               | 193       | .117         | 0                           | 0         | 131        |
| 23    | 43               | 198       | .123         | 0                           | 0         | 123        |
| 24    | 6                | 66        | .138         | 0                           | 0         | 107        |
| 25    | 49               | 156       | .138         | 0                           | 0         | 80         |
| 26    | 109              | 226       | .139         | 0                           | 0         | 86         |
| 27    | 91               | 223       | .159         | 0                           | 0         | 67         |
| 28    | 111              | 123       | .167         | 0                           | 0         | 141        |
| 29    | 2                | 3         | .167         | 0                           | 0         | 124        |
| 30    | 44               | 154       | .171         | 0                           | 0         | 98         |
| 31    | 69               | 215       | .178         | 0                           | 0         | 158        |
| 32    | 19               | 189       | .182         | 0                           | 0         | 102        |
| 33    | 14               | 128       | .185         | 0                           | 1         | 88         |
| 34    | 4                | 161       | .187         | 16                          | 0         | 136        |
| 35    | 99               | 116       | .189         | 10                          | 0         | 153        |
| 36    | 24               | 141       | .191         | 0                           | 0         | 109        |
| 37    | 75               | 212       | .194         | 17                          | 0         | 162        |
| 38    | 13               | 238       | .198         | 0                           | 0         | 117        |
| 39    | 11               | 51        | .209         | 0                           | 0         | 87         |
| 40    | 88               | 121       | .214         | 0                           | 0         | 127        |
| 41    | 106              | 170       | .221         | 0                           | 0         | 92         |
| 42    | 159              | 234       | .227         | 0                           | 0         | 155        |
| 43    | 39               | 72        | .231         | 0                           | 0         | 146        |
| 44    | 95               | 172       | .233         | 0                           | 0         | 52         |
| 45    | 115              | 224       | .235         | 0                           | 0         | 106        |
| 46    | 60               | 83        | .241         | 0                           | 0         | 93         |

|     |     |     |      |    |    |     |
|-----|-----|-----|------|----|----|-----|
| 47  | 70  | 174 | .249 | 0  | 0  | 103 |
| 48  | 36  | 93  | .253 | 0  | 0  | 122 |
| 49  | 80  | 140 | .257 | 0  | 0  | 133 |
| 50  | 136 | 222 | .258 | 21 | 0  | 155 |
| 51  | 12  | 59  | .258 | 0  | 0  | 127 |
| 52  | 31  | 95  | .265 | 0  | 44 | 163 |
| 53  | 61  | 233 | .266 | 0  | 0  | 154 |
| 54  | 5   | 166 | .291 | 0  | 0  | 120 |
| 55  | 25  | 188 | .291 | 0  | 0  | 185 |
| 56  | 78  | 244 | .301 | 0  | 0  | 210 |
| 57  | 160 | 205 | .305 | 0  | 0  | 98  |
| 58  | 9   | 217 | .315 | 0  | 0  | 65  |
| 59  | 48  | 89  | .317 | 0  | 0  | 132 |
| 60  | 33  | 152 | .318 | 0  | 0  | 168 |
| 61  | 131 | 132 | .319 | 0  | 0  | 149 |
| 62  | 28  | 97  | .319 | 0  | 0  | 82  |
| 63  | 107 | 130 | .324 | 0  | 0  | 139 |
| 64  | 54  | 199 | .325 | 0  | 0  | 77  |
| 65  | 9   | 21  | .338 | 58 | 0  | 84  |
| 66  | 105 | 235 | .341 | 0  | 0  | 137 |
| 67  | 91  | 120 | .357 | 27 | 8  | 105 |
| 68  | 96  | 220 | .361 | 0  | 0  | 148 |
| 69  | 67  | 228 | .367 | 0  | 0  | 130 |
| 70  | 16  | 192 | .369 | 0  | 0  | 119 |
| 71  | 27  | 137 | .387 | 19 | 0  | 114 |
| 72  | 104 | 139 | .394 | 0  | 0  | 165 |
| 73  | 103 | 229 | .396 | 0  | 0  | 136 |
| 74  | 53  | 157 | .396 | 0  | 0  | 162 |
| 75  | 38  | 208 | .419 | 0  | 0  | 111 |
| 76  | 148 | 176 | .420 | 0  | 0  | 179 |
| 77  | 54  | 237 | .424 | 64 | 0  | 169 |
| 78  | 17  | 145 | .435 | 0  | 0  | 129 |
| 79  | 22  | 90  | .448 | 0  | 0  | 159 |
| 80  | 49  | 197 | .460 | 25 | 0  | 156 |
| 81  | 32  | 55  | .461 | 12 | 0  | 166 |
| 82  | 28  | 102 | .462 | 62 | 3  | 160 |
| 83  | 26  | 167 | .464 | 0  | 0  | 172 |
| 84  | 9   | 42  | .477 | 65 | 0  | 180 |
| 85  | 35  | 85  | .490 | 0  | 0  | 153 |
| 86  | 109 | 134 | .495 | 26 | 0  | 183 |
| 87  | 7   | 11  | .498 | 0  | 39 | 165 |
| 88  | 1   | 14  | .499 | 0  | 33 | 183 |
| 89  | 20  | 162 | .514 | 0  | 0  | 137 |
| 90  | 147 | 169 | .517 | 0  | 0  | 158 |
| 91  | 58  | 214 | .518 | 0  | 0  | 113 |
| 92  | 106 | 143 | .518 | 41 | 0  | 112 |
| 93  | 60  | 79  | .533 | 46 | 0  | 197 |
| 94  | 57  | 186 | .549 | 0  | 0  | 104 |
| 95  | 52  | 243 | .552 | 0  | 0  | 173 |
| 96  | 108 | 242 | .554 | 0  | 0  | 156 |
| 97  | 37  | 240 | .570 | 0  | 0  | 135 |
| 98  | 44  | 160 | .572 | 30 | 57 | 150 |
| 99  | 68  | 181 | .580 | 0  | 0  | 126 |
| 100 | 113 | 124 | .589 | 0  | 0  | 175 |

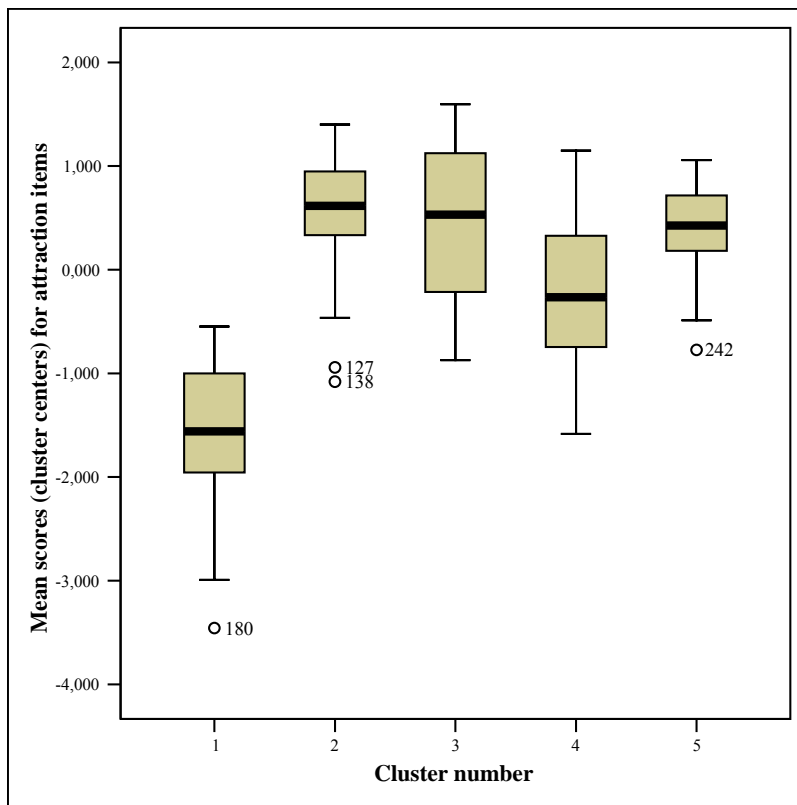
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|-----|-----|-----|-------|-----|-----|-----|
| 101 | 138 | 200 | .590  | 0   | 0   | 212 |
| 102 | 19  | 144 | .594  | 32  | 18  | 182 |
| 103 | 70  | 163 | .605  | 47  | 0   | 150 |
| 104 | 57  | 171 | .618  | 94  | 0   | 168 |
| 105 | 91  | 153 | .625  | 67  | 0   | 190 |
| 106 | 115 | 187 | .629  | 45  | 0   | 131 |
| 107 | 6   | 155 | .635  | 24  | 0   | 141 |
| 108 | 119 | 210 | .649  | 0   | 0   | 151 |
| 109 | 24  | 82  | .654  | 36  | 0   | 148 |
| 110 | 63  | 127 | .658  | 0   | 0   | 202 |
| 111 | 18  | 38  | .676  | 0   | 75  | 167 |
| 112 | 47  | 106 | .680  | 0   | 92  | 164 |
| 113 | 34  | 58  | .713  | 0   | 91  | 192 |
| 114 | 27  | 183 | .713  | 71  | 0   | 184 |
| 115 | 64  | 218 | .719  | 0   | 0   | 178 |
| 116 | 10  | 175 | .721  | 0   | 0   | 149 |
| 117 | 13  | 45  | .723  | 38  | 0   | 143 |
| 118 | 86  | 158 | .726  | 0   | 0   | 154 |
| 119 | 16  | 190 | .733  | 70  | 0   | 188 |
| 120 | 5   | 74  | .738  | 54  | 14  | 146 |
| 121 | 142 | 185 | .744  | 0   | 0   | 171 |
| 122 | 30  | 36  | .746  | 0   | 48  | 180 |
| 123 | 43  | 179 | .759  | 23  | 0   | 151 |
| 124 | 2   | 56  | .775  | 29  | 0   | 187 |
| 125 | 76  | 117 | .778  | 0   | 0   | 157 |
| 126 | 8   | 68  | .780  | 0   | 99  | 178 |
| 127 | 12  | 88  | .793  | 51  | 40  | 144 |
| 128 | 46  | 219 | .818  | 0   | 0   | 191 |
| 129 | 17  | 211 | .822  | 78  | 0   | 200 |
| 130 | 67  | 202 | .827  | 69  | 0   | 179 |
| 131 | 77  | 115 | .849  | 22  | 106 | 159 |
| 132 | 48  | 204 | .854  | 59  | 0   | 208 |
| 133 | 23  | 80  | .865  | 20  | 49  | 169 |
| 134 | 195 | 239 | .885  | 0   | 0   | 193 |
| 135 | 37  | 164 | .928  | 97  | 0   | 189 |
| 136 | 4   | 103 | .928  | 34  | 73  | 176 |
| 137 | 20  | 105 | 1.024 | 89  | 66  | 181 |
| 138 | 71  | 92  | 1.030 | 11  | 0   | 196 |
| 139 | 107 | 133 | 1.037 | 63  | 0   | 163 |
| 140 | 125 | 245 | 1.044 | 0   | 0   | 182 |
| 141 | 6   | 111 | 1.056 | 107 | 28  | 164 |
| 142 | 101 | 191 | 1.080 | 0   | 0   | 207 |
| 143 | 13  | 129 | 1.083 | 117 | 0   | 197 |
| 144 | 12  | 40  | 1.128 | 127 | 0   | 198 |
| 145 | 94  | 213 | 1.140 | 6   | 0   | 160 |
| 146 | 5   | 39  | 1.165 | 120 | 43  | 192 |
| 147 | 168 | 236 | 1.167 | 0   | 0   | 214 |
| 148 | 24  | 96  | 1.175 | 109 | 68  | 175 |
| 149 | 10  | 131 | 1.219 | 116 | 61  | 174 |
| 150 | 44  | 70  | 1.267 | 98  | 103 | 176 |
| 151 | 43  | 119 | 1.271 | 123 | 108 | 186 |
| 152 | 201 | 206 | 1.277 | 0   | 0   | 200 |
| 153 | 35  | 99  | 1.301 | 85  | 35  | 173 |
| 154 | 61  | 86  | 1.337 | 53  | 118 | 219 |

|     |     |     |       |     |     |     |
|-----|-----|-----|-------|-----|-----|-----|
| 155 | 136 | 159 | 1.342 | 50  | 42  | 171 |
| 156 | 49  | 108 | 1.385 | 80  | 96  | 195 |
| 157 | 76  | 149 | 1.404 | 125 | 0   | 213 |
| 158 | 69  | 147 | 1.449 | 31  | 90  | 189 |
| 159 | 22  | 77  | 1.463 | 79  | 131 | 185 |
| 160 | 28  | 94  | 1.500 | 82  | 145 | 211 |
| 161 | 173 | 232 | 1.507 | 0   | 0   | 202 |
| 162 | 53  | 75  | 1.516 | 74  | 37  | 217 |
| 163 | 31  | 107 | 1.589 | 52  | 139 | 221 |
| 164 | 6   | 47  | 1.614 | 141 | 112 | 191 |
| 165 | 7   | 104 | 1.666 | 87  | 72  | 193 |
| 166 | 32  | 65  | 1.666 | 81  | 0   | 177 |
| 167 | 18  | 182 | 1.667 | 111 | 0   | 215 |
| 168 | 33  | 57  | 1.668 | 60  | 104 | 204 |
| 169 | 23  | 54  | 1.682 | 133 | 77  | 201 |
| 170 | 62  | 100 | 1.690 | 0   | 0   | 206 |
| 171 | 136 | 142 | 1.751 | 155 | 121 | 216 |
| 172 | 26  | 165 | 1.777 | 83  | 0   | 198 |
| 173 | 35  | 52  | 1.855 | 153 | 95  | 194 |
| 174 | 10  | 87  | 1.865 | 149 | 0   | 214 |
| 175 | 24  | 113 | 1.920 | 148 | 100 | 190 |
| 176 | 4   | 44  | 1.931 | 136 | 150 | 209 |
| 177 | 15  | 32  | 1.990 | 9   | 166 | 199 |
| 178 | 8   | 64  | 2.034 | 126 | 115 | 203 |
| 179 | 67  | 148 | 2.064 | 130 | 76  | 188 |
| 180 | 9   | 30  | 2.074 | 84  | 122 | 205 |
| 181 | 20  | 73  | 2.092 | 137 | 0   | 218 |
| 182 | 19  | 125 | 2.102 | 102 | 140 | 215 |
| 183 | 1   | 109 | 2.112 | 88  | 86  | 219 |
| 184 | 27  | 246 | 2.158 | 114 | 0   | 205 |
| 185 | 22  | 25  | 2.166 | 159 | 55  | 216 |
| 186 | 43  | 84  | 2.241 | 151 | 15  | 195 |
| 187 | 2   | 29  | 2.302 | 124 | 0   | 233 |
| 188 | 16  | 67  | 2.433 | 119 | 179 | 208 |
| 189 | 37  | 69  | 2.504 | 135 | 158 | 227 |
| 190 | 24  | 91  | 2.537 | 175 | 105 | 201 |
| 191 | 6   | 46  | 2.686 | 164 | 128 | 222 |
| 192 | 5   | 34  | 2.719 | 146 | 113 | 220 |
| 193 | 7   | 195 | 2.809 | 165 | 134 | 212 |
| 194 | 35  | 207 | 3.067 | 173 | 0   | 222 |
| 195 | 43  | 49  | 3.107 | 186 | 156 | 209 |
| 196 | 71  | 230 | 3.116 | 138 | 0   | 223 |
| 197 | 13  | 60  | 3.165 | 143 | 93  | 206 |
| 198 | 12  | 26  | 3.230 | 144 | 172 | 211 |
| 199 | 15  | 151 | 3.381 | 177 | 0   | 231 |
| 200 | 17  | 201 | 3.427 | 129 | 152 | 210 |
| 201 | 23  | 24  | 3.665 | 169 | 190 | 224 |
| 202 | 63  | 173 | 3.679 | 110 | 161 | 223 |
| 203 | 8   | 50  | 3.717 | 178 | 0   | 227 |
| 204 | 33  | 114 | 3.762 | 168 | 0   | 228 |
| 205 | 9   | 27  | 3.915 | 180 | 184 | 224 |
| 206 | 13  | 62  | 3.920 | 197 | 170 | 226 |
| 207 | 101 | 180 | 4.140 | 142 | 0   | 218 |
| 208 | 16  | 48  | 4.190 | 188 | 132 | 228 |

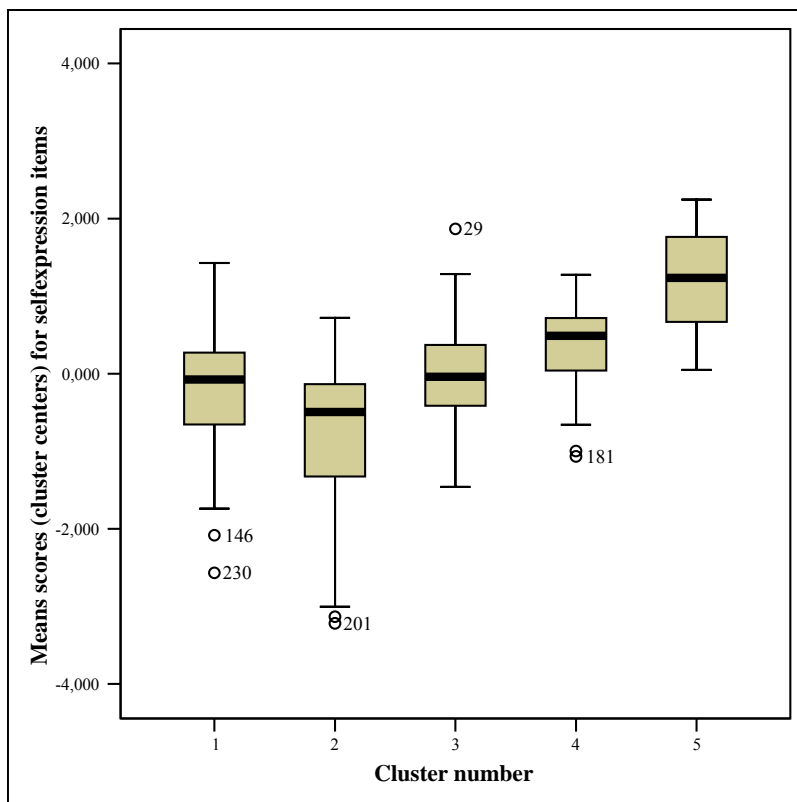


|     |    |     |        |     |     |     |
|-----|----|-----|--------|-----|-----|-----|
| 209 | 4  | 43  | 4.255  | 176 | 195 | 225 |
| 210 | 17 | 78  | 4.738  | 200 | 56  | 232 |
| 211 | 12 | 28  | 4.787  | 198 | 160 | 217 |
| 212 | 7  | 138 | 4.920  | 193 | 101 | 236 |
| 213 | 76 | 146 | 5.159  | 157 | 0   | 234 |
| 214 | 10 | 168 | 5.189  | 174 | 147 | 221 |
| 215 | 18 | 19  | 5.248  | 167 | 182 | 220 |
| 216 | 22 | 136 | 5.292  | 185 | 171 | 229 |
| 217 | 12 | 53  | 5.325  | 211 | 162 | 235 |
| 218 | 20 | 101 | 5.477  | 181 | 207 | 234 |
| 219 | 1  | 61  | 5.678  | 183 | 154 | 230 |
| 220 | 5  | 18  | 5.798  | 192 | 215 | 233 |
| 221 | 10 | 31  | 6.127  | 214 | 163 | 226 |
| 222 | 6  | 35  | 6.187  | 191 | 194 | 230 |
| 223 | 63 | 71  | 6.434  | 202 | 196 | 236 |
| 224 | 9  | 23  | 6.987  | 205 | 201 | 238 |
| 225 | 4  | 177 | 7.008  | 209 | 0   | 231 |
| 226 | 10 | 13  | 7.161  | 221 | 206 | 235 |
| 227 | 8  | 37  | 7.712  | 203 | 189 | 232 |
| 228 | 16 | 33  | 8.364  | 208 | 204 | 237 |
| 229 | 22 | 231 | 9.098  | 216 | 0   | 238 |
| 230 | 1  | 6   | 10.667 | 219 | 222 | 239 |
| 231 | 4  | 15  | 10.695 | 225 | 199 | 239 |
| 232 | 8  | 17  | 10.948 | 227 | 210 | 242 |
| 233 | 2  | 5   | 11.033 | 187 | 220 | 241 |
| 234 | 20 | 76  | 12.337 | 218 | 213 | 237 |
| 235 | 10 | 12  | 12.498 | 226 | 217 | 241 |
| 236 | 7  | 63  | 12.986 | 212 | 223 | 240 |
| 237 | 16 | 20  | 13.392 | 228 | 234 | 244 |
| 238 | 9  | 22  | 14.736 | 224 | 229 | 240 |
| 239 | 1  | 4   | 17.808 | 230 | 231 | 243 |
| 240 | 7  | 9   | 18.950 | 236 | 238 | 242 |
| 241 | 2  | 10  | 19.126 | 233 | 235 | 243 |
| 242 | 7  | 8   | 24.121 | 240 | 232 | 245 |
| 243 | 1  | 2   | 30.205 | 239 | 241 | 244 |
| 244 | 1  | 16  | 37.321 | 243 | 237 | 245 |
| 245 | 1  | 7   | 44.249 | 244 | 242 | 0   |

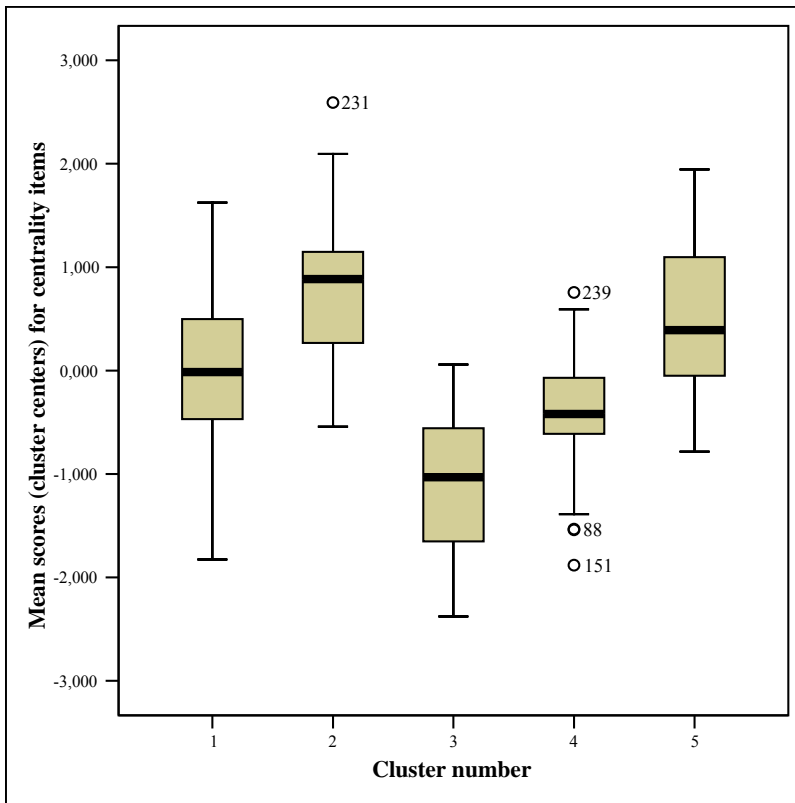
## Appendix K-1 Box plot Attraction



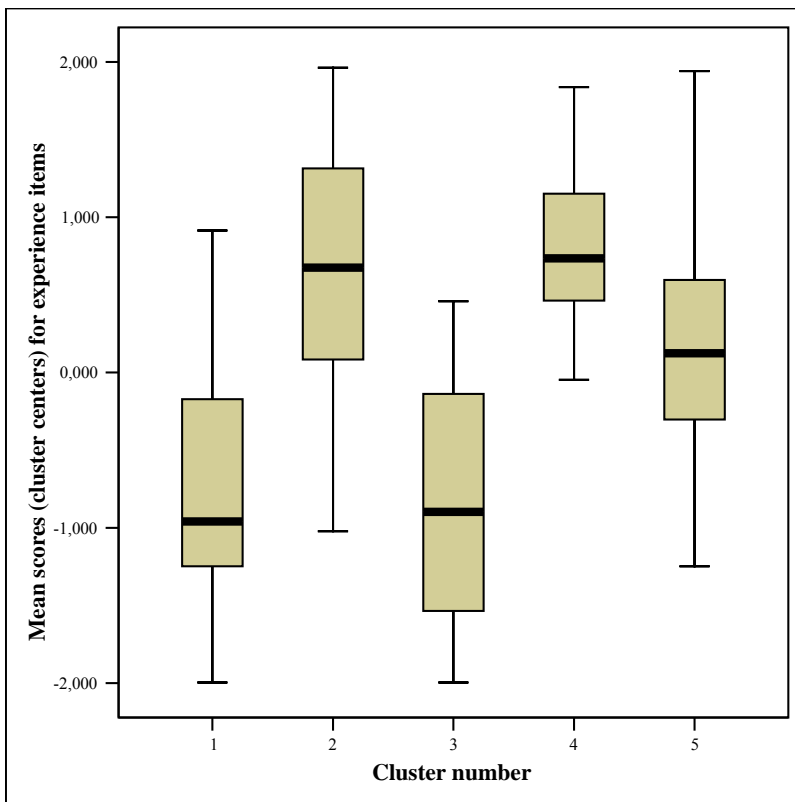
## Appendix K-2 Box plot Self-expression



### Appendix K-3 Box plot Centrality



### Appendix K-4 Box plot Experience



## Appendix L-1 Univariate Analysis of Variance Attraction

| Multiple Comparisons                             |                               |                          |            |        |                         |             |
|--|-------------------------------|--------------------------|------------|--------|-------------------------|-------------|
| Dependent Variable: REGR factor score Attraction |                               |                          |            |        |                         |             |
| Bonferroni                                       |                               |                          |            |        |                         |             |
| (I) Cluster<br>Number of Case                    | (J) Cluster<br>Number of Case | Mean<br>Difference (I-J) | Std. Error | Sig.   | 95% Confidence Interval |             |
|  |                               |                          |            |        | Lower Bound             | Upper Bound |
| 1  | 1                             |                          |            |        |                         |             |
|  | 2                             | -2.1550                  | 0.1180     | 0.0000 | -2.4893                 | -1.8207     |
|  | 3                             | -2.0343                  | 0.1236     | 0.0000 | -2.3843                 | -1.6842     |
|  | 4                             | -1.4088                  | 0.1320     | 0.0000 | -1.7827                 | -1.0350     |
|  | 5                             | -1.9878                  | 0.1287     | 0.0000 | -2.3524                 | -1.6231     |
| 2  | 1                             | 2.1550                   | 0.1180     | 0.0000 | 1.8207                  | 2.4893      |
|  | 2                             |                          |            |        |                         |             |
|  | 3                             | 0.1207                   | 0.1140     | 1.0000 | -0.2021                 | 0.4436      |
|  | 4                             | 0.7462                   | 0.1230     | 0.0000 | 0.3976                  | 1.0947      |
|  | 5                             | 0.1672                   | 0.1195     | 1.0000 | -0.1714                 | 0.5059      |
| 3  | 1                             | 2.0343                   | 0.1236     | 0.0000 | 1.6842                  | 2.3843      |
|  | 2                             | -0.1207                  | 0.1140     | 1.0000 | -0.4436                 | 0.2021      |
|  | 3                             |                          |            |        |                         |             |
|  | 4                             | 0.6254                   | 0.1284     | 0.0000 | 0.2617                  | 0.9891      |
|  | 5                             | 0.0465                   | 0.1250     | 1.0000 | -0.3077                 | 0.4008      |
| 4  | 1                             | 1.4088                   | 0.1320     | 0.0000 | 1.0350                  | 1.7827      |
|  | 2                             | -0.7462                  | 0.1230     | 0.0000 | -1.0947                 | -0.3976     |
|  | 3                             | -0.6254                  | 0.1284     | 0.0000 | -0.9891                 | -0.2617     |
|  | 4                             |                          |            |        |                         |             |
|  | 5                             | -0.5789                  | 0.1334     | 0.0002 | -0.9567                 | -0.2011     |
| 5  | 1                             | 1.9878                   | 0.1287     | 0.0000 | 1.6231                  | 2.3524      |
|  | 2                             | -0.1672                  | 0.1195     | 1.0000 | -0.5059                 | 0.1714      |
|  | 3                             | -0.0465                  | 0.1250     | 1.0000 | -0.4008                 | 0.3077      |
|  | 4                             | 0.5789                   | 0.1334     | 0.0002 | 0.2011                  | 0.9567      |
|  | 5                             |                          |            |        |                         |             |

Based on observed means.

\*The mean difference is significant at the .05 level.

## Appendix L-2 Univariate Analysis of Variance Self-expression

| Multiple Comparisons                                  |                               |                          |            |        |                         |             |
|---|-------------------------------|--------------------------|------------|--------|-------------------------|-------------|
| Dependent Variable: REGR factor score Self-expression |                               |                          |            |        |                         |             |
| Bonferroni  |                               |                          |            |        |                         |             |
| (I) Cluster<br>Number of Case                         | (J) Cluster<br>Number of Case | Mean Difference<br>(I-J) | Std. Error | Sig.   | 95% Confidence Interval |             |
|   |                               |                          |            |        | Lower Bound             | Upper Bound |
| 1   | 1                             |                          |            |        |                         |             |
|   | 2                             | 0.5039                   | 0.1470     | 0.0072 | 0.0874                  | 0.9204      |
|   | 3                             | -0.2351                  | 0.1539     | 1.0000 | -0.6712                 | 0.2010      |
|   | 4                             | -0.6125                  | 0.1644     | 0.0024 | -1.0783                 | -0.1466     |
|   | 5                             | -1.4297                  | 0.1604     | 0.0000 | -1.8840                 | -0.9753     |
| 2   | 1                             | -0.5039                  | 0.1470     | 0.0072 | -0.9204                 | -0.0874     |
|   | 2                             |                          |            |        |                         |             |
|   | 3                             | -0.7390                  | 0.1420     | 0.0000 | -1.1412                 | -0.3367     |
|   | 4                             | -1.1163                  | 0.1533     | 0.0000 | -1.5506                 | -0.6821     |
|   | 5                             | -1.9336                  | 0.1489     | 0.0000 | -2.3555                 | -1.5116     |
| 3   | 1                             | 0.2351                   | 0.1539     | 1.0000 | -0.2010                 | 0.6712      |
|   | 2                             | 0.7390                   | 0.1420     | 0.0000 | 0.3367                  | 1.1412      |
|   | 3                             |                          |            |        |                         |             |
|   | 4                             | -0.3774                  | 0.1599     | 0.1911 | -0.8305                 | 0.0758      |
|   | 5                             | -1.1946                  | 0.1558     | 0.0000 | -1.6359                 | -0.7533     |
| 4   | 1                             | 0.6125                   | 0.1644     | 0.0024 | 0.1466                  | 1.0783      |
|   | 2                             | 1.1163                   | 0.1533     | 0.0000 | 0.6821                  | 1.5506      |
|   | 3                             | 0.3774                   | 0.1599     | 0.1911 | -0.0758                 | 0.8305      |
|   | 4                             |                          |            |        |                         |             |
|   | 5                             | -0.8172                  | 0.1661     | 0.0000 | -1.2880                 | -0.3465     |
| 5   | 1                             | 1.4297                   | 0.1604     | 0.0000 | 0.9753                  | 1.8840      |
|   | 2                             | 1.9336                   | 0.1489     | 0.0000 | 1.5116                  | 2.3555      |
|   | 3                             | 1.1946                   | 0.1558     | 0.0000 | 0.7533                  | 1.6359      |
|   | 4                             | 0.8172                   | 0.1661     | 0.0000 | 0.3465                  | 1.2880      |
|   | 5                             |                          |            |        |                         |             |

Based on observed means.

\*The mean difference is significant at the .05 level.

### Appendix L-3 Univariate Analysis of Variance Centrality

| Multiple Comparisons                             |                               |                          |            |        |                         |             |  |
|--|-------------------------------|--------------------------|------------|--------|-------------------------|-------------|--|
| Dependent Variable: REGR factor score Centrality |                               |                          |            |        |                         |             |  |
| Bonferroni                                       |                               |                          |            |        |                         |             |  |
| (I) Cluster<br>Number of Case                    | (J) Cluster<br>Number of Case | Mean Difference<br>(I-J) | Std. Error | Sig.   | 95% Confidence Interval |             |  |
|  |                               |                          |            |        | Lower Bound             | Upper Bound |  |
| 1  | 1                             |                          |            |        |                         |             |  |
|  | 2                             | -0.8600                  | 0.1344     | 0.0000 | -1.2408                 | -0.4792     |  |
|  | 3                             | 1.0851                   | 0.1408     | 0.0000 | 0.6863                  | 1.4839      |  |
|  | 4                             | 0.3548                   | 0.1503     | 0.1906 | -0.0711                 | 0.7808      |  |
|  | 5                             | -0.5896                  | 0.1466     | 0.0008 | -1.0051                 | -0.1742     |  |
| 2  | 1                             | 0.8600                   | 0.1344     | 0.0000 | 0.4792                  | 1.2408      |  |
|  | 2                             |                          |            |        |                         |             |  |
|  | 3                             | 1.9451                   | 0.1298     | 0.0000 | 1.5773                  | 2.3129      |  |
|  | 4                             | 1.2148                   | 0.1402     | 0.0000 | 0.8177                  | 1.6119      |  |
|  | 5                             | 0.2704                   | 0.1362     | 0.4822 | -0.1154                 | 0.6562      |  |
| 3  | 1                             | -1.0851                  | 0.1408     | 0.0000 | -1.4839                 | -0.6863     |  |
|  | 2                             | -1.9451                  | 0.1298     | 0.0000 | -2.3129                 | -1.5773     |  |
|  | 3                             |                          |            |        |                         |             |  |
|  | 4                             | -0.7303                  | 0.1462     | 0.0000 | -1.1446                 | -0.3159     |  |
|  | 5                             | -1.6747                  | 0.1424     | 0.0000 | -2.0783                 | -1.2712     |  |
| 4  | 1                             | -0.3548                  | 0.1503     | 0.1906 | -0.7808                 | 0.0711      |  |
|  | 2                             | -1.2148                  | 0.1402     | 0.0000 | -1.6119                 | -0.8177     |  |
|  | 3                             | 0.7303                   | 0.1462     | 0.0000 | 0.3159                  | 1.1446      |  |
|  | 4                             |                          |            |        |                         |             |  |
|  | 5                             | -0.9444                  | 0.1519     | 0.0000 | -1.3748                 | -0.5140     |  |
| 5  | 1                             | 0.5896                   | 0.1466     | 0.0008 | 0.1742                  | 1.0051      |  |
|  | 2                             | -0.2704                  | 0.1362     | 0.4822 | -0.6562                 | 0.1154      |  |
|  | 3                             | 1.6747                   | 0.1424     | 0.0000 | 1.2712                  | 2.0783      |  |
|  | 4                             | 0.9444                   | 0.1519     | 0.0000 | 0.5140                  | 1.3748      |  |
|  | 5                             |                          |            |        |                         |             |  |

Based on observed means.

\*The mean difference is significant at the .05 level.

## Appendix L-4 Univariate Analysis of Variance Experience

| Multiple Comparisons                             |                               |                          |            |        |                         |             |  |
|--|-------------------------------|--------------------------|------------|--------|-------------------------|-------------|--|
| Dependent Variable: REGR factor score Experience |                               |                          |            |        |                         |             |  |
| Bonferroni                                       |                               |                          |            |        |                         |             |  |
| (I) Cluster<br>Number of Case                    | (J) Cluster<br>Number of Case | Mean Difference<br>(I-J) | Std. Error | Sig.   | 95% Confidence Interval |             |  |
|  |                               |                          |            |        | Lower Bound             | Upper Bound |  |
| 1  | 1                             |                          |            |        |                         |             |  |
|  | 2                             | -1.4483                  | 0.1400     | 0.0000 | -1.8451                 | -1.0516     |  |
|  | 3                             | 0.0335                   | 0.1466     | 1.0000 | -0.3819                 | 0.4490      |  |
|  | 4                             | -1.6000                  | 0.1566     | 0.0000 | -2.0438                 | -1.1563     |  |
|  | 5                             | -0.9020                  | 0.1528     | 0.0000 | -1.3348                 | -0.4692     |  |
| 2  | 1                             | 1.4483                   | 0.1400     | 0.0000 | 1.0516                  | 1.8451      |  |
|  | 2                             |                          |            |        |                         |             |  |
|  | 3                             | 1.4818                   | 0.1353     | 0.0000 | 1.0986                  | 1.8650      |  |
|  | 4                             | -0.1517                  | 0.1460     | 1.0000 | -0.5654                 | 0.2620      |  |
|  | 5                             | 0.5463                   | 0.1419     | 0.0015 | 0.1444                  | 0.9483      |  |
| 3  | 1                             | -0.0335                  | 0.1466     | 1.0000 | -0.4490                 | 0.3819      |  |
|  | 2                             | -1.4818                  | 0.1353     | 0.0000 | -1.8650                 | -1.0986     |  |
|  | 3                             |                          |            |        |                         |             |  |
|  | 4                             | -1.6335                  | 0.1524     | 0.0000 | -2.0652                 | -1.2019     |  |
|  | 5                             | -0.9355                  | 0.1484     | 0.0000 | -1.3559                 | -0.5151     |  |
| 4  | 1                             | 1.6000                   | 0.1566     | 0.0000 | 1.1563                  | 2.0438      |  |
|  | 2                             | 0.1517                   | 0.1460     | 1.0000 | -0.2620                 | 0.5654      |  |
|  | 3                             | 1.6335                   | 0.1524     | 0.0000 | 1.2019                  | 2.0652      |  |
|  | 4                             |                          |            |        |                         |             |  |
|  | 5                             | 0.6980                   | 0.1583     | 0.0002 | 0.2496                  | 1.1465      |  |
| 5  | 1                             | 0.9020                   | 0.1528     | 0.0000 | 0.4692                  | 1.3348      |  |
|  | 2                             | -0.5463                  | 0.1419     | 0.0015 | -0.9483                 | -0.1444     |  |
|  | 3                             | 0.9355                   | 0.1484     | 0.0000 | 0.5151                  | 1.3559      |  |
|  | 4                             | -0.6980                  | 0.1583     | 0.0002 | -1.1465                 | -0.2496     |  |
|  | 5                             |                          |            |        |                         |             |  |

Based on observed means.

\*The mean difference is significant at the .05 level.

## Appendix M Correlation Matrix Motivations

| Motivations | Mot 1 | Mot 2 | Mot 3 | Mot 4 | Mot 5 | Mot 6 | Mot 7 | Mot 8 | Mot 9 | Mot 10 | Mot 11 | Mot 12 | Mot 13 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| Mot 1       | 1.000 | .201  | -.047 | .136  | .150  | .333  | .264  | .103  | .048  | -.040  | .039   | -.039  | .154   |
| Mot 2       | .201  | 1.000 | .491  | .219  | .127  | .200  | .277  | .300  | .152  | .247   | .101   | .532   | .304   |
| Mot 3       | -.047 | .491  | 1.000 | .211  | .171  | .057  | .294  | .305  | .290  | .440   | .151   | .490   | .228   |
| Mot 4       | .136  | .219  | .211  | 1.000 | .247  | .261  | .184  | .113  | .028  | .101   | .180   | .146   | .217   |
| Mot 5       | .150  | .127  | .171  | .247  | 1.000 | .384  | .340  | .244  | .242  | .193   | .214   | .081   | .157   |
| Mot 6       | .333  | .200  | .057  | .261  | .384  | 1.000 | .335  | .257  | .079  | .098   | .024   | .052   | .251   |
| Mot 7       | .264  | .277  | .294  | .184  | .340  | .335  | 1.000 | .379  | .260  | .233   | .078   | .149   | .076   |
| Mot 8       | .103  | .300  | .305  | .113  | .244  | .257  | .379  | 1.000 | .309  | .275   | .222   | .331   | .117   |
| Mot 9       | .048  | .152  | .290  | .028  | .242  | .079  | .260  | .309  | 1.000 | .406   | .114   | .216   | -.028  |
| Mot 10      | -.040 | .247  | .440  | .101  | .193  | .098  | .233  | .275  | .406  | 1.000  | .114   | .327   | .057   |
| Mot 11      | .039  | .101  | .151  | .180  | .214  | .024  | .078  | .222  | .114  | .114   | 1.000  | .216   | .207   |
| Mot 12      | -.039 | .532  | .490  | .146  | .081  | .052  | .149  | .331  | .216  | .327   | .216   | 1.000  | .459   |
| Mot 13      | .154  | .304  | .228  | .217  | .157  | .251  | .076  | .117  | -.028 | .057   | .207   | .459   | 1.000  |
| Mot 14      | .105  | .205  | .146  | .088  | .351  | .227  | .263  | .185  | .254  | .346   | .243   | .214   | .241   |
| Mot 15      | .045  | .122  | .196  | .383  | .253  | .295  | .050  | .147  | .019  | .171   | .216   | .218   | .328   |
| Mot 16      | .259  | .210  | .161  | .043  | .182  | .348  | .260  | .237  | .100  | .094   | .088   | .171   | .278   |
| Mot 17      | .239  | .170  | -.011 | .176  | .086  | .275  | .186  | .021  | -.023 | .031   | .174   | .126   | .246   |
| Mot 18      | -.113 | .386  | .467  | .286  | .276  | .105  | .186  | .297  | .202  | .375   | .086   | .588   | .340   |
| Mot 19      | .157  | .301  | .259  | .118  | .160  | .164  | .319  | .239  | .226  | .185   | .038   | .326   | .165   |
| Mot 20      | .112  | .161  | -.004 | .188  | -.002 | .215  | .086  | .026  | -.156 | .036   | .158   | .064   | .223   |
| Mot 21      | .142  | .344  | .270  | .251  | .275  | .353  | .361  | .418  | .153  | .216   | .186   | .415   | .425   |
| Mot 22      | .150  | .093  | .103  | .296  | .281  | .414  | .171  | .162  | .082  | .089   | .283   | .116   | .297   |
| Mot 23      | .193  | .156  | .172  | .145  | .044  | .269  | .146  | .185  | .077  | .080   | .119   | .231   | .339   |
| Mot 24      | .147  | .151  | .101  | .033  | .113  | .151  | .245  | .124  | .190  | .084   | .023   | .126   | .135   |
| Mot 25      | .026  | .010  | .194  | .043  | .125  | -.015 | .033  | -.027 | .278  | .120   | .035   | .116   | .045   |

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Mot 9 = To collect interesting artefacts

Mot 10 = Because of the risk involved

Mot 11 = To do something creative, such as take pictures or videos

Mot 12 = To show myself that I can do it

Mot 13 = To gain an experience I can look back on

Mot 14 = To study underwater geological formations

Mot 15 = For the adventure of it

Mot 16 = To meet new people

Mot 17 = To learn more about the underwater environment

Mot 18 = Because I think it is a challenge

Mot 19 = To help keep me physically fit

Mot 20 = To look at underwater animal and plant life

Mot 21 = To develop my diving skills and abilities

Mot 22 = To explore things

Mot 23 = For a change from everyday life

Mot 24 = So I can do things with my friends and/or family

Mot 25 = To go hunting (spearfishing and catch prawns, crabs, crayfish, etc.)



## Appendix M Correlation Matrix Motivations - continued

| Motivations | Mot 14 | Mot 15 | Mot 16 | Mot 17 | Mot 18 | Mot 19 | Mot 20 | Mot 21 | Mot 22 | Mot 23 | Mot 24 | Mot 25 |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Mot 1       | .105   | .045   | .259   | .239   | -.113  | .157   | .112   | .142   | .150   | .193   | .147   | .026   |
| Mot 2       | .205   | .122   | .210   | .170   | .386   | .301   | .161   | .344   | .093   | .156   | .151   | .010   |
| Mot 3       | .146   | .196   | .161   | -.011  | .467   | .259   | -.004  | .270   | .103   | .172   | .101   | .194   |
| Mot 4       | .088   | .383   | .043   | .176   | .286   | .118   | .188   | .251   | .296   | .145   | .033   | .043   |
| Mot 5       | .351   | .253   | .182   | .086   | .276   | .160   | -.002  | .275   | .281   | .044   | .113   | .125   |
| Mot 6       | .227   | .295   | .348   | .275   | .105   | .164   | .215   | .353   | .414   | .269   | .151   | -.015  |
| Mot 7       | .263   | .050   | .260   | .186   | .186   | .319   | .086   | .361   | .171   | .146   | .245   | .033   |
| Mot 8       | .185   | .147   | .237   | .021   | .297   | .239   | .026   | .418   | .162   | .185   | .124   | -.027  |
| Mot 9       | .254   | .019   | .100   | -.023  | .202   | .226   | -.156  | .153   | .082   | .077   | .190   | .278   |
| Mot 10      | .346   | .171   | .094   | .031   | .375   | .185   | .036   | .216   | .089   | .080   | .084   | .120   |
| Mot 11      | .243   | .216   | .088   | .174   | .086   | .038   | .158   | .186   | .283   | .119   | .023   | .035   |
| Mot 12      | .214   | .218   | .171   | .126   | .588   | .326   | .064   | .415   | .116   | .231   | .126   | .116   |
| Mot 13      | .241   | .328   | .278   | .246   | .340   | .165   | .223   | .425   | .297   | .339   | .135   | .045   |
| Mot 14      | 1.000  | .216   | .140   | .334   | .265   | .248   | .198   | .278   | .274   | .049   | .178   | .168   |
| Mot 15      | .216   | 1.000  | .271   | .136   | .419   | .062   | .111   | .326   | .472   | .281   | .155   | .046   |
| Mot 16      | .140   | .271   | 1.000  | .339   | .104   | .188   | .086   | .375   | .182   | .302   | .157   | -.096  |
| Mot 17      | .334   | .136   | .339   | 1.000  | .119   | .205   | .423   | .239   | .331   | .153   | .148   | -.014  |
| Mot 18      | .265   | .419   | .104   | .119   | 1.000  | .399   | .034   | .285   | .252   | .257   | .114   | .124   |
| Mot 19      | .248   | .062   | .188   | .205   | .399   | 1.000  | .110   | .291   | .114   | .190   | .215   | .082   |
| Mot 20      | .198   | .111   | .086   | .423   | .034   | .110   | 1.000  | .226   | .297   | .143   | .083   | -.096  |
| Mot 21      | .278   | .326   | .375   | .239   | .285   | .291   | .226   | 1.000  | .379   | .311   | .182   | -.030  |
| Mot 22      | .274   | .472   | .182   | .331   | .252   | .114   | .297   | .379   | 1.000  | .312   | .109   | .073   |
| Mot 23      | .049   | .281   | .302   | .153   | .257   | .190   | .143   | .311   | .312   | 1.000  | .188   | -.075  |
| Mot 24      | .178   | .155   | .157   | .148   | .114   | .215   | .083   | .182   | .109   | .188   | 1.000  | .080   |
| Mot 25      | .168   | .046   | -.096  | -.014  | .124   | .082   | -.096  | -.030  | .073   | -.075  | .080   | 1.000  |

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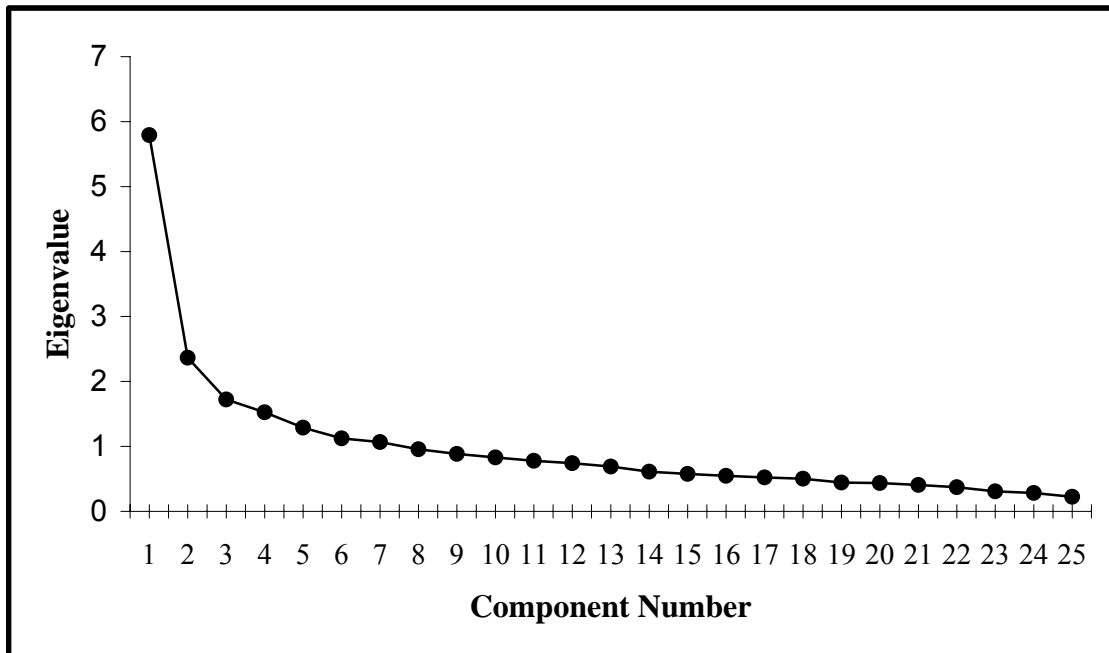
Mot 22 = To explore things

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crabs, crayfish, etc.)

**Appendix N      Scree Plot for Motivations**



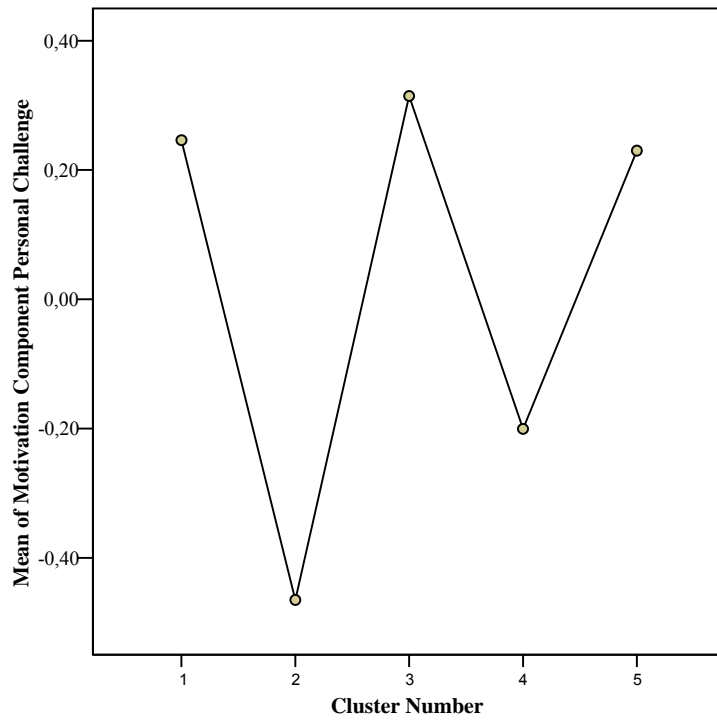
## Appendix O-1 Descriptive Statistics for Clusters and Motivation Components

| Motivation Components | Cluster | N   | Mean  | Std. Deviation | Std. Error | 95% Confidence |             | Minimum | Maximum |
|-----------------------|---------|-----|-------|----------------|------------|----------------|-------------|---------|---------|
|                       |         |     |       |                |            | Lower Bound    | Upper Bound |         |         |
| 1. Personal Challenge | 1       | 46  | .246  | .899           | .133       | -.021          | .513        | -1.932  | 2.142   |
|                       | 2       | 64  | -.465 | .996           | .124       | -.714          | -.216       | -2.865  | 1.342   |
|                       | 3       | 52  | .314  | .842           | .117       | .080           | .549        | -1.692  | 1.835   |
|                       | 4       | 40  | -.201 | .922           | .146       | -.495          | .094        | -2.851  | 2.308   |
|                       | 5       | 44  | .230  | 1.091          | .164       | -.102          | .561        | -1.969  | 2.080   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -2.865  | 2.308   |
| 2. Adventure          | 1       | 46  | -.206 | .990           | .146       | -.499          | .088        | -2.814  | 2.320   |
|                       | 2       | 64  | .139  | .847           | .106       | -.073          | .351        | -2.100  | 2.195   |
|                       | 3       | 52  | .171  | .864           | .120       | -.069          | .412        | -1.953  | 1.519   |
|                       | 4       | 40  | -.235 | .959           | .152       | -.542          | .072        | -2.743  | 1.832   |
|                       | 5       | 44  | .024  | 1.319          | .199       | -.377          | .425        | -5.928  | 2.114   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -5.928  | 2.320   |
| 3. Relaxation         | 1       | 46  | -.499 | .785           | .116       | -.732          | -.266       | -2.885  | 1.040   |
|                       | 2       | 64  | .326  | .851           | .106       | .113           | .539        | -1.627  | 2.343   |
|                       | 3       | 52  | -.285 | 1.072          | .149       | -.583          | .014        | -2.313  | 2.201   |
|                       | 4       | 40  | -.128 | .977           | .155       | -.441          | .185        | -2.518  | 1.947   |
|                       | 5       | 44  | .500  | .983           | .148       | .201           | .799        | -1.779  | 2.388   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -2.885  | 2.388   |
| 4. Novelty            | 1       | 46  | -.227 | .706           | .104       | -.437          | -.017       | -1.879  | .989    |
|                       | 2       | 64  | -.102 | 1.099          | .137       | -.376          | .173        | -3.171  | 2.639   |
|                       | 3       | 52  | .081  | .919           | .127       | -.175          | .337        | -2.199  | 2.630   |
|                       | 4       | 40  | -.233 | 1.135          | .179       | -.596          | .130        | -4.496  | 1.715   |
|                       | 5       | 44  | .502  | .921           | .139       | .222           | .782        | -1.559  | 2.172   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -4.496  | 2.639   |
| 5. Stature            | 1       | 46  | .097  | .825           | .122       | -.148          | .342        | -1.557  | 1.842   |
|                       | 2       | 64  | -.229 | 1.103          | .138       | -.504          | .047        | -2.607  | 2.424   |
|                       | 3       | 52  | -.139 | .937           | .130       | -.400          | .122        | -1.976  | 2.748   |
|                       | 4       | 40  | .107  | .875           | .138       | -.172          | .387        | -2.056  | 1.909   |
|                       | 5       | 44  | .299  | 1.120          | .169       | -.042          | .639        | -1.964  | 4.071   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -2.607  | 4.071   |
| 6. Learn              | 1       | 46  | -.311 | .915           | .135       | -.583          | -.039       | -3.293  | 1.579   |
|                       | 2       | 64  | .081  | 1.139          | .142       | -.204          | .366        | -4.721  | 1.797   |
|                       | 3       | 52  | .044  | .959           | .133       | -.223          | .311        | -2.693  | 1.738   |
|                       | 4       | 40  | -.172 | .910           | .144       | -.463          | .119        | -2.856  | 1.669   |
|                       | 5       | 44  | .311  | .914           | .138       | .034           | .589        | -2.705  | 1.756   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -4.721  | 1.797   |
| 7. Hunt               | 1       | 46  | .224  | 1.034          | .152       | -.083          | .531        | -2.116  | 3.151   |
|                       | 2       | 64  | .203  | 1.088          | .136       | -.068          | .475        | -2.085  | 4.324   |
|                       | 3       | 52  | -.237 | .913           | .127       | -.491          | .018        | -2.285  | 2.953   |
|                       | 4       | 40  | .041  | 1.028          | .163       | -.287          | .370        | -2.846  | 2.333   |
|                       | 5       | 44  | -.288 | .792           | .119       | -.529          | -.047       | -2.348  | 2.095   |
|                       | Total   | 246 | .000  | 1.000          | .064       | -.126          | .126        | -2.846  | 4.324   |

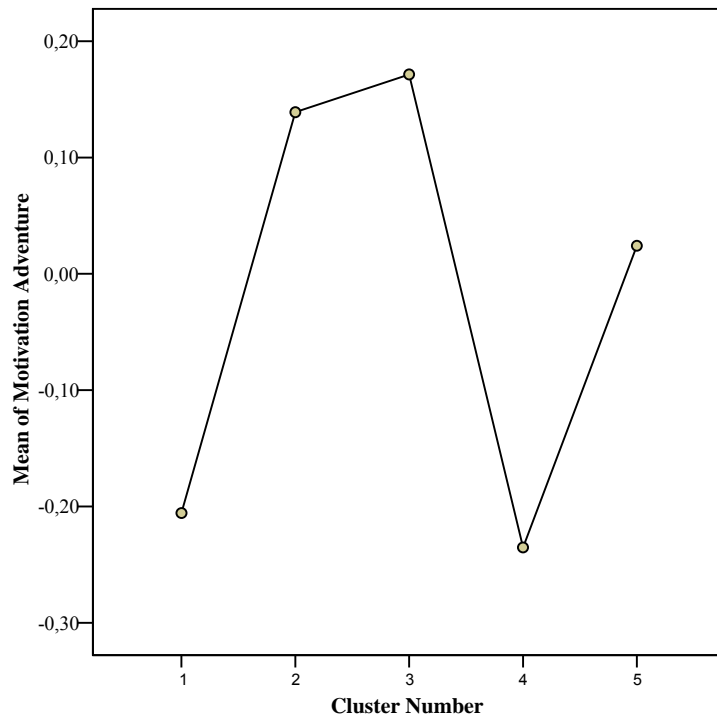
**Appendix O-2 Tests of Within-Subjects Effects for Clusters and Motivation Components**

| Source                         |                    | Type III Sum of Squares | df       | Mean Square | F     | Sig. |
|--------------------------------|--------------------|-------------------------|----------|-------------|-------|------|
| Motivation component           | Sphericity Assumed | .556                    | 6        | .093        | .097  | .997 |
|                                | Greenhouse-Geisser | .556                    | 5.962    | .093        | .097  | .997 |
|                                | Huynh-Feldt        | .556                    | 6        | .093        | .097  | .997 |
|                                | Lower-bound        | .556                    | 1        | .556        | .097  | .755 |
| Motivation component * Cluster | Sphericity Assumed | 92.073                  | 24       | 3.836       | 4.026 | .000 |
|                                | Greenhouse-Geisser | 92.073                  | 23.847   | 3.861       | 4.026 | .000 |
|                                | Huynh-Feldt        | 92.073                  | 24       | 3.836       | 4.026 | .000 |
|                                | Lower-bound        | 92.073                  | 4        | 23.018      | 4.026 | .004 |
| Error(motivation component)    | Sphericity Assumed | 1377.927                | 1446.000 | .953        |       |      |
|                                | Greenhouse-Geisser | 1377.927                | 1436.765 | .959        |       |      |
|                                | Huynh-Feldt        | 1377.927                | 1446.000 | .953        |       |      |
|                                | Lower-bound        | 1377.927                | 241      | 5.718       |       |      |

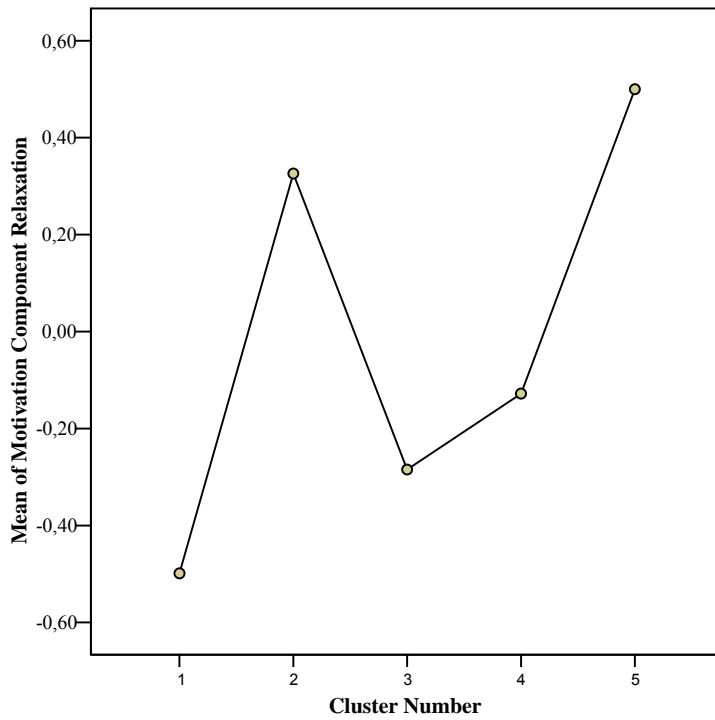
**Appendix P-1 Mean Scores Motivational Component Personal Challenge on Clusters**



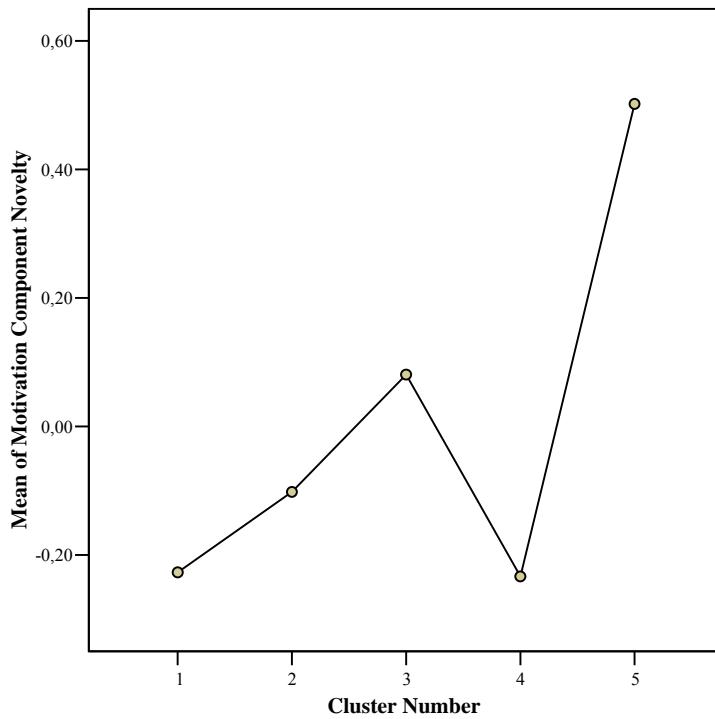
**Appendix P-2 Mean Scores Motivational Component Adventure on Clusters**



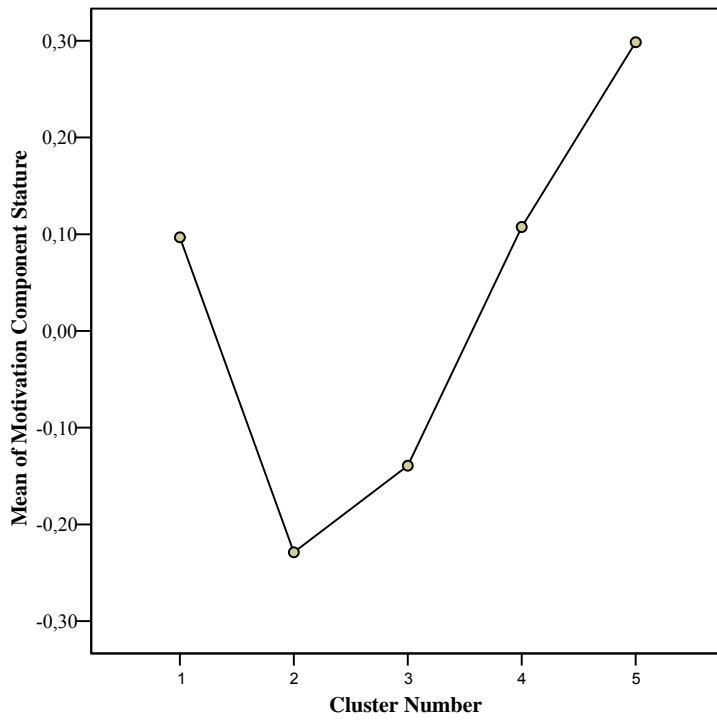
**Appendix P-3 Mean Scores Motivational Component Relaxation on Clusters**



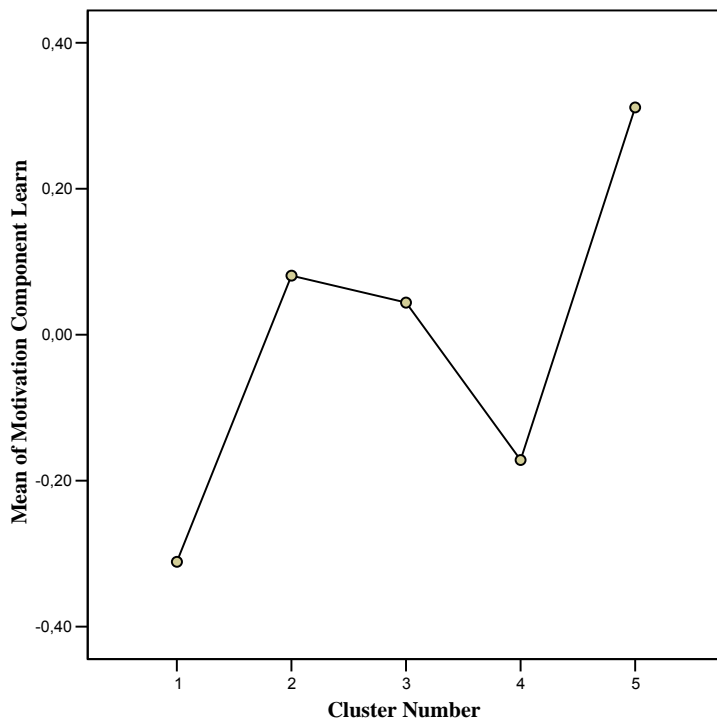
**Appendix P-4 Mean Scores Motivational Component Novelty on Clusters**



**Appendix P-5 Mean Scores Motivational Component Stature on Clusters**



**Appendix P-6 Mean Scores Motivational Component Learn on Clusters**



## Appendix P-7 Mean Scores Motivational Component Hunt on Clusters

