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Dissertation

**An Investigation into Perceptions of Coasteering in the
Pembrokeshire Coast National Park Amongst Participants in
Other Forms of Recreation.**

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Statement of Authorship

I certify that this Dissertation is my own unaided work and that all sources of references have been acknowledged.

Signed

Anthony Rogers

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Abstract

The novel sport of coasteering is promoted in the Pembrokeshire Coast National Park as an opportunity to discover areas of coast inaccessible by normal means, seek adventure and 'commune with nature'. However, the resulting increase in recreational use of the intertidal zone has the potential to conflict with more established uses.

A mixed methods approach was adopted to investigate the potential for encounters with coasteering groups to impact on the quality of other site users' recreational experience. Researcher administered questionnaires were utilised at three coasteering venues in August and October 2010. Respondents were shown a series of video images of coasteering groups and asked to rate how an encounter with the groups depicted would affect their own recreational experience, using a five point Likert scale. Expressed perceptions were supported by responses to open-ended questions probing which factors respondents considered important in forming their perceptions, along with contextual information. The quantitative data were subjected to appropriate tests of significance and association to identify variables significant in the formation of respondent's expressed perceptions. Qualitative data were scrutinised for recurring themes to triangulate the quantitative results.

It was found that 62.1% (n=164) of respondents perceived that encounters with coasteerers would impact positively upon their recreational experience, often adding interest to their visit. However, 30.3% (n=80) of respondents felt that such encounters would detract from the quality of their experience, highlighting the potential for recreational conflict. The proximity, type and frequency of encounters, respondent's level of educational qualification and the respondent's choice of main activity were the most significant variables affecting the formation of a perception of negative impacts. The findings are discussed with reference to the management of recreation in the National Park.

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Introduction

Coasteering and the Pembrokeshire Coast National Park

Tranquillity and the desire to relax and get away from it all are often cited as reasons for visiting a national park (eg. Pembrokeshire Coast National Park Authority [PCNPA], 2008; Suckall *et al.*, 2009). However, there is an annual increase in visitor participation in group adventure activities in Pembrokeshire (South West Wales Coastal Recreation Audit [SWWCRA], 2009). The novel sport of coasteering (traversing the coast by a combination of climbing, scrambling, cliff jumping and swimming [British Coasteering Federation, 2010]) in particular has become very popular. Organised groups travel from as far afield as Cardiff (some 100 miles) to coasteer on the Pembrokeshire Coast (SWWCRA, 2009). This sport is promoted as an opportunity to discover areas of coast inaccessible by normal means, seek adventure and ‘commune with nature’ (Activity Pembrokeshire, 2010; Celtic Quest Coasteering, 2010; TYF, 2010). Activity providers therefore seek access to remoter sites previously used for more traditional ‘quiet enjoyment’ pastimes such as walking, nature-watching and angling, in order to ensure a high quality experience for their clients. **Figure 1** depicts various aspects of coasteering.

The recent growth in the pursuit of coasteering in areas previously unexploited for organised group activities may threaten the desirability of those areas for some established users. Where such recreational displacement occurs, it may be difficult to identify from data on visitor numbers, or reported levels of satisfaction (Arnberger & Haider, 2005; Shackley, 1996). There is, however, anecdotal evidence that some visitors, and even activity providers feel that management may be necessary in order to maintain a high quality recreational experience for all user groups in the face of increasing recreational pressures (Green *et al.*, 2005; Luddington, 2008).

Figure 1. Images of Coasteering on the Pembrokeshire Coast.



There is potential for tension between the PCNPA's dual responsibilities of protecting tranquillity (amongst other features) and promoting enjoyment of the special features of the Park (PCNPA, 2008), making the area ideal for this study. Coasteering does not involve the use of mechanised or noisy equipment. When walking to and from venues, groups can only be distinguished from 'traditional' walkers by their attire (typically wetsuit, buoyancy aid and helmet). When actively coasteering however, members of the group are often vocal in their enthusiasm as they leap into the water. The ability to depict coasteerers in these two modes makes it possible to investigate the importance of specific activities or behaviours in forming perceptions of the sport amongst other recreational site users.

How This Study Adds to Existing Knowledge

Whilst the existing literature deals extensively with the issues surrounding visitor perceptions, expectations, satisfaction and recreational conflict, it is not known how this may relate specifically to coasteering or to the Pembrokeshire Coast National Park. The issues are complex and often related to highly subjective assessments of concepts such as tranquillity, crowding and behaviour. This study investigated the extent to which the major concepts identified in the literature review and the attributes of coasteering groups may interact to create any perceived impacts on the quality of the recreational experience of other recreational users of the study area.

An understanding of the magnitude, variation and distribution of any perception of recreational conflict is essential for effective management of recreation in the National Park. Hence, the research investigated visitor perceptions of coasteering at various sites and times in the National Park in an attempt to include the full range of recreational users, even if spatial or temporal mechanisms for coping with perceived recreational conflict were being employed. The output from this research may inform debate and guide future management by identifying potential recreational conflicts and the major factors underlying them at an early stage. How the findings may be applied to the management of the National Park is also discussed.

Research Aim:

To identify whether and how coasteering in the Pembrokeshire Coast National Park may impact upon the quality of the recreational experience of participants in other forms of recreation at coasteering venues and to explore how the findings could be used to manage the quality of the recreational experience for all users and reduce potential recreational conflict in relation to coasteering.

Research Objectives:

The research aim has been broken down into three clear research objectives as follows:

- 1. To establish the nature and range of variation of any perception of impacts of coasteering on the recreational experience of other users of the study area.***
- 2. To identify factors which are significant in forming perceptions of any impacts of coasteering on the recreational experience of other users of the study area.***
- 3. To analyse how the findings could be used to develop and improve management actions to reduce or resolve potential recreational conflicts in relation to coasteering in the study area.***

It should be noted here that 'impacts' may be positive or negative contributions to the recreational experience of others.

Literature Review

Coasteering: Impacts and Trends

In recent years, the adventure recreation market in the Pembrokeshire Coast National Park has grown (SWWCRA, 2009). The Coastal Tourism Strategy for Wales targets coastal adventure sports as a growth market (Welsh Assembly Government [WAG], 2008). Coasteering has become particularly popular. Luddington (2008) notes that the sport is increasing rapidly, with 2,237 individuals making 104 coasteering groups (up to 93 clients per day) during the peak season (14th July to 2nd September) in 2007 from just one activity provider. There are at least eight activity providers offering coasteering sessions in the study area (Jones, Pers. Comm. 16/07/2010). The National Park Management Plan notes that 'High user volumes at a particular time may turn a basically innocuous activity into a potential problem' (PCNPA, 2008; p78).

There is little published research on the impacts of coasteering. Davenport & Davenport (2006) identify the activity as a potential future problem. However, existing studies concentrate on identifying impacts on natural environmental features (eg. Green *et al.*, 2005; Thomas, 2007; Tyler-Walters, 2005), or disturbance to wildlife (eg. Green *et al.*, 2005; Lyles, 2009). No studies were identified which dealt directly with the potential for coasteering groups to impact upon the quality of the recreational experience of others.

Luddington (2008) provides anecdotal evidence that some members of coasteering groups in north Pembrokeshire are finding certain areas crowded at certain times and that this detracts from the quality of their experience. Green *et al.* (2005) note that there is over-crowding (although this is not defined) on some popular routes, including Abereidly (a site in the study area). They also identify the potential for recreational conflict with climbers and with sea anglers.

Further evidence for the potential for conflict is provided by a recent exchange of letters to the County's local paper, in which claims that encounters with coasteering groups detracted from the quiet enjoyment of the area were rebutted and the case was made for coasteering as an inherently non-polluting

and health-promoting way of enjoying the National Park (Western Telegraph, 2009).

Informal discussions with activity providers have highlighted the potential for non-participants to confuse coasteering with 'tombstoning' when discussing these issues. Tombstoning involves jumping into the water from height (Maritime and Coastguard Agency [MCA], 2010) and is normally practiced by private, unsupervised groups. The sport is not offered as a stand-alone activity by activity providers, although some aspects of tombstoning and coasteering are similar. Tombstoning is seen as purely a thrill seeking experience and has attracted negative media coverage following a series of deaths and serious injuries (eg. MCA, 2008; MCA, 2009).

The boundaries between coasteering and tombstoning are not precisely defined. Coasteerers jump from the rocks into the water and tombstoners traverse the rocks to reach a venue. Images used to promote coasteering often focus on the thrill-seeking aspects of the sport (eg. Celtic Quest Coasteering, 2011). However, tombstoners are seldom seen wearing the protective helmet and buoyancy aid which have become associated with images of coasteering. Coasteering and tombstoning may represent two points on a continuum of recreational activity (defined partly by the mindset of participants) between which lie other activities such as 'wild swimming', which is promoted by publications aimed at visitors to natural areas (eg. Rew, 2009).

Tombstoning provides an example of how negative impacts of adventure sports on the recreational experience of others in a natural area may be expressed. On five occasions between August 2007 and August 2010 in Pembrokeshire, members of the public became so anxious for the safety of groups engaged in tombstoning that they called Coastguard search and rescue teams. In contrast, the tombstoners, when questioned by Coastguard Rescue Officers, did not feel that they required assistance and no casualties were recorded (Evans, Pers. Comm. 18/08/2010). It should be noted that the groups involved were not under the instruction of professional guides.

Whilst this study deals specifically with the potential impacts of coasteering, perceptions of tombstoning were probed to establish whether the two activities are perceived as distinct by other recreational users.

Visitor Motivation, Expectation and Satisfaction

Shackley (1996) notes that visitors arrive at a natural area with a complex set of expectations and motivations shaped by perceptions of the area, social, cultural and economic circumstances. The quality of their experience is determined by the match between expectation and reality. Buchanan (1983) suggests that recreational satisfaction is multi-dimensional and that secondary activities are important in determining the quality of the recreational experience. For example, walkers may also be bird-watching and enjoy a picnic. Different user groups seek different experiences and have a variety of motivations. Visitor satisfaction is correlated with motivation (Devesa *et al.*, 2010; Shackley, 1996). It is necessary, therefore, to build a complete picture of the expectations and motivations of visitors in order to understand expressed perceptions.

There is evidence that perception of concepts such as tranquillity, solitude and environmental quality vary with socio-demographic factors, landscape features and the presence of other people in the landscape (eg. Hammitt *et al.*, 2001; Oku & Fukamachi, 2006; Owens, 1985; Petrosillo *et al.*, 2007; Pheasant *et al.*, 2010; Roca *et al.*, 2009; Suckall *et al.*, 2009). Hammitt (1982) argued that those seeking 'wilderness solitude' showed an affinity for others of their social group, but an aversion to those from other groups. Some people seeking solitude and tranquillity enjoy a sense of 'being alone together' with their own social group, but view other groups negatively (p479). Conversely, Arnberger & Haider (2005) noted that respondents in their study could be divided into crowding averse and crowding tolerant groups – the latter preferring an amount of social stimulation in the form of encounters with different types of recreational users of the area.

Lynn & Brown (2003) comment that perceptions of the environmental impact of an activity often vary with education, gender and experience. Petrosillo, *et al.* (2007) found that perceptions of environmental quality and management were

correlated with awareness of being in a protected natural area. The attitudes of visitors are not fixed, but vary depending on the context in which they are placed (Macnaghten, 1995). For example, Arnberger & Haider (2005) noted that images depicting people in the foreground were rated more negatively than those showing people in the distance.

Factors which provide context for the perceptions expressed by respondents (such as respondents' socio demographic characteristics, expectation of tranquillity, main activity and group type) were therefore incorporated into the study design.

The Potential for Recreational Conflict

There is potential for new recreational pressures to conflict with or displace more established forms of leisure (SWWCRA, 2009). Recreational conflict has been defined by Jacob & Schreyer (1980) as goal interference attributed to another's behaviour. However, Hammitt & Schneider (2000) view this definition as too restrictive and argue that goal interference which is not attributable to another's behaviour (such as poor weather) may exacerbate the perception of recreational conflict. Owens (1985) held that 'conflict is a cumulative process of social interaction which, once established, becomes an enduring psychological state' (p252). Although levels of recreational conflict may objectively be quite low, it may be quite important in certain visitor segments (Hammitt & Schneider, 2000).

Much of the literature focuses on conflicts between mechanised and non-mechanised recreational users and may not be directly relevant to this study. However, Adelman *et al.* (1986), Cessford (2003), Jackson & Wong (1982) and Ramthun (1995) identify an asymmetry in perception of recreational conflict between different user groups. It appears that those engaged in active or mechanised pastimes often do not recognise the conflict reported by groups seeking quiet enjoyment of an area, or they do not comprehend the magnitude of the negative perceptions reported. This is supported by Arnberger & Haider (2005), who reported that negative perceptions of groups could be compounded by perceptions of the user type or activity involved. However, Cessford (2003)

detected a lower level of perceived recreational conflict amongst individuals who had actually encountered other types of recreational user compared to those who merely anticipated encounters.

Jacob & Schreyer (1980) identified four factors which contribute towards recreational conflict. These are:

- Activity style – the behaviours associated with a recreational activity and the personal meanings attached to them.
- Resource specificity – the significance attached to a particular recreational resource.
- Mode of experience – the varying expectations of how the environment should be experienced.
- Tolerance for lifestyle diversity – variation in the degree to which recreational users accept or reject lifestyles dissimilar to their own.

Ramthun (1995) stresses the importance of the degree of tolerance / sensitivity respondents demonstrate to other user types in the formation of perceptions of recreational conflict.

Manning *et al.* (1996) note that too much or inappropriate recreational use can substantially reduce the quality of the visitor experience, resulting in conflicts between incompatible uses or spatial, temporal or even total visitor displacement. This recreational displacement can be seen as a coping mechanism where recreational conflict occurs (Hammit & Schneider, 2000) and may not be reflected in data on visitor numbers to an area, as total visitor numbers may increase, but representation amongst different visitor segments may alter (Arnberger & Haider, 2005). Reported levels of satisfaction will not necessarily, therefore, alter over time where visitor displacement is occurring (Shackley, 1996). Hammit & Schneider (2000) draw parallels between recreational conflict and stress response literature. It is likely that those visitors seeking solitude and tranquillity (and therefore likely to be intolerant of activity groups) will avoid the busiest periods, choosing either quieter times of day, or off-peak season to visit sites. Consequently, diurnal and seasonal factors are important in leisure research (Long, 2007).

Bell *et al.* (2001) discuss the concept of territorial behaviour and argue that this can be a vehicle for expressing identity, or can be associated with valuation or attachment regarding a space. According to Moore & Graefe (1994), such place attachments are central to substitution and displacement processes and have two dimensions; place *dependence* (reflecting the importance of a place for facilitating the visitor's activity) and place *identity* (reflecting an individual's valuing of a setting for more symbolic or emotional reasons). They assert that socio-demographics, length of association with a site and distance between an individual's home and the recreation setting are important factors in forming place attachment.

Factors identified above as relevant in the formation of recreational conflict (such as place attachment, activity style, resource specificity and prior knowledge of the sport) and in recreationists' responses to it (such as temporal or spatial displacement) were incorporated into the study design.

The National Park and Natural Area Management

The Pembrokeshire Coast National Park is Britain's only coastal national park. The area is highly protected for its landscape character, lies on a Heritage Coast and is partly within a Marine Special Area of Conservation. There are many Sites of Special Scientific Interest in the study area, designated for geological interest, coastal habitats and the presence of rare species.

The lack of development along the coastline of Pembrokeshire (compared to other UK tourist destinations) is thought likely to be increasingly important in maintaining visitor spending in the future (Pembrokeshire County Council [PCC]/PCNPA, 2006). When asked what they would like to see improved in Pembrokeshire, 58% of respondents to a 2008 survey said 'nothing' or 'keep it as it is' (QA Research, 2008). 91% of respondents to a 2004 survey said that the beaches and coast were the main reason for their trip to Pembrokeshire (PCC, 2006). In a 1994 survey of visitors to the National Park, 93% of respondents regarded 'peace and quiet' as significant to their experience (PCNPA, 2003; PCNPA, 2004). Reported levels of satisfaction with recreational

provision along the Pembrokeshire Coast Path are amongst the highest for any National Trail in the UK (PCNPA, 2008).

Tranquillity is one of the special features of the park which the PCNPA is required to protect (PCNPA, 2008). Noisy sports, overcrowding and other activities likely to degrade perceived tranquillity, along with managing conflicts between users with differing expectations, have been identified as challenges for the Authority (PCNPA, 2008). The PCNPA notes that coasteering, whilst having many attributes which the Authority would promote (inherently non-polluting, health promoting and based on active enjoyment of the special qualities of the Park), has the potential to cause adverse impacts (PCNPA, 2008). Manning *et al.* (1996) note that the dual purpose of many natural area managers in protecting environmental quality and promoting outdoor recreation opportunities often conflict. Where recreational pressures conflict irreconcilably with protecting the special qualities of the Park, priority is given to conservation goals (PCNPA, 2008).

The difficulties facing the PCNPA in managing the Park to maintain tranquillity are not, however, straightforward. Tranquillity is a construct of the cognitive processes of the individual (Pheasant *et al.*, 2010; Suckall *et al.*, 2009) and depends partly on the expectations of individuals (PCNPA, 2008). Pheasant *et al.* (2010) state that the presence of others can detract from tranquillity, a view reinforced in the National Park Management Plan (PCNPA, 2008), which asserts that intrusive noise from recreational activity is particularly likely to affect impressions of remoteness and tranquillity. The Coastal Tourism Strategy for Wales (WAG, 2008), whilst targeting coastal adventure sports as a growth market (p15), acknowledges that there is potential for adventure activities to spoil the tranquillity of the environment that many visitors are seeking (p11). However, Suckall *et al.* (2009) argue that promoting natural areas as places to walk and find deeper meaning is to perpetuate an assumption that all segments of society have the same objectives from recreation time, and that these objectives can be met by providing tranquil spaces for those with a 'romantic gaze'. It is not simply a case of fewer people is better. Some visitors to natural areas may find the presence of others reassuring, possibly indicating that they

are in 'the right place' (Urry, 1990) or may seek stimulation through social contact (Arnberger & Haider, 2005), whilst others may find natural areas (with few facilities) uninteresting (Suckall *et al.*, 2009). The Welsh Assembly Government asserts that a balance needs to be struck between tranquil areas and those supporting a large number of visitors and a range of activities (WAG, 2008). The PCNPA seek to provide a spectrum of recreational opportunities by providing some areas which are easy to access and enjoy, whilst others remain more challenging and wild (PCNPA, 2008).

Bell *et al.* (2001) conceptualise crowding as a psychological state characterised by stress. Hence, there is a distinction between the *physical* carrying capacity of a site and the *perceptual* carrying capacity, which is concerned with the subjective quality of the visitor experience and based only in part on the density of people in an area (Urry, 1990). The Welsh Assembly Government (2008) recommends that a programme of work is developed to evaluate the ecological and social carrying capacity of different coastal areas. However, Owens (1985) notes that the concept of carrying capacity led to a view that conflict was an inevitable result of crowding, ignoring the complex cognitive processes involved in the perception of both crowding and conflict. Newsome *et al.* (2002) state that the concept of carrying capacity for visitor management is now viewed as reductionistic and naïve. They suggest that the question should not be 'how much use is too much?', but rather 'what are the desired conditions?' or 'how much change is acceptable?' (p155). This approach is known as the Limits of Acceptable Change.

Manning *et al.* (1996) recognise four basic approaches to managing recreation in natural areas:

1. Increase supply of natural areas to meet demand.
2. Limit recreational use through access restrictions.
3. Modify the recreational use to limit impacts on the environmental resource.
4. Modify the environmental resource to enhance resilience to recreational pressures.

Hammitt & Schneider (2000) note that management approaches to recreational conflict have traditionally been through separating recreationists spatially or temporally, but recently the values and attitudes of groups have come under scrutiny. Manning *et al.* (1996) assert that managers often lack adequate information on the nature and causes of recreation related problems to take effective action. It is only in understanding the spatial distribution of recreational conflicts and the drivers behind them, that land managers can develop appropriate techniques for optimising the overall visitor experience in an area. Hammitt & Schneider (2000) identify the first stage of conflict resolution as identifying the issues, whilst Owens (1985) asserts that managers need to anticipate recreational conflict, rather than merely reacting to it.

The PCNPA proactively engages with stakeholders through involvement with groups such as the Pembrokeshire Coastal Forum (PCF), which brings together a diverse group of stakeholders with an interest in the Pembrokeshire coast to promote a sustainable approach to the planning, management, use and development of the coastal zone (PCF, 2011). Low key management and voluntary codes of practice are the preferred management options in the Park (PCNPA, 2008). Voluntary codes of conduct for outdoor activity providers in Pembrokeshire have been drawn up by the Pembrokeshire Outdoor Charter Group (POGC, 2005a), which brings together stakeholders in outdoor recreation in the area (such as activity providers, the PCNPA and the National Trust) to promote responsible and sustainable development of outdoor recreation (POGC, 2005b). Private, ad-hoc groups may not, however, be aware of or conform to these standards. Codes of conduct for some specific recreational activities in the coastal zone in Pembrokeshire are already in operation. For example the Marine Code (POGC, undated a & b), Climbing Access Agreements for Pembrokeshire (PCNPA, 2009), the Personal Watercraft Guidelines (PCC/PCNPA, undated) and the Kite-sports Guidelines (POGC, undated, c).

Visitor Profile in Pembrokeshire

Tourism is a dominant factor in the Pembrokeshire economy (PCC/PCNPA, 2006; PCNPA, 2003); a situation likely to continue given that the County is heavily promoted as a tourist destination (eg the Guardian, 2010; National Geographic, 2011; PCC, 2011). However, there is a marked seasonality in visitor numbers to the County, which may reflect the importance of family holidays, which are restricted to school holidays (PCNPA, 2003; WAG, 2008). This results in over-use of the recreational resource at some times and spare capacity at others (PCNPA, 2008). Seasonality of employment is of concern to local residents (PCNPA, 2004). The proportion of repeat visitors, group structure and types of recreational activity also show a marked seasonality (PCNPA, 2008; QA Research, 2008).

The area attracts visitors from a wide socio-demographic base, although there have been recent increases in the proportion of visitors in the 24-34 year old age group (QA Research, 2008). This may be linked to recent increases in participation in adventure activities. Visitors to the Welsh coast typically participate in walking (69%), adventure sports (8%) and wildlife watching (5%) (WAG, 2008). Participation in all three of these activities in Pembrokeshire increased significantly between 2004 and 2008 (QA Research, 2008).

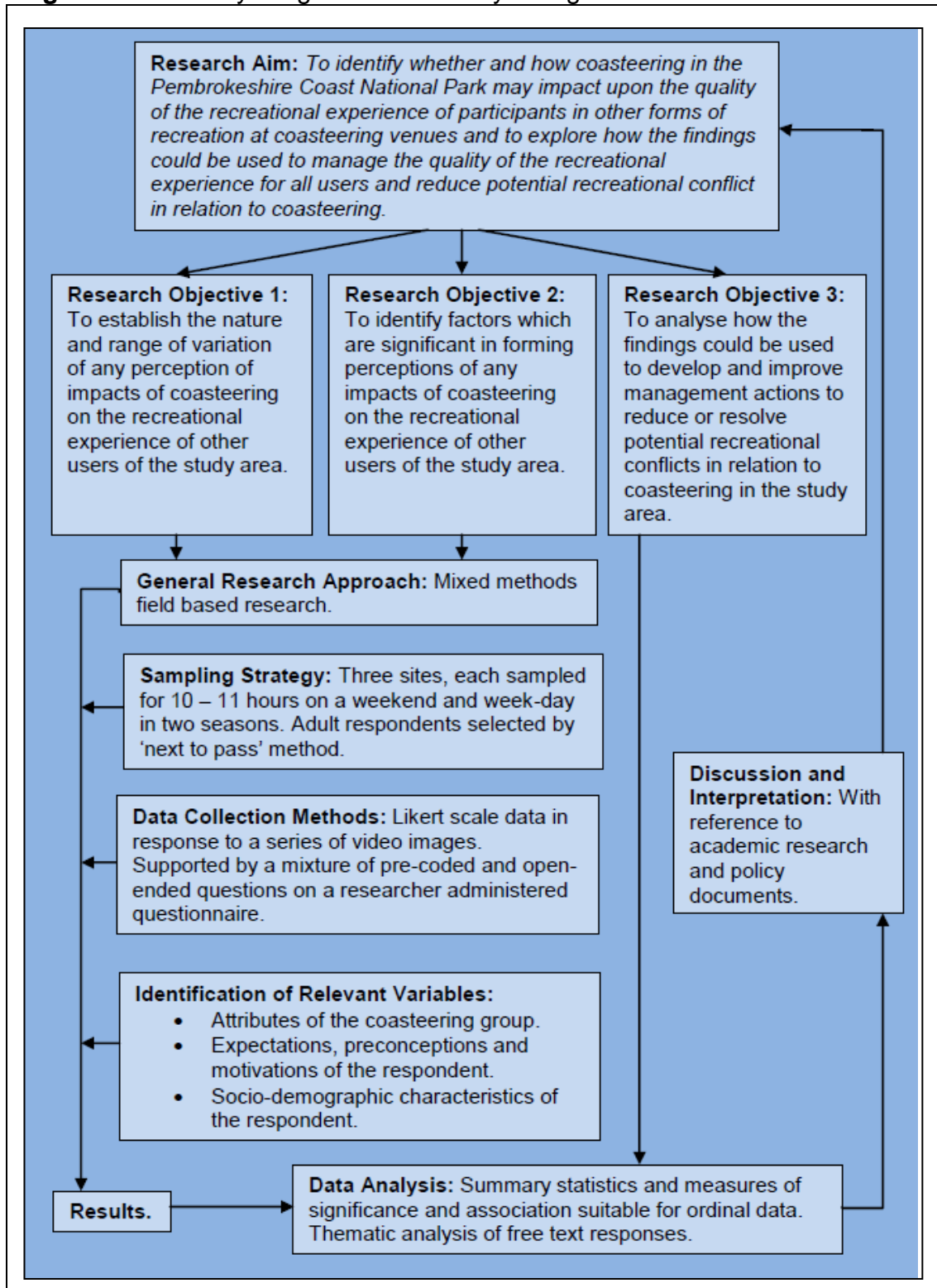
Summary of the Literature Review

Coasteering is becoming popular in Pembrokeshire, however, little is known about the potential physical or social impacts of the sport. There is potential for recreational conflict with other users of the National Park. Perceptions of recreational conflict are based on multi-dimensional assessments of the user types involved and may also vary with certain characteristics of the respondent. The current approach of the PCNPA is through stakeholder involvement and consensus building, but with priority given to protecting the special features of the Park where these conflict with promoting their active enjoyment.

Methodology

A summary of the methods used is presented in **Figure 2**, below to aid understanding of the following detailed discussion of the study design.

Figure 2. Summary Diagram of the Study Design.



General Research Approach

Veal (2006) asserts that qualitative methods (such as focus groups and case studies) are ideal for exploring attitudes and perceptions on an individual basis, whilst questionnaire surveys (often quantitative or mixed methods) provide a means to record the occurrence of attitudes and perceptions among the population as a whole. A strong feature of qualitative methods is in understanding (rather than recording) subjective aspects of the human experience (Silverman, 2010). Small amounts of qualitative data can also be useful to supplement and illustrate quantitative results (Robson, 1993). Using such a mixed methods approach can test reliability and generality of the findings, reducing inappropriate certainty (Long, 2007; Mitra & Lankford, 1999; Robson, 1993). Consequently, a mixed methods research approach was employed incorporating the collection of both quantitative and qualitative data. The quantitative data were used to investigate overall perceptions of the impact of coasteering on respondents' recreational experience and the significance of the independent variables in forming those perceptions (Research Objectives 1 & 2). The qualitative data were used to triangulate the quantitative results and to provide greater insight into the formation of such a subjective concept as the perception of any impacts of encounters with coasteerers upon respondent's recreational experience, in order to aid interpretation of the results and inform the development of recommendations (Research Objective 3).

Much laboratory based research identifies the issues as they relate to, for example, the student population (through convenience sampling at universities), but may not be reliable when applied to real situations (eg. Hammitt, 1982; Hammitt *et al.*, 2001; Herzog *et al.*, 2003). Conducting experimental research in the field increases external validity, but the level of control required over variables may be difficult to achieve (Bell *et al.*, 2001). Field research methods also ensure that the time lag between experience and reporting is kept to a minimum (Tourism and Recreation Research Unit, 1983).

The research topic deals with perceptions amongst users of an area, which are formed by an individual's reaction to a complex set of stimuli and can change according to the stimuli applied (Pheasant *et al.*, 2010) and the context of the experience (Macnaghten, 1995). Attachment to a particular site may also be important in forming perceptions (Moore & Graefe, 1994). Therefore, field based research methods were chosen over laboratory based simulations to capture perceptions at or near the point of experience, whilst subjects are in the recreational 'mode' they use at a particular site. This approach, combined with a suitable sampling strategy (see below), also allowed the full range of recreational users of the sites to be included in the survey. In order to investigate potential impacts on the recreational experience of those engaged in other forms of recreation in the area, subjects were selected on-site from those engaged in any form of recreation other than coasteering (although this did not preclude those who engaged in coasteering at other times).

Respondents were all aged 18 years or more. The purpose of the survey was explained to each respondent and their verbal consent to take part was obtained before the interview commenced. No information was collected which could subsequently identify the respondent, although each case was given a unique, sequential reference number to assist in later analysis.

Sampling Strategy

Two strategies were employed to allow the likely range of visitor types to be sampled during the study (even if recreational displacement had occurred), based on the assumption that visitors would seek settings which they perceived as appropriate to their recreational needs. These included spatial and temporal factors as discussed below.

Spatial Factors

Spatial factors were investigated by including three sites in the study, where coasteering was known to occur. All were in areas of high tranquillity (PCNPA, 2008), but where expectation of encounters with coasteerers may vary (Recreational Audit Working Group [RAWG], 2010). The assumption was made that visitors seeking solitude and tranquillity would choose less developed

recreational venues than those for whom the presence of others made a positive contribution to their recreational experience. **Figures 3 & 4** show the three sites and their location. The sites chosen were:

- **Site 1: Abereddy** - a well established coasteering venue with some tourist facilities (on site car-park, toilets, ice cream van). Coasteering usage 51-100 participants daily in the summer, frequent to infrequent at other times (RAWG, 2010).
- **Site 2: Aberbach / Abermawr** - relatively unexploited, with no tourist facilities (roadside car-parking ¼ a mile away). Coasteering usage 0-25 participants per day, frequently in summer - infrequent at other times (RAWG, 2010).
- **Site 3: Ceibwr Bay** – unexploited. Coasteering usage 0-25 participants per day, infrequently in summer (RAWG, 2010).

Figure 3. Site Location Map.



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Figure 4. Images of the Three Study Sites.



The survey point at each site was located such that the entrances to parking areas and the coast path could be seen. Adult respondents were selected on a next to pass basis to reduce potential researcher bias in subject selection

(Arnberger & Haider, 2005; Long, 2007; Lynn & Brown, 2003; Veal, 2006), regardless of the route by which they entered the site. All visitors arriving during an interview were excluded from the survey. Once an interview was complete and the researcher was fully prepared for another interview, the next person to arrive was approached. Consequently, those arriving during quiet periods were highly likely to be selected, whereas those arriving in busy periods may well have been overlooked. This can lead to under-representation of those arriving during particularly busy periods (Long, 2007; Veal, 2006). To detect and correct any such bias due to sampling error, a note was kept of the number of potential respondents arriving each hour and the number actually interviewed to allow a weighting to be applied if those arriving at busy times were thought to be under-represented (Veal, 2006). Where people arrived as part of a group, the first to enter the site (or exit the vehicle if arriving by car or bus) was approached to maintain the random selection of respondents.

Temporal Factors

Activity providers known to run coasteering sessions at the study sites (Jones, pers. Comm. 16/07/2010) were contacted to establish the times that coasteering groups were likely to arrive at their venues in the morning and leave in the afternoon. It was felt that before 09:30 and after 17:00 it would be unlikely that coasteering groups would be on site. The survey commenced 1 hour before the usual arrival time for coasteering groups (08:30) and continued for 2 ½ hours after the last groups normally left (19:30) in the summer in order to include site users seeking to avoid busy periods. The survey was discontinued at 18:30 in the shoulder season due to poor light introducing safety concerns for the researcher and ethical concerns over approaching lone respondents at remote locations in the dark. It should be noted here that some activity providers are beginning to offer 'sunset sessions' in the summer, which typically finish at 20:00hrs, although these sessions are rare at present.

All the activity providers contacted run coasteering sessions throughout the year, although there is a marked seasonality in the numbers of participants. The survey was carried out in the height of the high season (August) during school

holidays and again during the shoulder season (October [WAG, 2008]), avoiding school holidays. Each site was surveyed on a week-day and a week-end in both seasons. In this way, it is hoped that the full range of visitor perceptions was represented, even if temporal displacement had occurred.

Data Collection Methods

Researcher administered questionnaires were utilised in this study, as the researcher can gauge whether the respondent has understood the question (Tourism & Recreation Research Unit, 1983) and respondents are more likely to voice honest opinions orally than in writing (Bell *et al.*, 2001). A mixture of pre-coded and open-ended questions were employed to record perceptions and other relevant variables. This enabled rapid collection of information from site users at or near the point of experience whilst they were in their recreational mindset (Tourism & Recreation Research Unit, 1983), whilst giving the researcher the opportunity to probe interesting or strongly held views and record the salient points as text to triangulate the more quantitative questionnaire responses.

As far as possible, free text responses were recorded by the researcher as spoken. Where these responses included potentially offensive language or reflected potentially offensive attitudes, they were recorded faithfully, but an element of judgement has been applied to their reproduction here. Some detail may be lost in transcription of comments as the tone of speech is often important in judging whether a comment was intended to be ironic or sarcastic (Long, 2007; Robson, 1993). If tone of voice or body language appeared to suggest to the researcher that a statement was intended not to be taken literally, this was noted alongside the comment to aid later analysis of the written records.

Likert attitude scales are commonly used to assess subjective responses to stimuli such as perceptions of environmental quality or crowding (eg. Arnberger & Haider, 2005; Chhetri *et al.*, 2004; Devesa *et al.*, 2010; Hammitt *et al.*, 2001; Herzog *et al.*, 2003; Lynn & Brown, 2003; Petrosillo, *et al.*, 2007). Respondents rate how they 'feel' in response to a stimulus. Responses are given on a pre-

coded scale ranging from some negative value to a positive one. Multiple responses are sought, each probing a different aspect of the research question. This is because multi faceted issues cannot be addressed by a single question (Long, 2007). The resultant scores are then summed to provide an indication of the respondent's overall position in relation to the item under investigation (Bernstein, 2005; Long, 2007).

The number of categories to include in the scale is the subject of some debate. Enough must be provided to allow the strength of the respondents feelings to be expressed but without over complicating the scale, which risks confusing the respondent. Bernstein (2005) suggests that a seven point scale (+/- 2) is usually optimal. Consideration should also be given to the inclusion of a neutral category. Some respondents may be genuinely indifferent to a stimulus, whereas others may use such a category through a lack of engagement with the research subject (Long, 2007; Robson, 1993). Robson (1993) suggests that the inclusion of a neutral category is usually desirable, whereas Bernstein (2005) favours its omission in order to force respondents to take either a positive or a negative position.

Respondents were shown a series of images of coasteerers and asked for each image *'How would an encounter with the group depicted affect the quality of your own recreational experience?'* A five point scale was devised, ranging from 1 (very negatively) through to 5 (very positively). The inclusion of two positive and two negative categories gave respondents the chance to express the strength of their perceptions. It was felt that some people may be genuinely unaffected by such encounters, hence the inclusion of a neutral (not at all) category. The inclusion of free text responses to each image made it possible to triangulate neutral Likert responses with comments such as *'doesn't really bother me'*. Responses were later re-coded from -2 to +2 to enable analysis to reflect perceptions as negative, neutral or positive values. Likert items were not tested for their discriminative power prior to inclusion in the final scale (as suggested by Robson, 1993) because the *a priori* items selected (different behaviours, group sizes & frequencies – see below) were felt to accurately represent the likely range of encounters in the field. Likert items with a high

discriminative power may, by definition, be those representing the extremes of likely encounters (eg. very large or noisy groups) making the results less generalisable to the situation 'on the ground'.

Many studies have sought to represent aspects of the environment using photographs (eg. Arnberger & Haider, 2005; Herzog & Barnes, 1999; Herzog & Bosley, 1992; Herzog *et al.*, 2003; Lynn & Brown, 2003). However, there are problems associated with representing a recreational setting or activity using still photography. Chhetri *et al.* (2004) argued that sound and movement were important determinants of visitor experience. Assessments made using one stimulus can be modified by introducing another (Pheasant *et al.*, 2010). Providing a stimulus representative of real encounters with coastering groups is a central theme of this research. Therefore, this study utilised video footage; including both sound and movement to provide contextual information for respondents assessing the images (Pheasant *et al.*, 2010).

The images were collected from the coast path at a distance representative of a typical encounter without the use of magnifying lenses using a Sony Handycam DCR-DVD camera. Recording equipment was placed on a tripod at approximately 1.6m above the ground to replicate the view of an adult observer, standing. It was found that a clip length of 18 seconds was necessary to display the desired behaviour in the longest clip. Consequently, all images were presented as 18 second un-edited video clips. Video footage was captured at a site which did not form part of the study and care was taken not to include easily recognised landscape features which could identify the filming location to respondents. In this way it was hoped that respondents would not be influenced by any sense of attachment to the filming location, making responses more likely to apply to the interview site. The full video clips are presented for reference on the attached CD labelled **Appendix 1**.

The images were displayed on a Toshiba A300 laptop computer, with a 330mm X 210mm screen, at eye level. The rear cargo section of a VW Transporter van with a lift-up door was used provide a power source and shelter for the equipment. All parties were in public view at all times and respondents were neither expected nor permitted to enter the vehicle, avoiding concerns over researcher or respondent safety. The vehicle was situated in a safe and visible location near the main entrance to each study site.

Having rated the video images, respondent's perceptions were probed further with an open ended question aimed at establishing which factors were most important in shaping the expressed perceptions.

In order to ensure that responses elicited were the respondents perceptions of the images presented to them and not the product of discussion with the researcher, these responses were recorded early in the interview. Questions aimed at probing perceptions of potentially more contentious issues, such as unsupervised groups and the sport of tombstoning, occurred later using a similar mixture of pre-coded and open ended questions. In order to avoid leading respondents, the researcher followed a standard script when approaching potential respondents and explaining the purpose and methods of the research. All interviews were carried out by the author and consequently there is no scope for inter-researcher variation. The questionnaire pro-forma and researcher script are presented in **Appendix 2**.

Two sequences of the video images were prepared and alternated between respondents in order to allow detection of any order effects (Herzog & Bosley, 1992; Herzog *et al.*, 2003). The order in which each clip appeared in the sequences was not randomised, but constructed such that images intended to represent different levels of the same variable did not occur next to each other. In this way it was hoped that the responses elicited were in respect of the individual image presented, and not relative to the previous image.

Another potential source of error in site based surveys is a bias towards a self-selecting group who wish to participate in the survey (possibly those with a strongly held view). This is particularly relevant (assuming random sampling) if the respondent refusal rate is high (Long, 2007; Robson, 1993). It is good practice to note and report the refusal rate for any survey of this type (Long, 2007). The relative importance of the refusal rate depends upon whether those refusing to participate are likely to differ in some respect from those agreeing to be interviewed, For example, Hebert *et al.* (1996) found that a refusal rate of 22.2% did not significantly affect their results as non-respondents were similar to respondents in the key variables under investigation.

Identification of Relevant Variables

The literature review identified many variables which may shape perceptions of recreational activity groups amongst other recreationists. This was augmented by informal interviews with activity providers and passers-by during early observation of coasteering groups to inform the study design. However, it was not possible to isolate some of these variables when studying real coasteering groups in the field. (eg. socio-demographic characteristics of the coasteering group). Variables identified as relevant for study are in bold type in the summary below.

Attributes of the Coasteering Group

Eight activity providers known to run coasteering sessions in the study area (Jones, pers. Comm. 16/07/2010) were contacted to establish representative **group sizes** to depict. When asked the standard ratio of clients to guides, answers ranged between 5:1 and 8:1 with a mean of 7:1 (rounded to the nearest whole unit). A group size of 8 was therefore chosen to represent the optimum size of a small group. However, groups are often 'doubled up' if there is demand, and other group sizes occur where large parties book in and wish to stay together. When asked what a typical group size would be, answers ranged between 10:2 (12) and 12:2 (14). A group size of 14 was therefore chosen to represent a typical group, providing maximum contrast with the smaller group defined above. Most activity providers contacted indicated that beyond 16:2 (18) the group would be split and either seek alternative venues, or stagger the

arrival time. The issue then becomes one of frequency of encounter, not group size (see below). Images of groups of 8 and 14 exhibiting similar behaviours were included in the study design.

Two categories of **frequency of encounter** were examined to investigate how this variable may affect expressed perception. The frequency categories selected were deliberately broad as the method requires respondents to imagine the higher frequency category and it would be unreasonable to expect respondents to envisage tightly defined frequencies. Defining frequency of encounter is further complicated due to temporal clustering. Sessions usually run for ½ a day and consequently, there is some temporal clustering as morning groups arrive and depart, then a brief lull before afternoon sessions commence. The categories were defined as; '*a single encounter with the group depicted*' and '*frequent encounters with similar groups*'. Respondents were asked to rate each image based on both frequencies of encounter.

Arnberger & Haider (2005) identified the **context of encounters** as significant in the formation of perceptions amongst respondents. Encounters with coasteering groups generally take two forms. When groups are in transit between sites they may pass at close quarters (in a similar way to any walking party). Conversely, when actively coasteering, the group may create more noise or visual disturbance. However, since this part of the activity is conducted in the intertidal zone, encounters with groups in this mode are usually at a distance.

Informal interviews with non-participants have also identified the behaviour of a group and whether they 'fit in' with the environment as relevant to this study. Initial observation of coasteering groups identified three main active behaviours. These were jumping from height, traversing and swimming along the coast and observing natural features. Images of coasteering groups displaying these three active behaviours and groups walking between venues on the coast path (filmed at representative distances) were presented to respondents in order to represent the likely range of types of encounter.

Informal interviews with non-participants have identified the **level of supervision** of groups and safety concerns about inexperienced or ill equipped groups as relevant variables for study. Furthermore, activity providers expressed the opinion that any negative perceptions of coasteering could be due to the behaviour of unsupervised groups, or confusion with groups engaged in **tombstoning**. The images presented to respondents were of well equipped groups with professional guides. Perceptions of unsupervised groups and tombstoning were explored by a set of questions at the end of the survey in order to avoid influencing responses to earlier questions about coasteering.

Expectations, Preconceptions and Motivations of the Respondent

Petrosillo *et al.* (2007) demonstrated that perceptions of environmental management in an area were correlated with **awareness of conservation designations** in that area. Respondents were asked if they thought the area surrounding the interview site had any legal protection as a nature conservation or heritage site. Their responses were assigned to pre-coded categories as set out in **Appendix 3**.

The literature review identified several factors which may influence the **respondent's potential to perceive recreational conflict**. These were assessed using questions on the main activity of the respondent, identification of the respondent with recreational groups (tribalism), attachment to the site, previous encounters with coasteering groups or prior participation in the activity and valued site attributes (Arnberger & Haider, 2005; Cessford, 2003; Jackson & Wong, 1982; Jacob & Schreyer, 1980; Moore & Graefe, 1994). The presence or absence of coasteering groups on-site during interviews was also noted, in case this additional stimulus affected expressed perceptions.

Respondent's **expectation of tranquillity** may be significant in influencing their perception of encounters with recreational groups in natural areas (Arnberger & Haider, 2005; Buchanan, 1983; Hammitt, 1982; Shackley, 1996). This was explored in the study by a set of *a priori* variables designed to infer respondent's expectation of tranquillity. These were distance walked from access point, weekday / weekend, season, factors affecting choice of season, time of arrival,

factors affecting choice of time of arrival, choice of site, valued site attributes and the main activity of the respondent.

Socio-demographic Characteristics of the Respondent

Respondent's socio-demographic characteristics may be relevant in the formation of perceptions of tranquillity, tolerance for recreational groups and perception of recreational conflict (Lynn & Brown, 2003; Moore & Graefe, 1994). Basic socio-demographic information (Long, 2007; Veal, 2006) was collected from respondents in order to establish any association between socio-demographic factors and expressed perception. This included:

- Age
- Gender
- Economic status
- Education
- Place of residence
- Respondent's group structure

Data Analysis Methods

The contextual information provided by respondents was evaluated and assigned to pre-coded groups describing motivations, expectations, place attachment and socio-demographics to allow quantitative analysis. The coding scheme is reproduced in **Appendix 3**.

Free text responses were entered onto the working database alongside the codes to enable checking of the coded entries and illustration of the results with examples.

Single Likert responses to stimuli are ordinal data (deVaus, 2002a). However, some authors assert that when the scores across a case are summed to provide an overall response, the data may be treated as interval and subjected to parametric tests (Rasmussen, 1989). This approach has been criticised by some statisticians (Göb *et al.*, 2007; Long, 2007). Göb *et al.* (2007) discuss the

analysis of Likert scales and, whilst acknowledging that interval methods are sufficiently successful, recommend that ordinal measures be employed.

To meet Research Objective 1, responses to all images of coasters at both frequencies were summed for each case to provide an overview of perception of any impacts of coastering on the respondent's recreational experience. Summary statistics suitable for ordinal data were calculated to indicate the range and distribution of scores about the median (see **Table 1 & Figure 5**).

In order to meet Research Objective 2, relationships between expressed perception and the variables studied were examined as follows:

- **Categorical variables:** Differences in the distribution of summed Likert responses between categories of the independent variable were tested using the Mann-Whitney U Test (where only two categories existed [Suckall *et al.*, 2009; Long, 2007]) or, where three or more categories existed, Kruskal-Wallis (Hartman, 2000). Where Kruskal-Wallis indicated significant differences, each category was tested pair-wise with each other category using Mann-Whitney to determine which categories differed from each other. Where variables showed significant differences in Likert response across categories, the median and frequency distribution of scores were calculated for each category of the independent variable.
- **Ordinal Variables:** Where categories were naturally ordered, they were examined as above, but in addition, Spearman's rho was used to test for co-variance between the summed Likert response and the independent variable (de Vaus, 2002b).
- **Scale variables:** Co-variance between summed Likert response and the independent variable was assessed using Pearson's R Correlation Coefficient (de Vaus, 2002b; Keown & Hakstian, 1973).

Where ordinal or categorical variables included categories with only a small number of cases, categories were aggregated either by joining adjacent groups

(substantive approach), or using a distributional approach such that resultant categories were as close to the quartiles for frequency of cases as possible without splitting categories (de Vaus, 2002b). The results for significant variables are presented visually in **Figures 7 - 19**. Frequency tables and further summary statistics are presented in **Appendix 4**.

Factor analysis has been applied to summated Likert data to establish sets of co-varying variables which account for the most significant observed variation in responses (Hammit *et al.*, 2001; Herzog *et al.*, 2003). It is assumed that where variables co-vary, but the relationship is not causal, they may represent components of an underlying theme, or factor (de Vaus, 2002b). De Vaus (2002b) suggests using this method for data reduction by applying the factor scores for each case as an independent variable instead of the original set of variables. Several of the questionnaire items in this study were designed to probe underlying themes such as potential for recreational conflict or respondent's expectation of tranquillity. Factor analysis was applied to these variables to determine whether any co-variance could be attributed to an underlying theme. Non-discriminating variables (those with little potential to discriminate between cases) were omitted from the analysis as they can skew the results (de Vaus, 2002b). The results are presented in **Table 10**.

In order to investigate perceptions of tombstoning and how they may differ from perceptions of coasteering, Likert responses to questions on tombstoning were treated in the same way as those for coasteering to provide summary statistics. However, these figures are the sum of only two Likert items and are therefore not directly comparable with those for coasteering (the sum of 10 Likert items). To provide a comparison score, the median coasteering Likert response for each case was subtracted from the median tombstoning Likert response for each case. The resulting figure gives both the direction and extent of any differences in perception of impacts of the two sports. The results are presented in **Table 7 & Figure 16**.

Perception of unsupervised groups was recorded as either more positive than, equal to, or more negative than perceptions of the groups depicted in the images shown to respondents. The frequency of response in each of these categories is presented in **Table 4 & Figure 12**.

Free text responses to questions designed to triangulate the quantitative data were entered onto the database as they appeared on the completed questionnaires. Robson (1993) recommends the use of content analysis to evaluate qualitative interview or questionnaire data and in coding responses to open ended questions in surveys. The occurrence of key words or phrases is noted and assigned to pre-coded categories based upon, for example recurring themes and whether the context is positive or negative in its treatment of that theme (Long, 2007). Robson (1993) stresses the importance of developing exhaustive and mutually exclusive categories for analysis based on themes identified in the literature. These are then tested to assess the reliability of the coding system before analysis begins. Conversely, Long (2007) favours allowing the categories to emerge from themes identified during familiarisation with the data. He suggests that it does not matter if the edges of categories are not precisely defined, allowing an element of judgement on the part of the researcher, especially where any conclusions can be triangulated by other means. Using individual words as recording units can be problematic since many words have multiple meanings. Robson (1993) suggests that it is common to use phrases (semantic units), or themes as the recording unit to more accurately convey meaning.

It was felt that a simple count of the number of times a particular key word occurs might risk missing the respondent's true meaning through removing context. Consequently, a more inductive approach was adopted whereby the text was trawled manually to identify recurring themes in the meaning of a comment using whole phrases as the recording unit. A number of *a priori* categories were established to examine aspects of coastering identified as potentially relevant during the literature review. These were coastering behaviours and group attributes (as illustrated by the five video images), level of supervision of the group and perception of tombstoning. Within these

categories, comments with similar meanings were grouped together (eg. 'it's a free country / they've as much right to be here as me / live and let live' formed one group of broadly neutral comments). If a comment was identified that appeared distinct from any previously occurring themes, a new category was created for it and any subsequent similar responses grouped with it. The results are presented in **Tables 2, 5, 8 & 9**.

Results and Discussion

Since the research objectives are to make inferences about the populations of the study sites, descriptive statistics and graphical representations of distribution are provided to aid interpretation only for variables showing significant variation across categories, but are omitted for variables failing to give significant results for inferential analyses. Further summary statistics and frequency tables for these variables are presented in **Appendix 4**. The full data set is reproduced for reference as a Microsoft Excel (2007) spreadsheet in **Appendix 5**.

Objective 1

To establish the nature and range of variation of any perception of impacts of coasteering on the recreational experience of other users of the study area.

Most recreational users of the study area interviewed (n=264) perceived that encounters with coasteerers would make a positive contribution to their recreational experience. When asked to rate how encounters with groups of coasteerers might affect the quality of their own recreational experience, 164 respondents (62.1%) gave responses which, when summed, were positive (see **Table 1 & Figure 5** for summary statistics). The average (median) response was 2.5 (possible range -20 to 20).

The qualitative results support these findings. Of the 1,128 statements recorded, 54.3% (n=613) were deemed positive, 5.0% (n=56) neutral and 40.7% (n=459) negative (see **Table 2**). Although the qualitative data include a lower proportion of neutral responses and a higher proportion of negative responses than the quantitative data, the rank order is the same. Proportional differences may, in part, be explained by under-representation of neutral comments due to the limitations of the study design (see discussion of the study design in light of the results).

There is much variation about the median score (range -16 to 20) with the bottom 25% of scores being at or below -1.75 and the top 25% being at or above 8.0. The frequency distribution suggests a degree of polarity in expressed perception, with a small increase in frequency of scores at either extreme of the range in an otherwise roughly normally distributed frequency distribution chart (see **Figure 5**). The potential for strongly held views at either extreme is supported by accompanying comments, such as:

'Uniformed, big, noisy group. Disturb[ing my] tranquillity' (Case 59).

'Would stop and watch. Impressive to see people kitted up well' (Case 62).

The results also highlight the potential for recreational conflict in relation to coasteering. 30.3% (n=80) of respondents perceived that encounters with coasteers would detract from the quality of their own recreational experience. The qualitative data support this finding, with 7% (n=32) of negative comments being directly associated with factors identified in the literature review as contributing to recreational conflict, such as competition for the environmental resource or coping mechanisms such as displacement. For example:

'Have to move out of the way' (Case 64).

'Would look for somewhere else if it were frequent' (Case 130).

The phenomenon of recreational conflict being at relatively low levels when measured objectively across the population, but very important amongst certain groups (as illustrated by the lower quartile of Likert responses and some of the accompanying comments) was identified by Hammitt & Schneider (2000) and may be associated with other themes identified in the literature review such as tolerance for lifestyle diversity (Jacob & Schreyer, 1980) or crowding tolerant / averse groups (Arnberger & Haider, 2005).

Table 1. Summary Statistics for Summed Likert Response to Perception of the Impact of Coasteering on the Recreational Experience of the Respondent.

Summary Statistics				
Median Response	2.5	Percentiles	25	-1.75
Range	36.0		50	2.5
Minimum	-16.0		75	8.0
Maximum	20.0			

Figure 5. Frequency Distribution for Summed Likert Response to Perception of the Impact of Coasteering on Respondent's Recreational Experience.

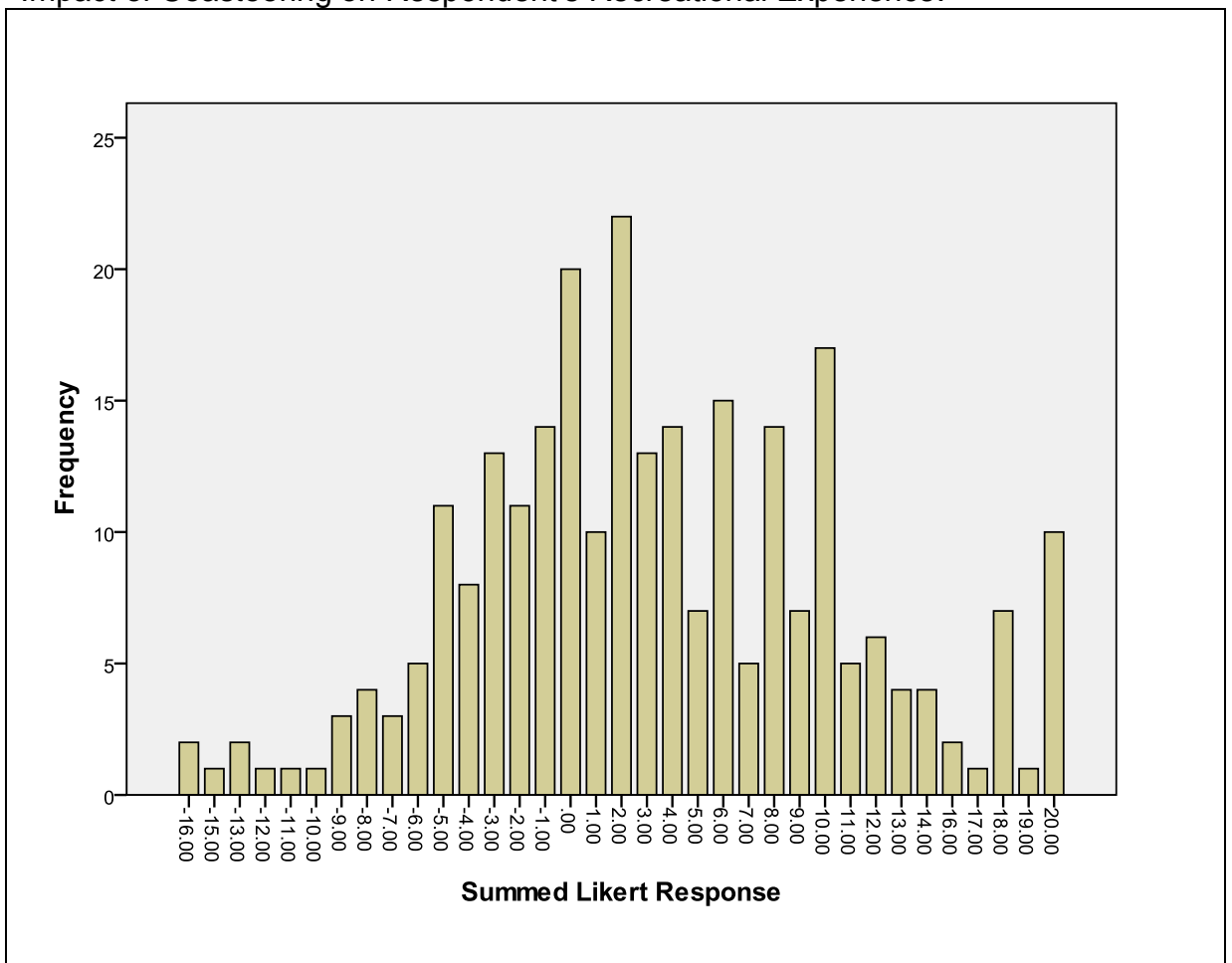


Table 2. Summary of Themes in Free Text Responses to Images of Coasteering – Number of Occurrences By Image Number.

Positive Comments					
Comment	Image 1	Image 2	Image 3	Image 4	Image 5
Add interest. Interesting. Interested in what they're up to. I'd watch for a while, novelty/ intrigued / curious / entertaining. 212 (34.6%)	7	63	61	6	75
Good to see (young) people active / engaged with the environment / not playing computer games / out & about / being constructive. Having an adventure. Doing something different. Exploring. Interacting with nature. 93 (15.2%)	16	31	14	20	13
Looks fun /exciting. I'd like to do it / I'm a bit envious / want to join in. 75 (12.2%)	1	5	31	2	36
Nice to see people enjoying themselves. Good to see. 59 (9.6%)	20	6	14	11	8
They're not on the path. At a distance / don't come face to face with them. Not in my way. Wouldn't notice them. 41 (6.7%)	0	22	5	0	14
Professional, well led group / well kitted out / orderly. They're quiet. 41 (6.7%)	4	7	8	16	6
They look nice / friendly / smiling / happy / helmets off. 26 (4.2%)	6	0	0	20 (of which, 14 noted helmets off)	0
Good to see the area being used / making use of natural resource. 14 (2.3%)	1	5	1	2	5
Good that they teach / learn about / respect the environment. Promotes respect for the environment. Educational. 8 (1.3%)	0	8	0	0	0
In awe of them / respect them / admire them / they're brave. 7 (1.1%)	0	1	3	0	3
No different to a group of walkers. 6 (1.0%)	2	0	0	4	0
I've done it / enjoy that sort of thing / like outdoor activities. 6 (1.0%)	0	2	2	1	1
Good for the economy / community. Brings people to the area. 6 (1.0%)	2	0	0	2	2

Table 2 Continued.

Promotes healthy approach to risk/danger. 5 (0.8%)	0	1	2	0	2
Positive for kids to see / good role models. 4 (0.7%)	1	0	1	1	1
Small / smaller group. 4 (0.7%)	0	0	0	4	0
Mixed race / gender group is positive 2 (0.3%)	0	0	0	2	0
Come here to watch them. 2 (0.3%)	0	1	0	0	1
Better than / I don't like jet skis. 1 (0.2%)	0	1	0	0	0
More positive now I've seen what they do. 1 (0.2%)	0	0	0	1	0
Total 613 (100%)	59 (9.6%)	153 (25.0%)	142 (23.2%)	92 (15.0%)	167 (27.2%)
Neutral Comments					
Comment	Image 1	Image 2	Image 3	Image 4	Image 5
Have a right to be there. Getting on with their own thing. Live & let live. Plenty of room for everyone. The park is for everyone. Would say hello / not affecting anyone else. 39 (68.4%)	11	4	2	15	7
They're not disturbing anything / doing any harm. 18 (31.6%)	3	6	3	3	3
Total 57 (100%)	14 (24.6%)	10 (17.5%)	5 (8.8%)	18 (31.6%)	10 (17.5%)
Negative Comments					
Comment	Image 1	Image 2	Image 3	Image 4	Image 5
Frequent groups a problem. If you're over-run with it. Would lose novelty if frequent. Would get annoying. Wouldn't want to see them every few minutes. 106 (23.1%)	30	11	30	22	13
Disrupting my tranquillity. I come here [at this time] for peace & quiet / isolation / avoid people / like being alone in nature. Invading my space. Noisy / nuisance / intrusion / rowdy / disturbance [to me]. 105 (22.9%)	30	6	38	26	5
Big group, size an issue. Lots of people. Group size inappropriate. 67 (14.5%)	41	6	4	13	3
Worried for their safety. Anxious. I might have to rescue them / call the emergency services / witness something horrible. Dangerous. Risk. 39 (8.5%)	0	2	9	0	28

Table 2 Continued.

Narrow path. I'd have to move over. They're in my way. Congestion. Too many people on the path. Groups on the path is negative. 37 (8.1%)	23	0	0	14	0
Prevents me doing my activity / competition for environmental resource. Changing use. Perceived ownership issues. Would go somewhere else / wouldn't come here if it were busy / I can walk away / find quieter spots. 32 (7.0%)	4	4	9	7	8
[might] Disturbs nature / wildlife / damages the environment. 23 (5%)	1	8	8	0	6
Uniformed group. Attire incongruous / inappropriate / intimidating. 9 (2.0%)	3	2	1	2	1
Dog-related concerns 8 (1.7%)	5	0	1	1	1
Might encourage others / my children. 7 (1.5%)	0	1	3	0	3
Didn't smile / say hello / make eye contact. 6 (1.3%)	3	0	0	3	0
Concerns about over-use of the area. 4 (0.9%)	0	2	0	1	1
Don't like organised activity. It's the fact that they are a group, not what they are doing. 3 (0.7%)	1	0	0	2	0
This is a pristine / unspoilt area, they should go somewhere else. 2 (0.4%)	1	0	0	0	1
Got their hats on. 2 (0.4%)	2	0	0	0	0
I wouldn't do it myself. Rather them than me. 2 (0.4%)	0	0	2	0	0
That would just annoy me / be a nuisance. 2 (0.4%)	0	0	1	1	0
Racist / sexist views. 2 (0.4%)	0	0	0	2	0
Spoils the view. 1 (0.2%)	0	1	0	0	0
They're not walkers 1 (0.2%)	1	0	0	0	0
Car-parking related concerns. 1 (0.2%)	0	0	0	0	1
Total 459 (100%)	145 (31.6%)	43 (9.4%)	106 (23.1%)	94 (20.5%)	71 (15.5%)

Table 2 Continued.

CONDITIONAL COMMENTS					
Comment	Image 1	Image 2	Image 3	Image 4	Image 5
As long as I know its safe / well led / well equipped / organised. 17 (27.9%)	0	0	8	1	8
Depends on their attitude / courtesy / consideration / behaviour / attire. 16 (26.2%)	7	0	0	9	0
As long as it's spread out / unless they're everywhere / as long as not too many. 9 (14.8%)	0	2	1	2	4
As long as they're not damaging / disturbing anything / the environment / littering. Any impacts managed / regulated. 9 (14.8%)	1	4	3	1	0
Depends how much noise they make. As long as they're quiet. 5 (8.2%)	3	0	0	2	0
Depends where it is / what natural features are there. 3 (4.9%)	0	1	2	0	0
Unlikely to encounter them. 1 (1.6%)	0	1	0	0	0
I'm expecting them here. 1 (1.6%)	1	0	0	0	0
Total 61 (100%)	12 (19.7%)	8 (13.1%)	14 (23.0%)	15 (24.6%)	12 (19.7%)

Objective 2

To identify factors which are significant in forming perceptions of any impacts of coastering on the recreational experience of other users of the study area.

All the variables were subjected to tests of significance and association as set out in the methodology. The results are presented in **Table 3**. Those variables showing significant results for the measures of association or differences in distribution are discussed in detail on the following pages. To aid discussion of the behaviour types and contexts of encounter depicted in the video images, stills from each image are presented in **Figure 6**. The full video clips are reproduced in **Appendix 1**.

Table 3. Quantitative Results by Variable (significant results in red text).

Variable	Test Statistic			
	Mann - Whitney	Kruskal - Wallis	Spearman's rho	Pearson's R
Age Code	N/A	0.348	0.041 Sig 0.502	N/A
Aggregated Age Code (adjacent groups paired)	N/A	0.537	0.059 Sig 0.342	N/A
Area of Residence	N/A	0.990	N/A	N/A
Behaviour Type		0.000		
Behaviour Type (pair-wise) 1 = walking 2 = rock-pooling 3 = jumping 5 = traversing	1x2 = 0.000 1x3 = 0.000 1x5 = 0.000 2x3 = 0.377 2x5 = 0.041 3x5 = 0.332	N/A	N/A	N/A
Conservation Awareness	N/A	0.248	0.018 Sig 0.765	N/A
Distance Walked (scale)	N/A	N/A	N/A	-0.079 Sig 0.202
Distance Walked (ordinal, split by quartiles)	N/A	0.267	-0.116 Sig 0.060	N/A
Economic Activity	0.488	N/A	N/A	N/A
Education Code	N/A	0.000	-0.236 Sig 0.000	N/A
Education (codes 4 & 5 aggregated)	N/A	0.000	-0.222 Sig 0.000	N/A
Education Code, Aggregated (pair-wise)	1x2 = 0.024 1x3 = 0.592 1x4 = 0.000 2x3 = 0.109 2x4 = 0.513 3x4 = 0.002	N/A	N/A	N/A
Factors Affecting Choice of Season	N/A	0.263	N/A	N/A
Factors Affecting Choice of Time	N/A	0.039	-0.119 Sig 0.053	N/A
Factors Affecting Choice of Time (pair-wise)	-1x0 = 0.021 -1x1 = 0.038 0x1 = 0.258	N/A	N/A	N/A
Frequency of Encounter	0.000	N/A	N/A	N/A
Gender	0.713	N/A	N/A	N/A
Group Size	0.020	N/A	N/A	N/A
Groups Visible During Interview	0.584	N/A	N/A	N/A
Occupation	N/A	0.632	N/A	N/A

Table 3 Continued.

Variable	Test Statistic			
	Mann - Whitney	Kruskal - Wallis	Spearman's rho	Pearson's R
Prior Knowledge of Coasteering	N/A	0.654	N/A	N/A
Respondent's Identification with Recreational Groups	N/A	0.766	N/A	N/A
Respondent's Group Structure	N/A	0.343	N/A	N/A
Respondent's Main Activity Code	N/A	0.030	N/A	N/A
Respondent's Main Activity Code (pair- wise)	1x2 = 0.014 1x3 = 0.789 2x3 = 0.053	N/A	N/A	N/A
Respondent's Resource Specificity	0.402	N/A	N/A	N/A
Respondent's Site Attachment	N/A	0.649	N/A	N/A
Sequence of Images	0.353	N/A	N/A	N/A
Season	0.209	N/A	N/A	N/A
Site	N/A	0.038	-0.137 Sig 0.026	N/A
Site (pair-wise)	1x2 = 0.835 1x3 = 0.014 2x3 = 0.042	N/A	N/A	N/A
Time of Arrival	N/A	N/A	N/A	0.022 Sig 0.721
Time Code	N/A	0.879	0.018 Sig 0.776	N/A
Valued Site Attributes	N/A	0.323	-0.128 Sig 0.037	N/A
Valued Site Attributes (codes -1 to 2 aggregated)	N/A	0.122	-0.127 Sig 0.039	N/A
Weekend / Weekday	0.018	N/A	N/A	N/A

Figure 6. Representative Stills from the Video Images.

Image 1: Group of 14 Passing on Coast Path



Image 2: Group of 8 Observing Natural Features



Image 3: Group of 14 with One Jumping



Image 4: Group of 8 Passing on Coast Path



Image 5: Group of 14 Traversing the Coast



These images are taken from 18s video clips presented to respondents during the survey.

Behaviour Type

Respondents consistently rated Image 1 (group of 14 walking on the coast path) more negatively than the other images. The median score for Image 1 is lower than those for Images 3 & 5 (see **Figure 7**). Although the median is the same as that for Image 2, both the upper and lower quartiles are lower for Image 1, resulting in the reported difference in distribution (see **Appendix 4**). The qualitative data support this with Image 1 having only 9.6% (n=59) of positive comments, but 31.6% (n=145) of negative comments across all five images (see **Table 2**). The expected frequency would be 20% across all five images if behaviour did not affect perceptions.

The most frequent negative comment associated with Image 1 was inappropriately large group size (n=41). However, the group size in this Image was identical to those in Images 3 and 5, which only returned 4 and 3 similar comments respectively. These images depicted coasteerers actively engaged in their sport in the intertidal zone, filmed *from* the coast path. Image 1 depicted a group passing at close quarters *on* the coast path. It is likely therefore that it is the proximity of the encounter which is important in forming these negative perceptions, possibly exacerbating the perception of crowding due to group size. This is consistent with the findings of Arnberger & Haider (2005) who noted that images depicting people in the foreground in natural areas were rated more negatively than those depicting people in the distance.

Image 1 also elicited a relatively large number of negative comments concerning frequency of encounter (n=30), disruption to tranquillity (n=30) and path congestion (n=23). It appears that having to give way to a group on a narrow path constitutes goal interference for many respondents and this is exacerbated by frequency of encounter. Similarly, respondents appear less tolerant of higher levels of frequency of encounter when coasteerers are in transit between venues. This is likely to be due to greater perceived competition

for the environmental resource (path space), as illustrated by some of the free text responses:

'One of the pleasures is how quiet the path is' (Case 78).

'Don't want too many people on the path' (Case 82).

'I'll have to step off the path and watch the dog' (Case 113).

Image 3 (jumping from height) seems to polarise opinion, prompting a relatively large number of negative comments concerning disruption to tranquillity (n=38) and frequency of encounter (n=30), but also many positive comments about adding interest (n=61) and looking exciting (n=31).

Inter-respondent variation in the ratings applied to a particular Image is likely to be due to some characteristic of the respondent, such as tolerance for lifestyle diversity, or their expectations and motivations. Intra-respondent variation in ratings applied across images is likely to be a function of the behaviour, or context depicted and supports the view that the attitudes of visitors are not fixed, but vary depending upon the context in which they are placed (Macnaghten, 1995). However, the variation may not be wholly attributable to the variables the images were intended to depict, as it was not possible to control all other variables whilst studying groups in the field (see discussion of the study design in light of the results).

Education

Respondents with higher levels of educational qualifications tended to rate encounters with coastering groups less positively than other respondents (see **Figure 8**). If the categories are treated as naturally ordered (from lowest to highest level of education) and subjected to a test of association, a significant negative correlation is reported between level of education and expressed perceptions (see **Table 3**). Lynn & Brown (2003) reported a similar phenomenon, where perceptions of the environmental impact of an activity often varied with level of education.

Figure 7. Median and Frequency Distribution for Summed Likert Response by Behaviour Type (Images 1, 2, 3 & 5).

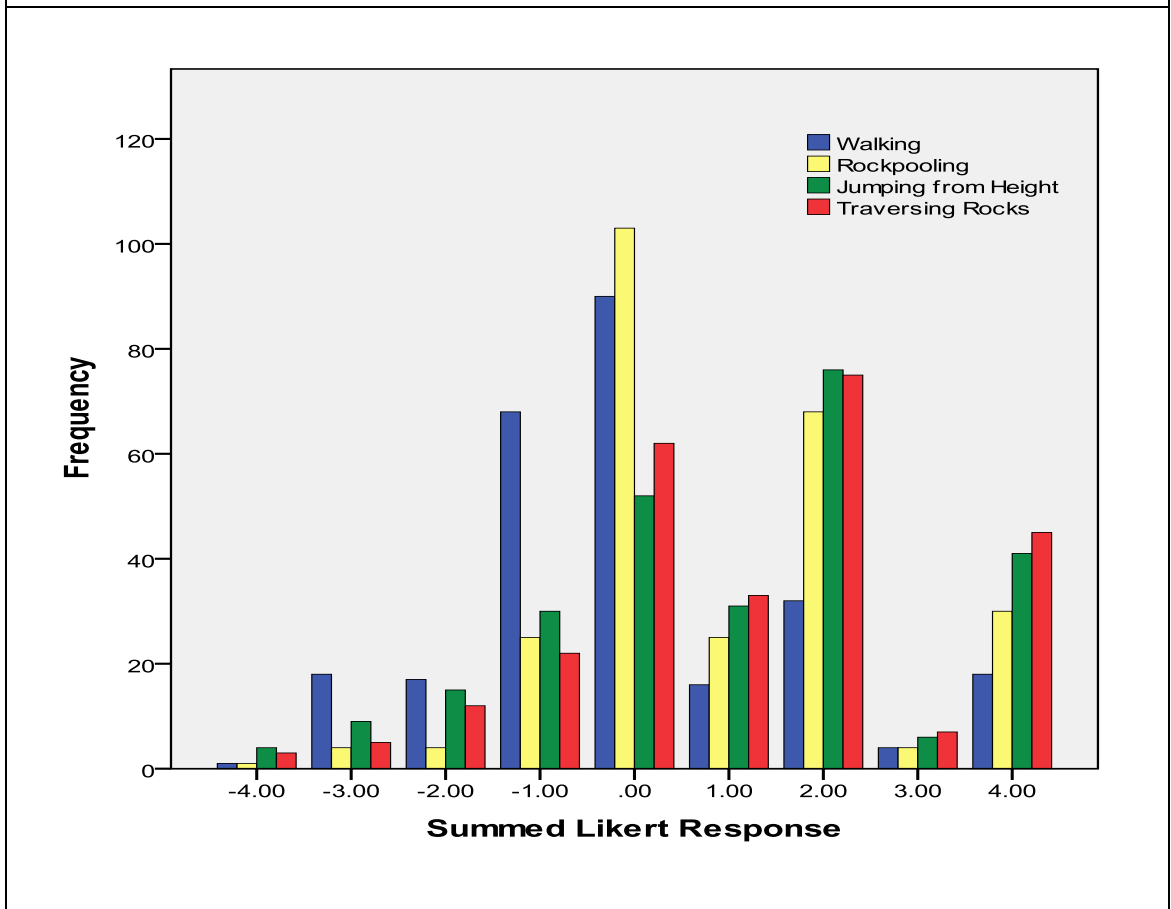
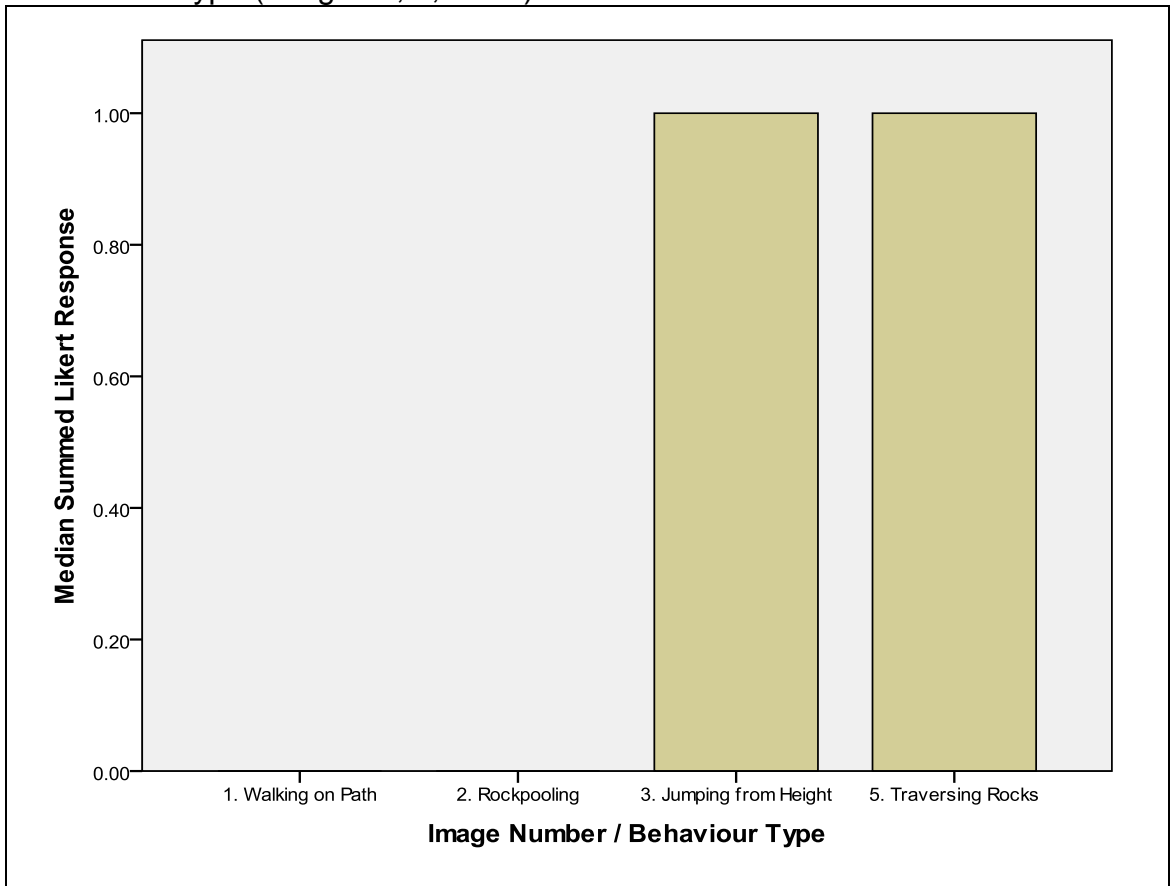
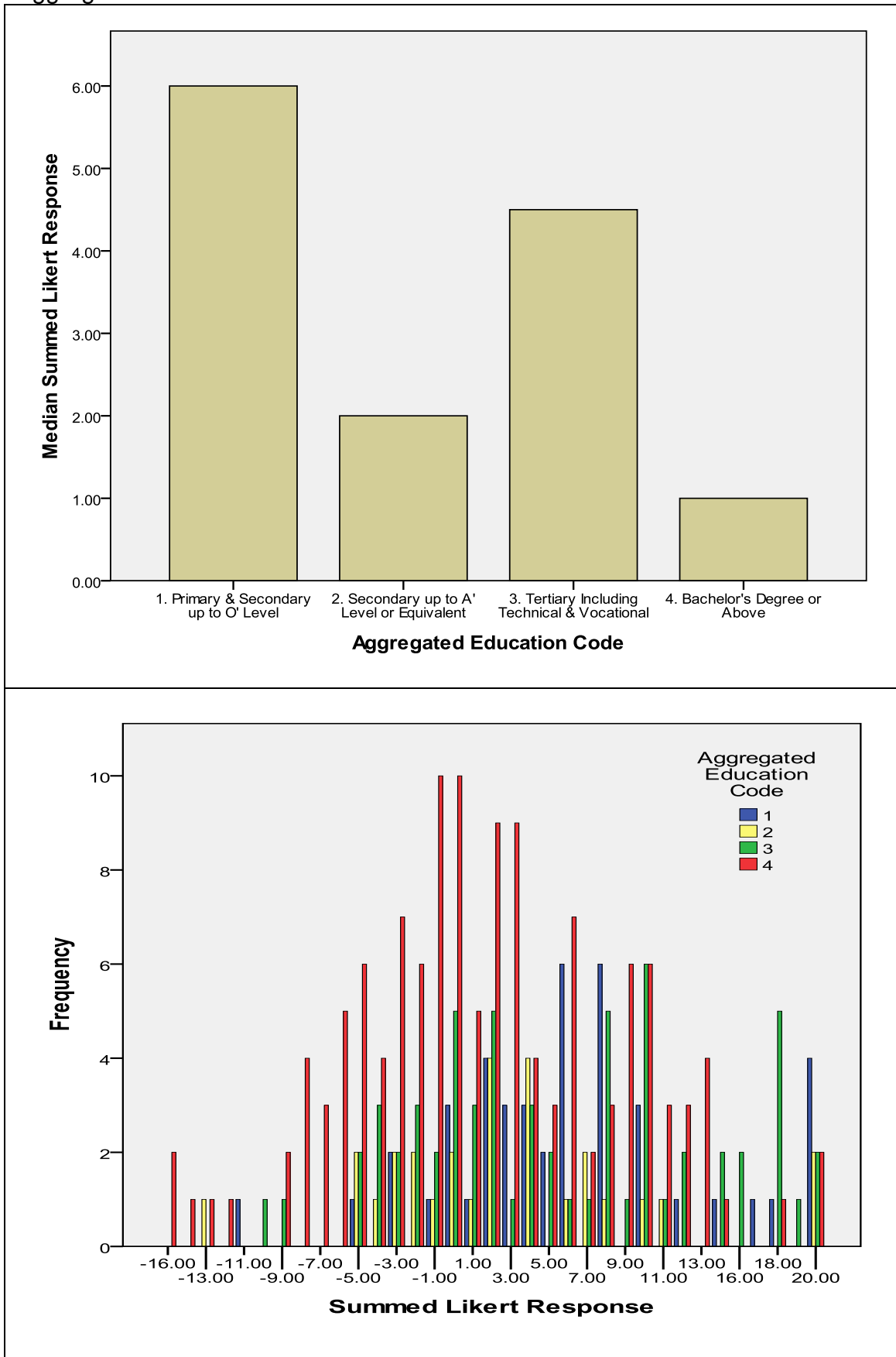


Figure 8. Median and Frequency Distribution for Summed Likert Response by Aggregated Education Code.



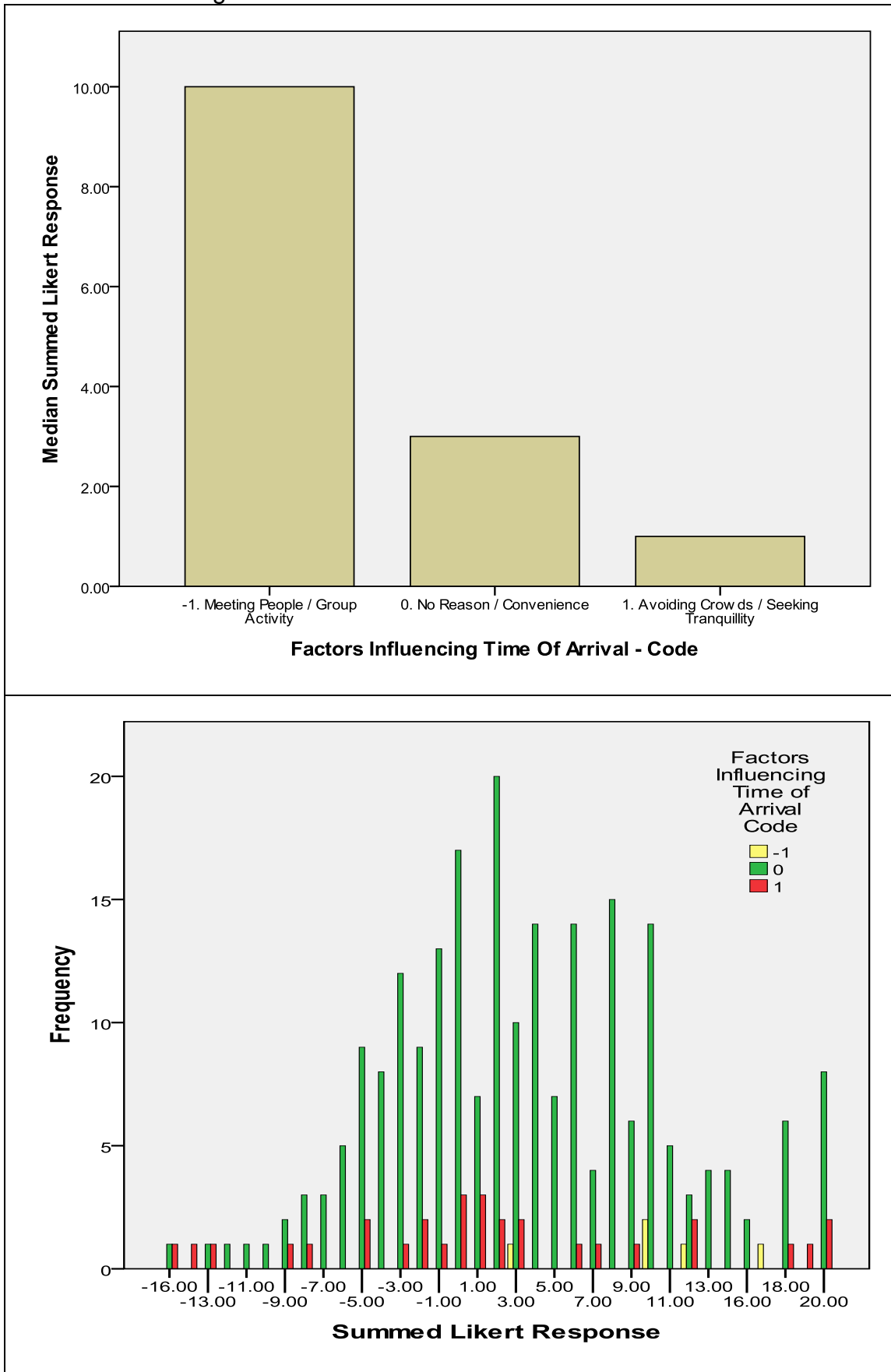
Factors Affecting Choice of Time of Arrival

This variable was derived from free text responses, coded into *a priori* groups aimed at reflecting respondent's expectation of tranquillity and is discussed in that context below. The actual time of arrival was not a significant variable in this study.

Respondents reporting that their choices were influenced by a desire to avoid crowds or seek tranquillity were more likely to rate encounters with coasteering groups less positively than other respondents (median summed response = 1). Those attending the sites to meet people or partake in group activities were the most positive about encounters with coasteerers (median summed response = 10). However, the low number of respondents in this category (n=5) undermines the robustness of this assertion. Those with no particular reason for their decision returned a median summed response of 3 (see **Figure 9**). If this variable is treated as naturally ordered along a scale of expectation of tranquillity and subjected to Spearman's rho, no significant correlation is detected between summed Likert response and this variable. This may, in part, be due to the small number of cases in some of the categories of the independent variable making significance levels hard to achieve.

This variable forms a weak component of the temporal variables factor in the factor analysis (see **Table 10**). It is unclear whether this variable truly represents a component of an underlying expectation of tranquillity, or whether it relates to other themes identified in the literature review, such as the crowding tolerant / averse groups identified by Arnberger & Haider (2005).

Figure 9. Median and Frequency Distribution for Summed Likert Response by Factors Influencing Time of Arrival Code.



Frequency of Encounter

Respondents consistently rated frequent encounters with coasteerers less positively than a single encounter (median summed Likert response 0 and 2 respectively, see **Figure 10**). This can be triangulated with the qualitative results, where 23.1% (n=106) of negative comments were concerned with frequency of encounter. It appears that, whilst many respondents were interested to see coasteering groups initially, the novelty was lost if encounters were frequent. For example:

'If you're over-run with it, it would spoil tranquillity' (Case 6).

'Seem more intrusive than a one-off' (Case 71).

'Interesting, but less so with more encounters' (Case 152).

Some of the comments recorded at all three sites indicate that high frequencies of encounter may contribute towards the potential for recreational displacement. For example:

'You can find quieter places to avoid it' (Case 31)

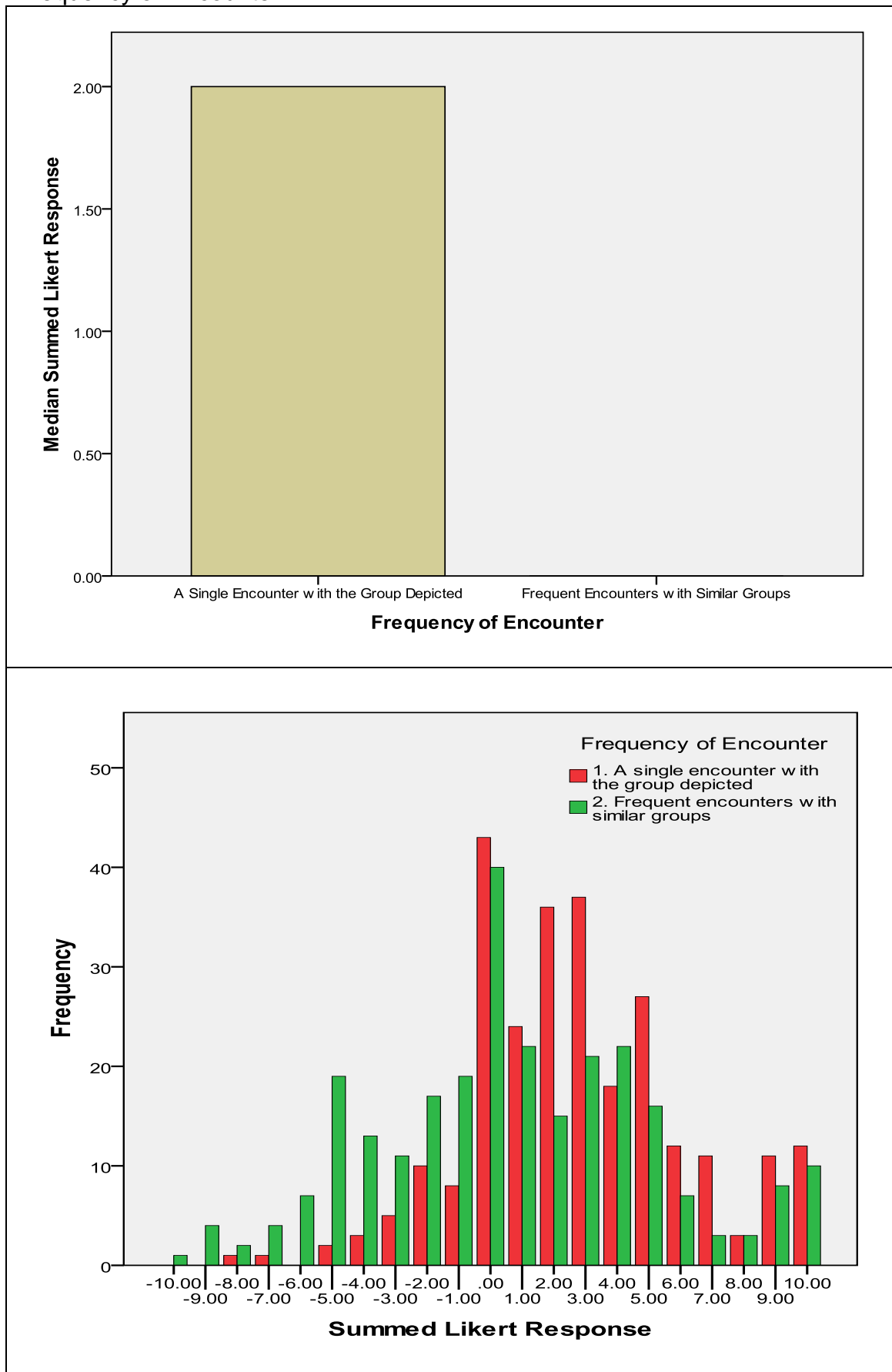
'Intrusion, but there's enough space – you could move away' (Case 70)

'Interested to watch one or two, but if frequent I wouldn't come' (Case 120)

'Less likely to come here if it was frequent' (Case 262)

Manning *et al.* (1996) note that too much recreational use can result in other users being displaced spatially, temporally or even totally. No positive comments associated with the higher category of frequency of encounter were recorded. It is possible that frequency of encounter acts by exacerbating the perception of goal interference due to other variables such as behaviour type, or group size. This is supported in the literature review, for example the PCNPA (2008) note that high user volumes can turn a basically innocuous activity into a potential problem. Overcrowding and managing potential recreational conflicts have been identified as challenges for the PCNPA (PCNPA, 2008).

Figure 10. Median and Frequency Distribution for Summed Likert Response by Frequency of Encounter.



Group Size

Whilst the median score for both Images 1 and 4 (group size 14 and 8 respectively) is 0, there is a significant difference in the distribution of scores about that median (see **Figure 11**). That is to say that the samples can be considered to be drawn from different populations. Image 1 consistently returned a greater number of negative Likert responses and fewer positive responses than Image 4. The qualitative data support the assertion that coasteering group size is significant in forming perceptions of encounters with coasteers amongst respondents. The larger group size (Image 1) elicited 41 negative comments concerning group size, whereas the smaller group (Image 4) prompted only 13 (see **Table 2**). It is interesting to note that these two images (both depicting groups passing at close quarters) account for 80.6% (n=54) of the 67 negative comments concerning group size across all five images. Images 3 & 5 also depicted the larger group size, but in the intertidal zone, not on the coast path. Proximity may, therefore be a contributing factor. This is supported by Bell *et al.* (2001) who conceptualised crowding as a psychological state which may be exacerbated by factors causing 'stress' to the respondent. Urry (1990) noted that how crowded an area feels is subjective and only partly based on the density of people in that area.

Level of Supervision

Respondents consistently felt that encounters with unsupervised groups would affect their recreational experience more negatively than encounters with the groups depicted (77.3% [n=204], see **Table 4 & Figure 12**). Only 9 respondents (3.4%) felt that such encounters would be more positive. This is supported by the qualitative responses (see **Table 5**). 83.1% (n=211) of comments concerning unsupervised groups were negative. It appears that anxiety over the safety of those engaged in coasteering may be one mechanism by which this sport can impact upon other recreationist's enjoyment of their chosen activity. 70.6% (n=149) of negative comments relating to level of supervision of coasteering groups expressed concerns over group safety, wasting the

Figure 11. Median and Frequency Distribution for Summed Likert Response by Group Size (Images 1 & 4).

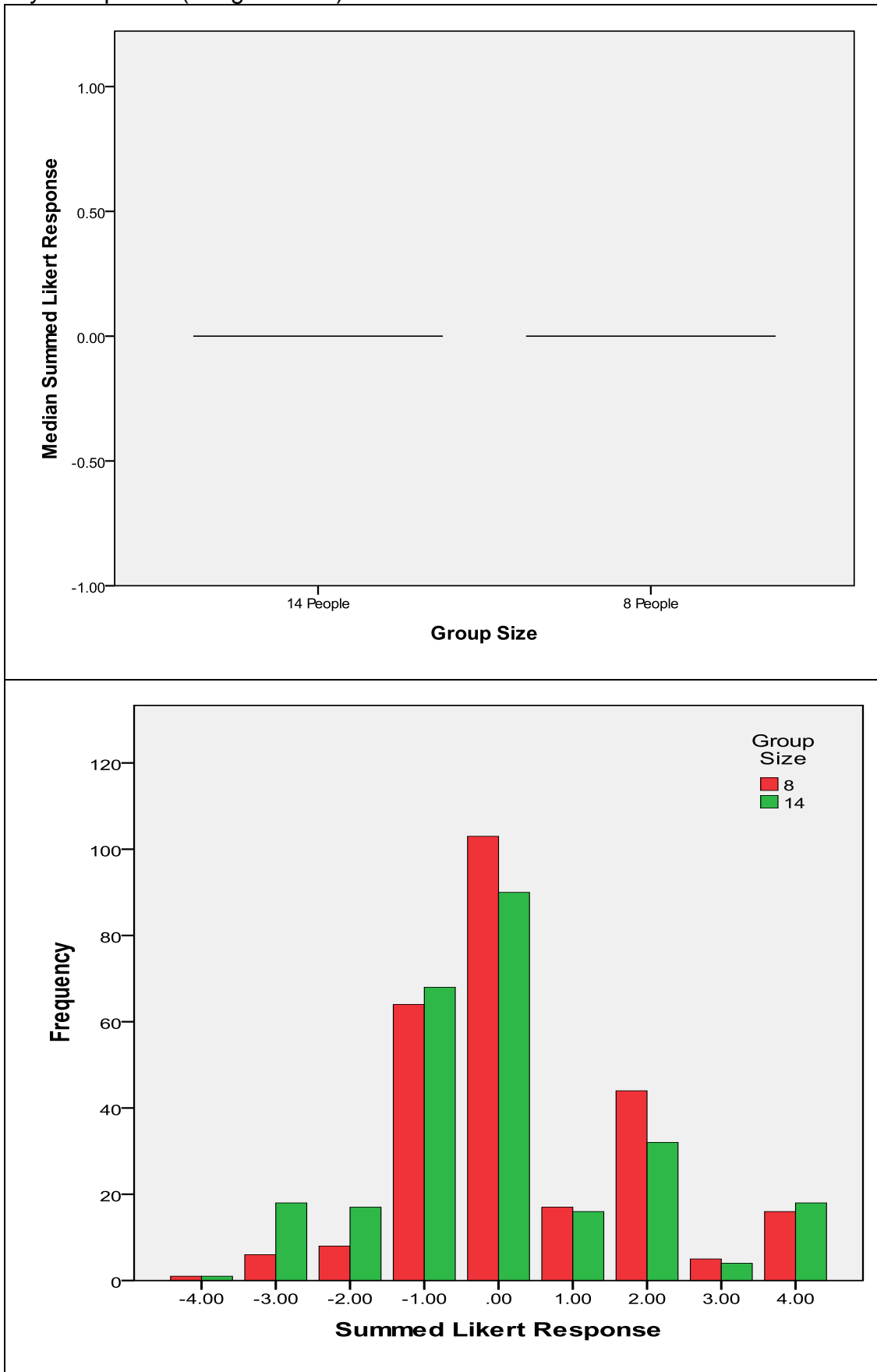


Table 4. Frequency Table and Summary Statistics for Comparative Response Categories to Perception of Unsupervised vs Supervised Coasteering Groups.

Response Category	Frequency	Percent	Valid Percent	Cumulative Percent
More Negative	204	77.3	77.3	77.3
The Same	51	19.3	19.3	96.6
More Positive	9	3.4	3.4	100
Totals	264	100.0	100.0	
Summary Statistics				
Median	-1.0	Percentiles	25	-1.0
Range	2.0		50	-1.0
Minimum	-1.0		75	-1.0
Maximum	1.0			

Figure 12. Frequency Distribution for Comparative Response Categories to Perception of Unsupervised vs Supervised Coasteering Groups.

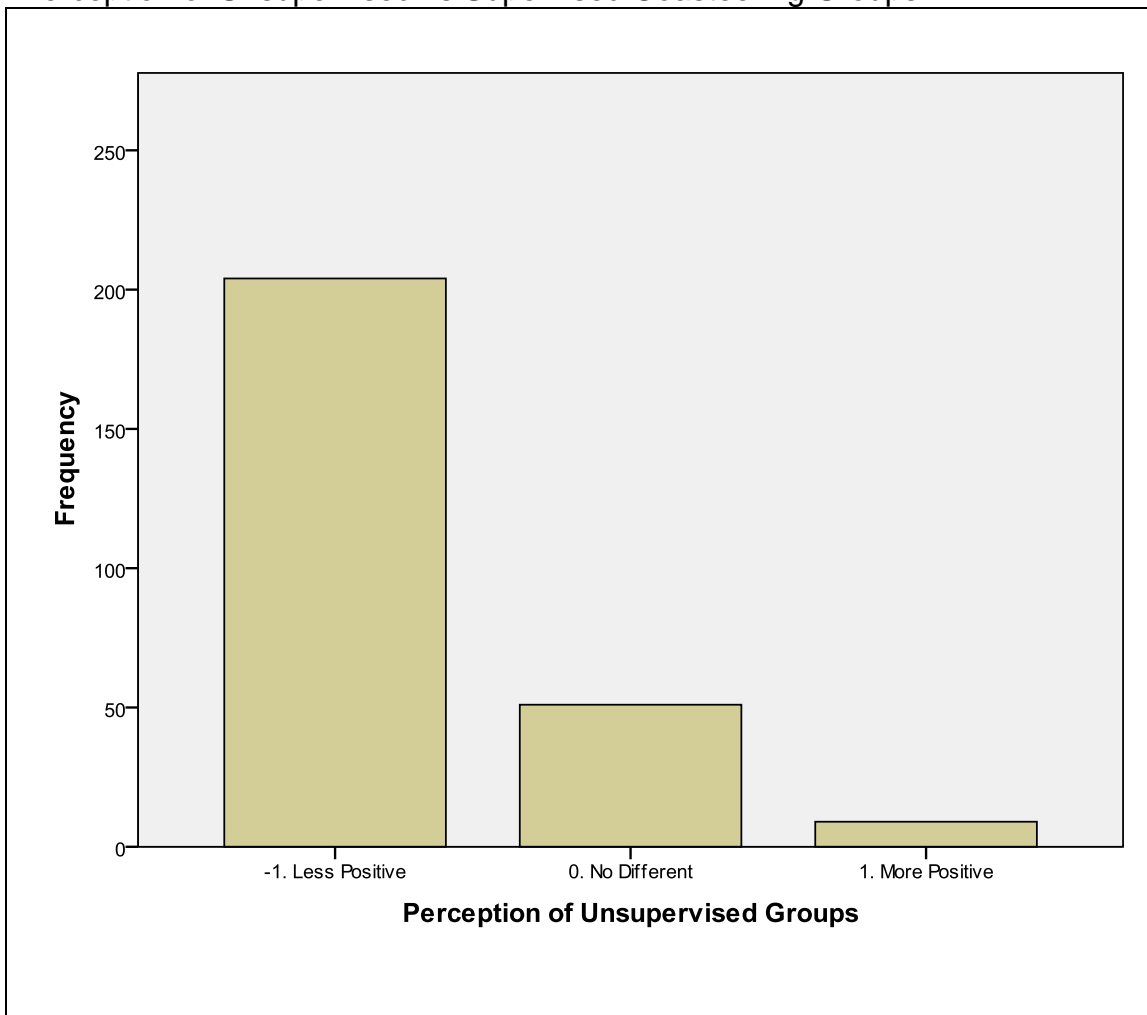


Table 5. Summary of Themes in Free Text Responses to Unsupervised Coaststeering Groups Relative to Supervised Groups.

POSITIVE	
Comment	Frequency
More positive to see people acting on their own initiative. Less exploitative. Less uniform appearance. They know what they're doing better than novices in supervised groups.	7 (100%)
Total	7 (100%)
NEUTRAL / CONDITIONAL	
Comment	Frequency
Organised groups with the right equipment are fine. OK if they appear to know what they're doing. Depends what they're doing.	24 (66.7%)
Not if they are youngsters / children.	11 (30.6%)
It's up to them / live & let live.	1 (2.8%)
Total	36 (100%)
NEGATIVE	
Comment	Frequency
Worried for their safety. Anxious. I might have to rescue them / call the emergency services / witness something horrible. Dangerous. Risk. Drain on the resources of the emergency services.	149 (70.6%)
Greater social impact – Noisier, rowdier, more risk-taking, less considerate towards others.	29 (13.7%)
Greater environmental impact (inc littering).	25 (11.9%)
Shouldn't be allowed unsupervised.	3 (1.4%)
Prefer to see them supervised.	2 (1.0%)
Doesn't look professional.	1 (0.5%)
Wouldn't be benefiting the local economy.	1 (0.5%)
Might encourage others / my kids (in a negative context).	1 (0.5%)
Total	211 (100%)

resources of the emergency services or anxiety over becoming involved in rescue efforts if the group were in difficulty. For example:

'Would worry me. Safety and witnessing something unpleasant with the kids' (Case 47).

'Worried about safety. Would want to ring the police and warn them' (Case 80)

'Be on edge, might have to get help' (Case 116).

'Very negative. I'd be thinking 'do I have to call the Coastguard?' *Would spoil my walk'* (Case186).

This is likely to constitute a form of goal interference whereby the relaxation sought by recreationists is denuded by feelings of anxiety. However, further qualitative research would be necessary in order to understand this phenomenon more fully.

A further 54 negative comments (25.6%) were related to greater perceived environmental or social impacts if groups were unsupervised. 7 positive comments and 36 neutral or conditional comments were recorded.

Respondent's Main Activity

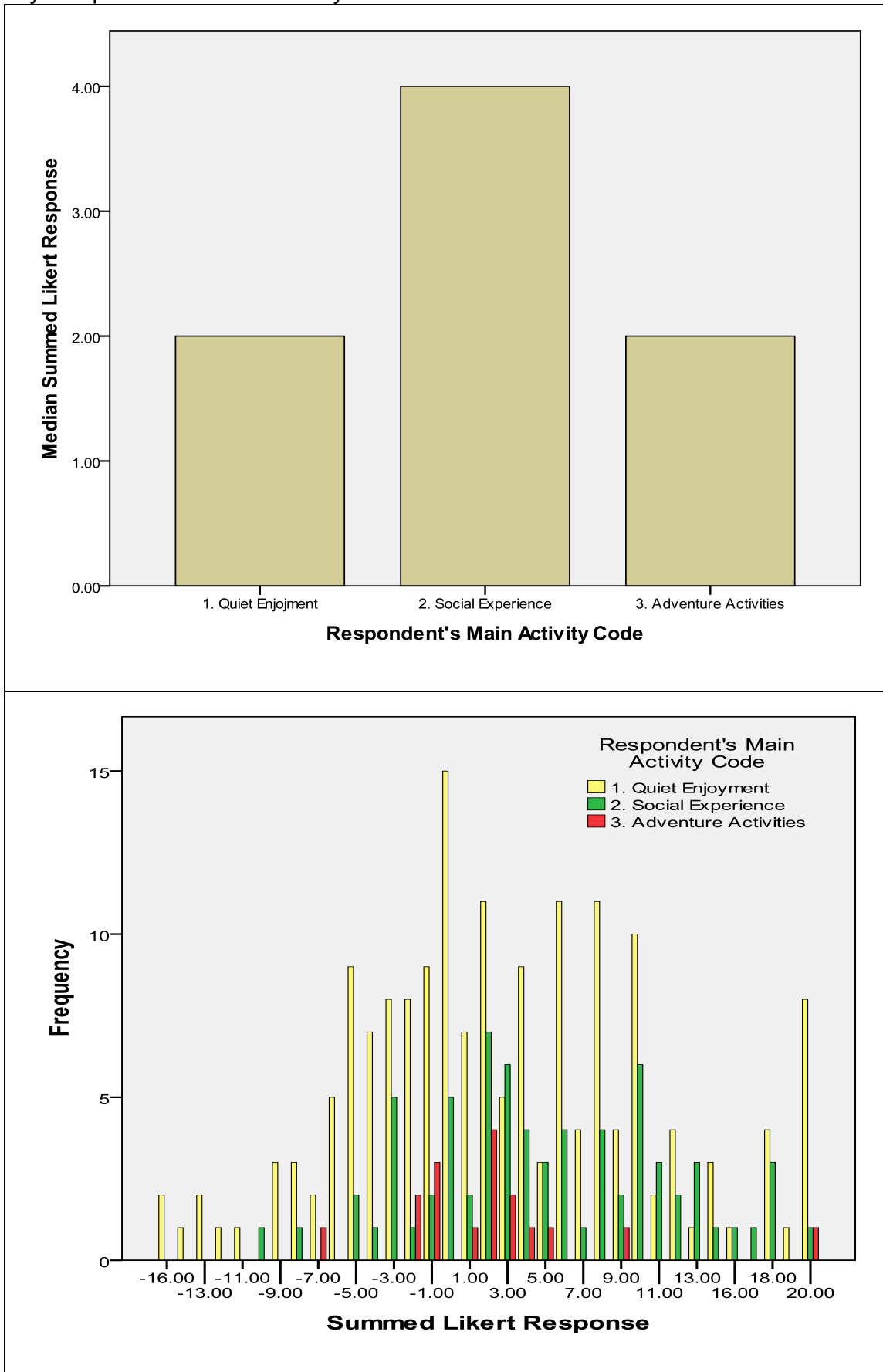
This variable is derived from free text responses coded into *a priori* groups to reflect respondent's expectation of tranquillity. Those seeking traditional 'quiet enjoyment' activities such as walking, nature watching, photography or fishing rated the images significantly less positively than those engaged in more social activities such as a 'family beach day', sightseeing, or picnicking (see **Figure 13**). These groups display similar traits to those described in previous studies as crowding averse and crowding tolerant respectively (Arnberger & Haider, 2005). For example:

'I'd stop and watch, make the walk more interesting' (Case 54, meeting relatives).

'I came here because it's out of the way, you don't expect organised activities' (Case 151, walking and seal-spotting).

Respondents participating in adventure sports such as surfing or kayaking returned a median score similar to quiet enjoyment and lower than those seeking a social experience. This could be due to tranquillity being an important component of some adventure sports (eg. Case 183, surfer. *'I don't want a bunch of corporate middle managers screaming on the rocks while I'm trying to surf'*.), or due to perceived competition for the environmental resource (eg. Case 114, tombstoner. He rated coasteering negatively overall, citing *'interference with my jumps'* as his reason). Whilst the difference between the social activities and adventure sports categories is not significant, this may be a function of the small number of respondents in the latter category (n=17). The Mann-Whitney U Test is sensitive to small samples, making significance levels harder to achieve as sample size decreases. It is unclear whether this variable is truly a component of the underlying factor 'expectation of tranquillity' (see discussion on factor analysis), or is associated with some other aspect of the formation of perceptions of recreational conflict such as mode of experience, or tolerance for lifestyle diversity, as identified by Jacob & Schreyer (1980).

Figure 13. Median and Frequency Distribution for Summed Likert Response by Respondent's Main Activity Code.



Site

Expressed perceptions are significantly less positive at Ceibwr Bay (Site 3) than at the other two sites (see **Figure 14**). The three sites were selected to represent different levels of tourist activity and development based on the assumption that those seeking quieter experiences would choose venues appropriate for that purpose. The ranking of Sites 1–3 (busy with some infrastructure through to quiet, undeveloped) is borne out by the data on visitor arrivals to the sites (see **Table 11**) and the number of respondents reporting that solitude, emptiness or lack of people were important attributes at each site (7.3% [n=12], 15.4% [n=20] & 16.8% [n=19] at Sites 1, 2 & 3, respectively, see **Table 9**). This gives some credibility to the treatment of 'site' as an ordinal variable. If treated as naturally ordered along a continuum of expectation of tranquillity and subjected to ordinal measures of association, a significant negative correlation is identified between site number and summed Likert response (see **Table 3**). The proposition that recreational users of the study area seek settings appropriate to their expectation of tranquillity is supported by comments such as:

'I just feel that Ceibwr is very unspoilt and doesn't need a load of wetsuited, plastic helmeted screaming kids' (Case 95, Site 3).

'I come here for solitude, so any group is negative – ramblers or whatever' (Case 206, Site 3).

The less positive perceptions reported at Site 3 (where coasteering is relatively infrequent) could also indicate that the site is frequented by recreationists with greater potential to be displaced from more popular coasteering venues. This is supported by comments recorded at Site 3, such as:

'I wouldn't come here if it were as busy as the Blue Lagoon' (Case 105, referring to a landform at Site 1).

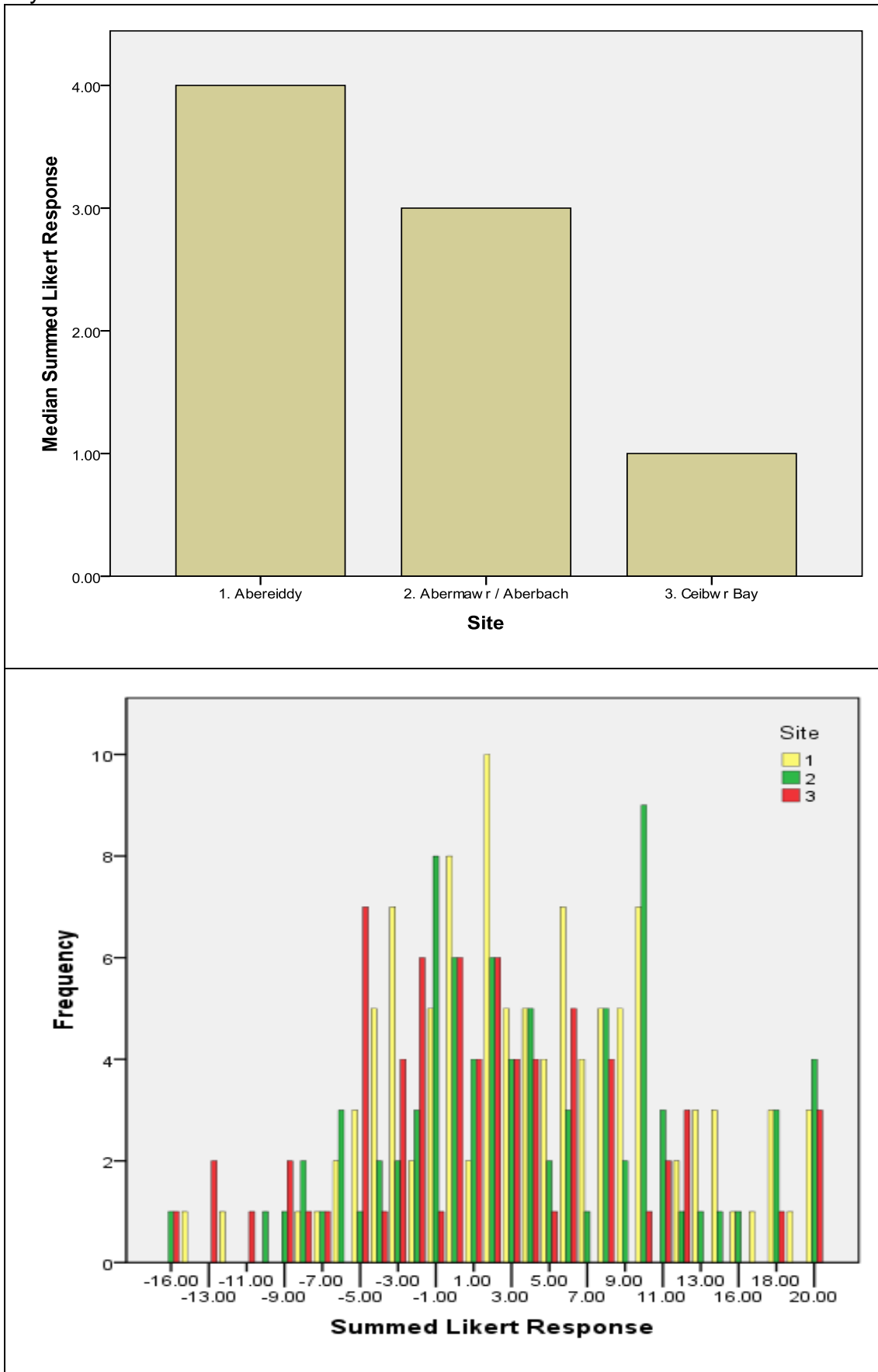
'Three or four or five times and I wouldn't come here again' (Case 153).

'I would avoid this site if it were too busy' (Case 259).

'They're well catered for in other parts of the county. There has to be a limit. Some places have to be kept unspoilt' (Case 257).

'If frequent, I'd think I was in the wrong place and move on' (Case 140).

Figure 14. Median and Frequency Distribution for Summed Likert Response by Site.



However, some comments recorded at all sites display a high degree of tolerance from respondents in response to what is essentially recreational displacement or goal interference:

'I could be away from them in five minutes if I wanted to walk away from them' (Case 172, Site 1).

'I'd be competing with them for space' (in response to Image 3, followed in response to Image 4 by) *'there's enough coast for everyone'* (Case 24, Site 2).
'I'm seeking solitude, but everyone's entitled to use it' (Case 154, Site 3).

These comments are unlikely to relate to the actual level of coastering use at the sites (as they were recorded at all three venues), but rather to some property of the respondents, such as their tolerance of encounters with other user types (Arnberger & Haider, 2005; Jacob & Schreyer, 1980; Ramthun, 1995), or their expectation or individual definition of tranquillity (Pheasant *et al.*, 2010; Shackley, 1996).

Tombstoning

Respondents overwhelmingly felt that encounters with groups of tombstoners would negatively affect the quality of their recreational experience (median score -2, possible range -4 to 4, see **Figure 15 & Table 6**). Only 17 positive comments associated with tombstoning were recorded whereas 225 negative comments were recorded (see **Table 8**). 147 of these (65.3%) were associated with safety concerns or anxiety over becoming involved in rescue efforts. For example:

'Worry over getting involved in rescuing someone' (Case 9).

'Concerned about their safety. Feel the need to check [my] mobile for a signal' (Case 23).

'I'd be worried about them making the place less happy if helicopters and lifeboats had to be called' (Case 42).

This supports the proposition discussed above (see 'level of supervision') that anxiety over the safety of participants in coastal adventure sports is one mechanism by which an activity can impact upon the quality of the recreational

experience of others. It is also consistent with the phenomenon identified in the literature review, where anxiety over the safety of tombstoning groups prompts recreational users to call the emergency services even where no casualties are reported (Evans, Pers. Comm. 18/08/2010).

Figure 15. Frequency Distribution for Summed Likert Response to Perception of the Impacts of Tombstoning on Respondent’s Recreational Experience.

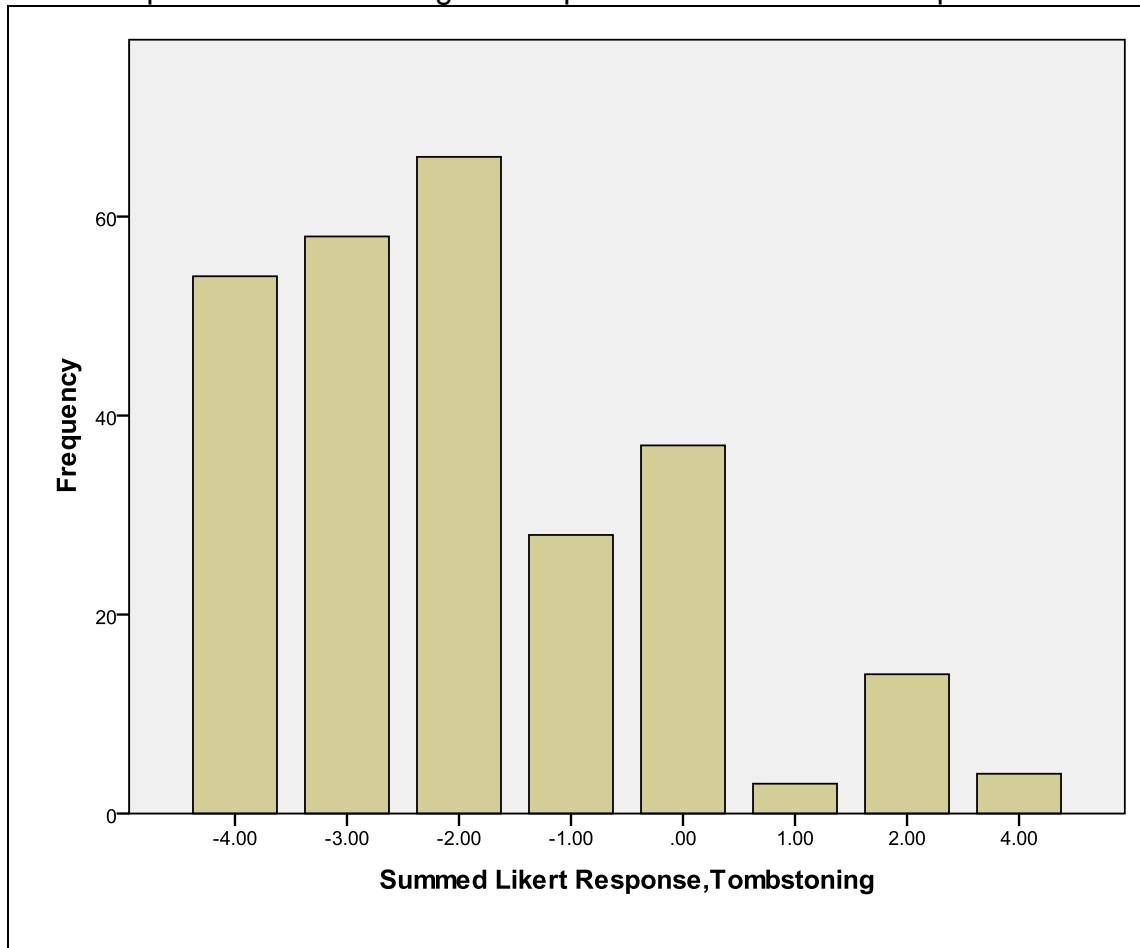


Table 6. Summary Statistics for Summed Likert Response to Perception of the Impacts of Tombstoning on the Respondent’s Recreational Experience.

Summary Statistics			
Median Response	-2	Percentiles	25 -3
Range	8		50 -2
Minimum	-4		75 -1
Maximum	4		

The median score (by case) for encounters with tombstoners was 1.5 points lower than that for encounters with coasterers (on a 5 point scale, see **Table 7 & Figure 16**). This clear difference in scores indicates that respondents viewed

coasteering and tombstoning as distinct activities, with differing potential to impact upon their own recreational experience. The cognitive mechanism for such an assessment is unclear, as there is considerable overlap between the two activities. It may be that respondents are making subjective assessments of differences in the motivations and values of groups (eg. thrill-seeking vs interacting with nature), or more objective assessments based on observed behaviour, or participants' attitudes to safety and risk (eg. unlike tombstoners, coasteerers usually wear protective equipment).

Table 7. Summary Statistics for Tombstoning / Coasteering Median Summed Likert Response Differential.

Summary Statistics				
Median Differential	-1.5	Percentiles	25	-2.0
Range	6		50	-1.5
Minimum	-4		75	-0.5
Maximum	2			

Figure 16. Frequency Distribution for Tombstoning / Coasteering Median Summed Likert Response Differential.

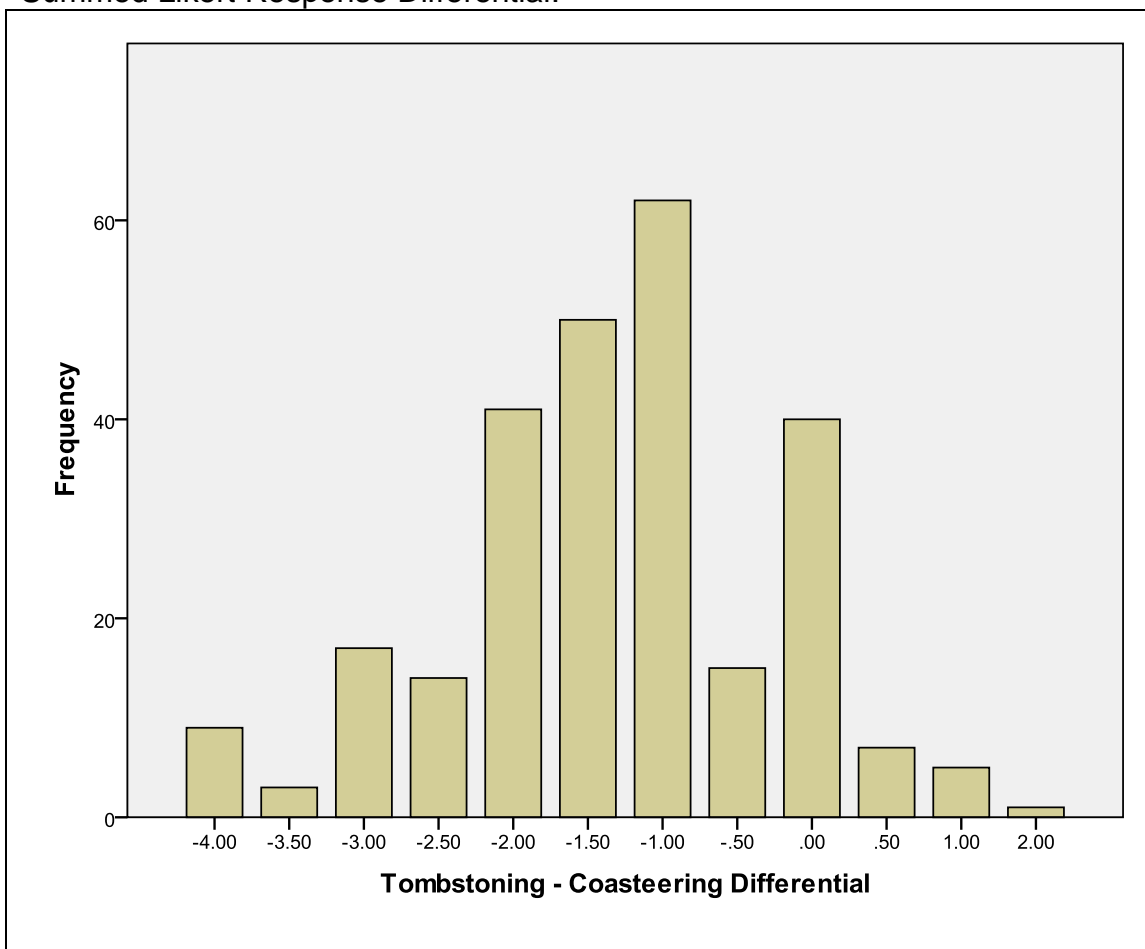


Table 8. Summary of Themes in Free Text Responses to Encounters with Tombstoning Groups.

POSITIVE	
Comment	Frequency
More exciting to watch. Interesting. Would watch.	13 (76.5%)
Good to see people challenging themselves / using their initiative / getting involved / having fun.	3 (17.7%)
Would like a go.	1 (5.9%)
Total	17 (100%)
NEUTRAL / CONDITIONAL	
Comment	Frequency
Depends on behaviour / attitude.	25 (38.5%)
Depends where it is / how safe location is.	12 (18.5%)
Annoying / negative if frequent.	9 (13.9%)
Might have been drinking.	5 (7.7%)
Depends on competency / kit.	4 (6.2%)
Depends on group size.	3 (4.6%)
It's up to them / live & let live / on their own heads.	3 (4.6%)
As long as far enough away.	2 (3.1%)
If youngsters / children.	1 (1.5%)
As long as they don't have to call emergency services.	1 (1.5%)
Total	65 (100%)
NEGATIVE	
Comment	Frequency
Worried for their safety. Anxious. I might have to rescue them / call the emergency services / witness something horrible. Dangerous. Risk. Drain on the resources of the emergency services.	147 (65.3%)
Might show less respect for others. Behaviour. Noisy / rowdy. Disrupt peace & quiet / tranquillity.	51 (22.7%)
Greater environmental impact. Less environmental awareness / responsibility.	11 (4.9%)
I avoid places where I know they will be. I would walk away.	7 (3.1%)
Bad example to others / my kids. Irresponsible.	4 (1.8%)
They would be in my way. Competition for resource.	2 (0.9%)
Shouldn't be allowed / not appropriate here.	2 (0.9%)
Not properly kitted out.	1 (0.4%)
Total	225 (100%)

Valued Site Attributes

This variable is derived from free text responses coded into a *a priori* groups to reflect the expectation of tranquillity (see **Figure 17 & Table 9**). The tests for differences in distribution returned no significant results. However, if the categories are taken as representing naturally ordered levels of expectation of tranquillity and subjected to a test of association, a significant negative correlation is reported (see **Table 3**). How this variable relates to respondent's expectation of tranquillity is discussed more fully below (see Factor Analysis).

Figure 17. Median and Frequency Distribution for Summed Likert Response by Aggregated Valued Attributes Code.

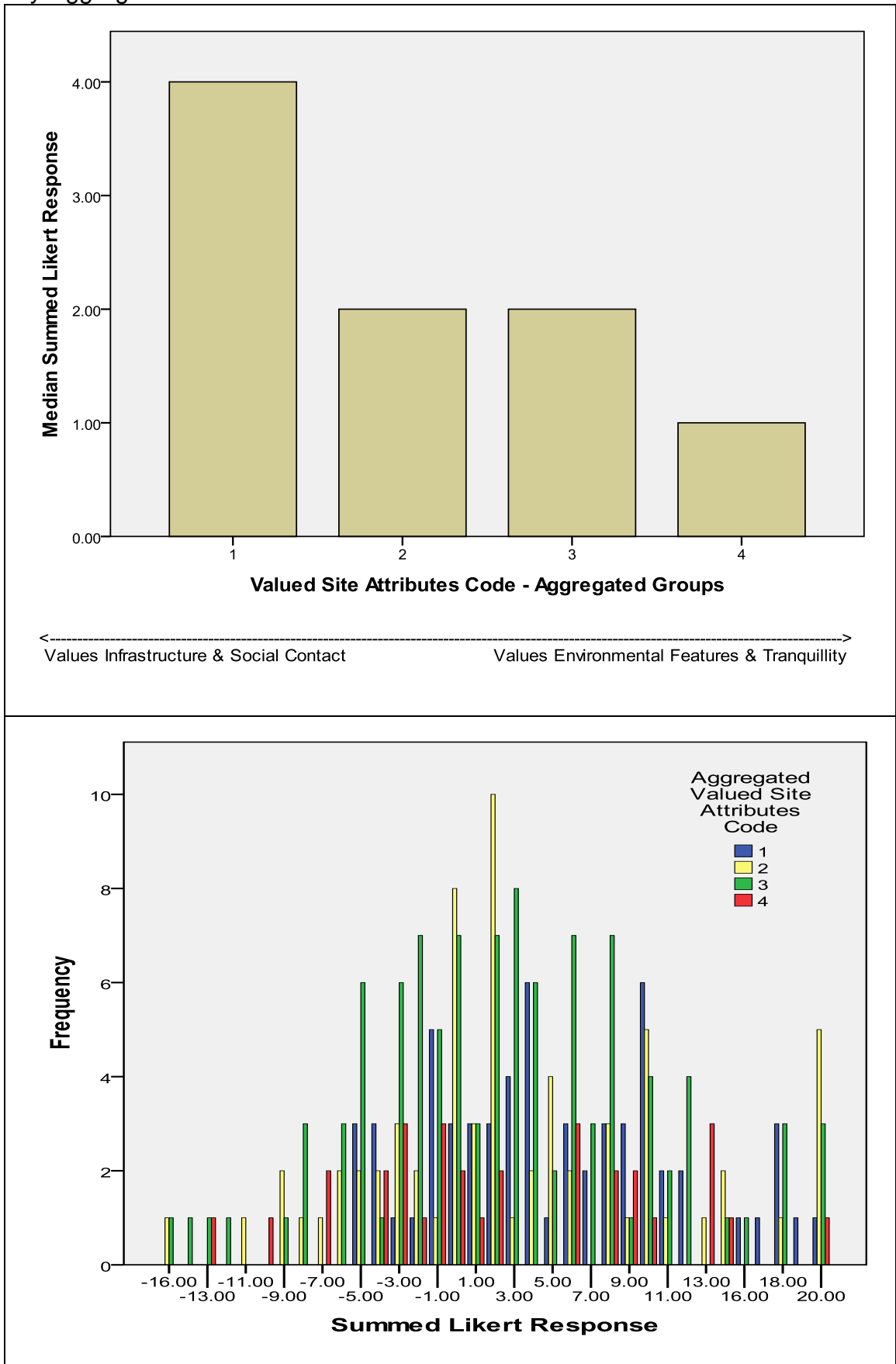


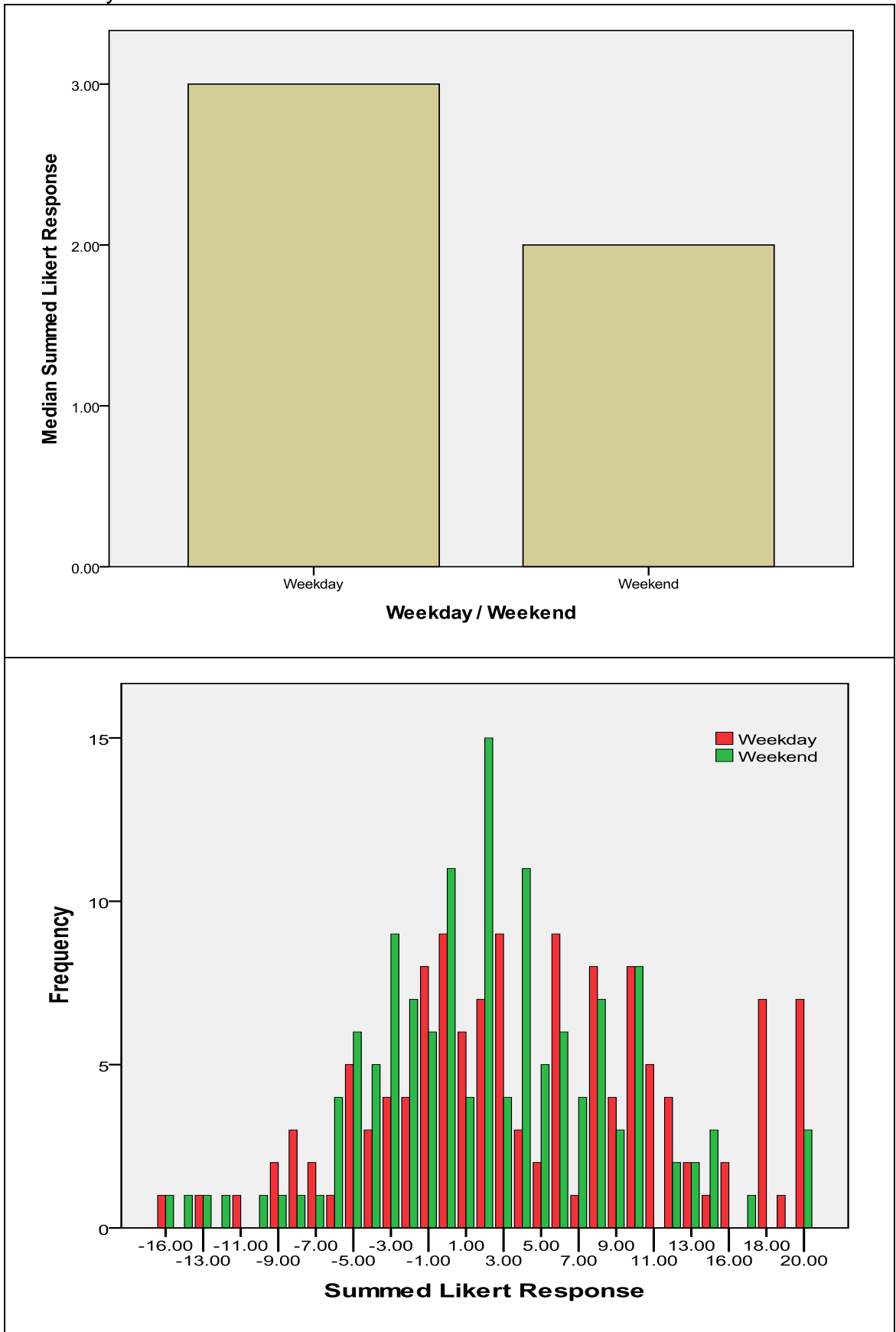
Table 9. Summary of Themes in Free Text Responses to the Question ‘What qualities of this site are important for your chosen activity today?’ (Valued Site Attributes).

Comment	Frequency Site 1	Frequency Site 2	Frequency Site 3	Overall Frequency
Views / naturalness / wilderness / tranquillity / environmental quality. Coastal scenery. Beauty.	45 (27.3%)	53 (40.8%)	46 (40.7%)	144 (35.3%)
Quieter than other beaches, not too well known, lack of people, solitude. Secluded. Isolation. Emptiness.	12 (7.3%)	20 (15.4%)	19 (16.8%)	51 (12.5%)
Beaches, rock-pools, the sea (in context of bathing), sand	18 (10.9%)	9 (6.9%)	7 (6.2%)	34 (8.3%)
Coast Path	11 (6.7%)	7 (5.4%)	6 (5.3%)	24 (5.9%)
Good / open / easy access. Car-park near the beach. Easy / free parking	16 (9.7%)	3 (2.3%)	2 (1.8%)	21 (5.2%)
Wildlife / geology	5 (3.0%)	4 (3.1%)	9 (8.0%)	18 (4.4%)
Close to home / accommodation.	5 (3.0%)	11 (8.5%)	0 (0.0%)	16 (3.9%)
Specific activity (fishing, surfing, coastering etc)	6 (3.6%)	9 (6.9%)	1 (0.9%)	16 (3.9%)
Specific landform (blue lagoon, witches cauldron)	12 (7.3%)	0 (0.0%)	3 (2.7%)	15 (3.7%)
No visitor facilities / undeveloped / unspoilt / no ice cream van.	4 (2.4%)	6 (4.6%)	4 (3.5%)	14 (3.4%)
Nostalgia / long association / family ties / friends wanted to come.	4(2.4%)	2 (1.5%)	6 (5.3%)	12 (2.9%)
Dog friendly	6 (3.6%)	2 (1.5%)	1 (0.9%)	9 (2.2%)
Have to walk to get here / remote	2 (1.2%)	0 (0.0%)	6 (5.3%)	8 (2.0%)
Safe location	6 (3.6%)	0 (0.0%)	0 (0.0%)	6 (1.5%)
Visitor facilities provided (toilets, ice cream / coffee van)	5 (3.0%)	0 (0.0%)	0 (0.0%)	5 (1.2%)
Good weather	1 (0.6%)	3 (2.3%)	1 (0.9%)	5 (1.2%)
Heritage	2 (1.2%)	0 (0.0%)	0 (0.0%)	2 (0.5%)
To watch coasterers / tombstoners	2 (1.2%)	0 (0.0%)	0 (0.0%)	2 (0.5%)
Transport links / shuttle bus	1 (0.6%)	1 (0.8%)	0 (0.0%)	2 (0.5%)
For a change	1 (0.6%)	0 (0.0%)	1 (0.9%)	2 (0.5%)
Launching facilities	1 (0.6%)	0 (0.0%)	0 (0.0%)	1 (0.3%)
Because it's a National Trust Property	0 (0.0%)	0 (0.0%)	1 (0.9%)	1 (0.3%)
Total	165 (100%)	130 (100%)	113 (100%)	408 (100%)

Weekday / Weekend

The median summed Likert response for encounters with coasterers is less positive on the weekends (median = 2) than during the week (median = 3, see **Figure 18**). This runs counter to the expected result, where expectation of tranquillity would be lower (and therefore tolerance of group encounters higher) on the weekend. It may be that this variable does not reflect ‘expectation of tranquillity’ as intended, but rather, is a function of greater perceived crowding on the weekends, especially during the high season.

Figure 18. Median and Frequency Distribution for Summed Likert Response by Weekday / Weekend.



Factor Analysis

Several of the variables discussed above were intended to provide an index of the expectation of tranquillity. Whilst some returned significant results individually, when subjected to Factor Analysis the resulting factors only accounted for 53% of variation (see **Table 10**). The factor scores did, however, show a highly significant negative correlation with summed Likert response. It was not possible to compute factors for the potential for recreational conflict (as originally intended) due to a lack of variables with sufficient discriminatory power.

A strong positive correlation is apparent between the 'site' and 'valued site attributes' components of factor 1 (rotated component scores 0.741 & 0.800 respectively). These two components are the most reliable indicators of the factor 'expectation of tranquillity'. Site 1 corresponds to low valued attributes scores (seeking social experience & easy access) and Site 3 corresponds to high valued attributes scores (seeking solitude, wildness, undeveloped areas), suggesting that people do choose a site which provides attributes they are seeking in relation to a desired level of perceived tranquillity (see **Figure 19**).

However, it is clear that further research is required in order to understand the subjective and multi-dimensional assessments involved in the perception of concepts such as tranquillity and recreational conflict and how these constructs may act in forming perceptions of any impacts of encounters with coastering groups. For example, reports of tranquillity, solitude, remoteness and emptiness as valued site attributes were recorded at all sites, despite objective measures such as visitor counts or tourist infrastructure indicating that Site 1 is relatively busy and developed. Similarly, Case 171 stated his valued site attributes as '*remoteness*' and '*coffee van*'. Although these responses may appear mutually exclusive, it may be that the respondent was applying a degree of cognitive dissonance, or simply that his personal definition of solitude or remoteness differs from more traditional understandings of these concepts.

Figure 19. Median and Frequency Distribution for Valued Site Attributes Score by Site.

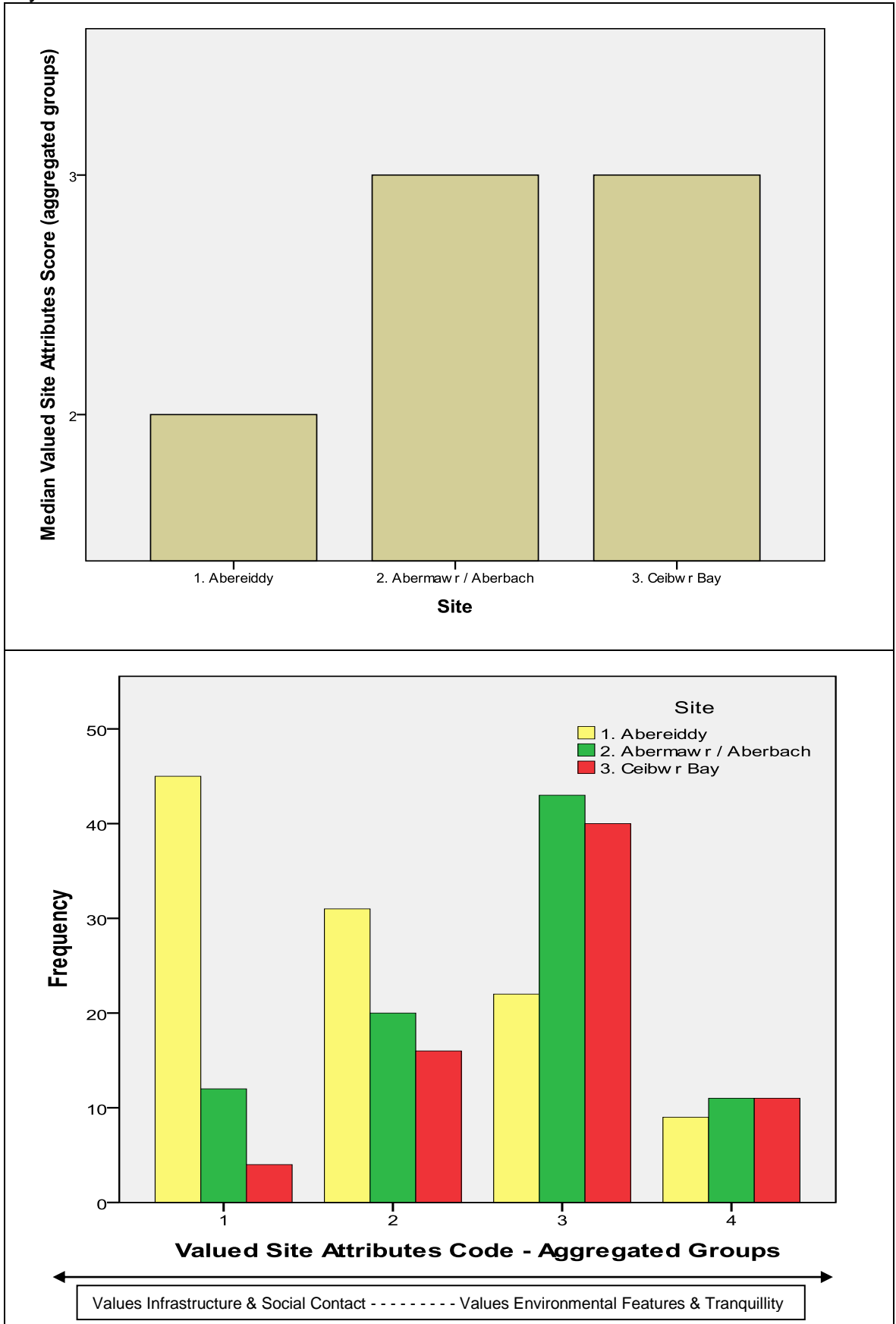


Table 10. Factor Analysis.

Theme	Factors Identified	Cumulative Variance	Pearson Correlation with Likert Score	Variables Included	Rotated Component Score
Expectation of Tranquillity KMO Measure of Sampling Adequacy: 0.565 Bartlett's Test of Sphericity: Chi Sq 73.2 Df 10 Sig 0.000	1. Site-specific and activity related variables.	31.552 %	-0.167 Sig 0.006	Site Valued Site Attributes Respondent's Main Activity	0.741 0.800 -0.601
	2. Temporal variables.	53.067 %	-0.149 Sig 0.016	Weekend / Week-day Factors Influencing Choice of Time	0.773 0.536
Potential for Recreational Conflict	N/A	N/A	N/A	No variables with significant discriminative power identified	N/A

Non-Discriminatory Variables

Other variables identified in the literature review as potentially significant in forming perceptions, such as gender, age, occupation and area of residence did not prove significant in this study. However, their lack of discriminatory power may have important implications for management. These are discussed below.

Respondent's level of prior knowledge of coasteering does not significantly affect the resulting scores. Negative perceptions are unlikely, therefore, to be due to pre-conceptions about coasteering or confusion with negative media coverage of tombstoning. The clear difference in responses to coasteering groups vs tombstoning groups supports this assertion. There is no evidence in this study of the cumulative nature of the process of the formation of perceptions of recreational conflict identified by Owens (1985), or that levels of perceived conflict are lower in respondents who have actually encountered other user types (Cessford, 2003).

No significant differences were reported in the distribution of scores between the high and shoulder seasons. It was expected that respondents choosing the shoulder season to visit would be less tolerant of encounters with groups than those visiting in the high season. This could be due to perceived crowding in the high season, especially at the weekends.

Although the factors influencing the respondent's choice of time of arrival were significant, this question was designed to give insight into the expectation of tranquillity and should be discussed in that context. The actual time of arrival was not significant.

Respondent's identity with different recreational groups was not a significant variable in this study, indicating that 'tribalism' amongst recreational groups was not important in forming perceptions of encounters with coastering groups in the study area.

Discussion of the Study Design in Light of the Results

The sample size was a product of the sampling strategy designed to include the likely range of users of the study area. The 264 respondents interviewed is in line with other similar studies (eg Arnberger & Haider [2005] sample size = 213).

11% (n=264) of potential respondents arriving at the sites during the study were interviewed. Overall, 13.2% (n=40) of potential respondents approached refused to participate in the study (see **Table 11**). Many of the significant variables were external to the respondent (eg. size and behaviour of the group, frequency of encounter) and should therefore be independent of the refusal rate. Although choice of site is partly a function of the values and expectations of the respondent, refusal rates at the three sites were similar (within 2.4% of the mean refusal rate). It is not known whether non-respondents differed from respondents with respect to the other significant variables (those aimed at assessing expectation of tranquillity and level of education), however the refusal rate was generally low (contrast, for example Hebert *et al.*, 1996) and is unlikely to have significantly affected the results.

Table 11. Arrivals, Respondents, Refusals and Sampling Efficiency by Site.

	Site 1	Site 2	Site 3	Totals
Total Number of Arrivals	1617	422	355	2394
Number Interviewed	107	86	71	264
Number of Refusals	13	14	13	40
% Approached Refusing	10.8	14	15.5	13.2
% Arrivals Interviewed	6.6	20.4	20.0	11.0

Since time of arrival was not a significant variable, it was not necessary to apply a weighting to correct any sampling bias due to the use of the next to pass sampling method (Veal, 2006). No order effects were detected with regard to the sequence in which the video clips were presented to respondents.

The record of arrivals at the sites supports their selection to represent different levels of recreational use (and by extension, expectation of tranquillity) and their application to the Likert response data as an ordinal variable representing expectation of tranquillity. This is further supported by the strong correlations between 'site' and other variables aimed at assessing the same factor (such as valued site attributes or respondent's main activity).

The qualitative data have highlighted some shortcomings in the study design. This is evident in the responses to Images 1 and 4, which were designed to depict the same activity (walking on the coast path) at different group sizes (14 and 8 respectively). However, 26 of the positive comments relating to these Images focus on how 'friendly' the group looks. 14 of these noted that most of the coasteerers in Image 4 had removed their helmets. Only 4 respondents noted in a positive context that Image 4 depicted a smaller group (see **Table 2**). Respondents were more likely to make negative comments about the larger size of the group in Image 1 (41 negative comments relating to group size for Image 1 and 13 for Image 4).

Other comments indicating the complexity of the stimuli used to assess impact upon recreational experience include whether members of the groups made eye contact with the camera, gender / ethnicity mix of the groups, width of the path at the point of passing and the physical attractiveness of members of the group. For example:

*'Bloody hell. Not one of them said hello. I'm really p****d off'* (Case 208, responding to Image 1)

'Mixed race and gender group. It's very positive' (Case 204, responding to Image 4)

This makes it impossible to attribute the differences in ratings between Images 1 & 4 to group size alone (as originally intended). The inclusion of qualitative data has, at least, highlighted these potential sources of error. Whilst study in a more controlled environment would have enabled more robust assertions to be made about the significance of some of the variables, the multidimensional nature of the assessment of group characteristics by respondents may have been overlooked. Consequently, external validity has been increased and the results can be more readily generalised to the real world.

The inclusion of a neutral category in Likert scales is the subject of much discussion. In this study, 1,054 of the 2,640 individual Likert responses utilised the neutral category. However, only 57 of the 1,129 statements recorded in the qualitative data were neutral. This disparity could indicate that the neutral Likert response category was utilised by respondents in order to avoid making a choice between positive and negative impacts, rather than indicating true neutrality. However, the questionnaire design was such that each image was rated at both frequencies of encounter before the respondent was asked for a verbal account of the factors affecting their expressed perception. The two frequencies of encounter were consistently rated differently and consequently, the accompanying free text responses often relate to the difference between the two scores for an image, instead of the image *per se*. Had free text responses been elicited for each Likert response, the qualitative data may have displayed a similar frequency of neutral views as the quantitative data. It was felt,

however, that eliciting free text responses after every Likert response would add too much time to an already lengthy interview and may risk disengaging the respondent.

Coding of free text responses into *a priori* categories should be undertaken by two researchers and the resulting categories scrutinised for inter-researcher differences to ensure consistency in coding (Robson, 1993). The limitations of time and resources when undertaking postgraduate research precluded this approach. All responses were coded by the author and this potential source of error is acknowledged.

This study has described overall perceptions of impacts of coasteering amongst those engaged in other forms of recreation in the study area and identified relevant variables which may be significant in forming those perceptions. However, further investigation into some of the quantitative aspects of this study would enable more precise management of recreation in the study area. For example, the higher frequency of encounter category was only loosely defined due to difficulties in expressing high frequency levels which may be tightly clustered due to group logistics. Whilst frequency of encounter is undoubtedly a significant variable, questions such as 'what constitutes too frequent?' or 'how many is too many?' remain unanswered. Identification of such limits of acceptable change could be of great use in managing recreation in the National Park.

It is clear that the cognitive processes involved in the perception of impacts upon respondent's recreational experience are complex and this study has not investigated the qualitative aspects of this phenomenon in great depth. For example, those engaged in traditional quiet enjoyment pastimes and those engaged in active sports (other than coasteering) rated the images less positively than other respondents. Why? Was the underlying factor some feature common to both groups (such as valuing tranquillity) or do the groups arrive at similar expressed perceptions via different cognitive routes? The

mindset of respondents appears to demonstrate a degree of plasticity dependant upon contextual factors. For example, Case 126 had been coasteering previously (and enjoyed it), but was on site for a quiet walk and scored the images negatively. More in-depth qualitative research involving case studies or focus groups could facilitate greater understanding of the multidimensional nature of such assessments.

Conclusion and Recommendations

The results and discussion are summarised below for each research objective and related to the wider context of the management of recreation and conservation in the National Park, with recommendations as appropriate.

Objective 1

To establish the nature and range of variation of any perception of impacts of coasteering on the recreational experience of other users of the study area.

Encounters with professionally led coasteering groups were generally viewed positively by those engaged in other forms of recreation in the study area. Nearly $\frac{2}{3}$ of respondents felt that encounters with coasteering groups would add to the quality of their recreational experience. However, perceptions of negative impacts were reported in 30.3% of cases. Where negative perceptions occur, they can be strongly held. Potential recreational conflict and displacement were identified in relation to coasteering, although these may not be detected from simple visitor counts or reported levels of satisfaction.

Objective 2

To identify factors which are significant in forming perceptions of any impacts of coasteering on the recreational experience of other users of the study area.

The way in which respondents rated the images of coasteering varied significantly (at the 95% probability level) with:

- Coasteering behaviour type.
- Respondent's level of education.
- Factors affecting respondent's choice of time of arrival .
- Frequency of encounter with coasteering groups.
- Coasteering group size.
- Respondent's main recreational activity.
- Site.
- Valued site attributes.
- Weekend / weekday.

The most significant variables (those achieving the 99% probability level) were behaviour type, education, frequency of encounter and respondent's main activity type.

Positive perceptions of coasteering were frequently associated with a positive view of people actively enjoying the environment (37.0%), adding interest to a visit to the sites (34.6%), the sport taking place mainly at a distance from other recreationists (6.7%) and the professionalism with which the group was led (6.7%).

The most frequently reported factors underpinning negative perceptions were high frequencies of encounter (23.1%), disruption to tranquillity (22.9%), large group size (14.5%), concern for the safety of participants (8.5%), coast path congestion (8.1%), competition for the recreational resource (7.0%) and disturbance to wildlife (5%). These factors can be viewed as mechanisms for goal interference contributing to a perception of recreational conflict.

The cognitive processes by which the variables discussed above can act in the formation of perceptions of any impacts of coasteering on respondent's recreational experience are complex. For example, it appears that the context of the encounter depicted in Image 1 (passing at close quarters) is as important as the large group size depicted in forming negative perceptions. Respondent's expectations, motivations, tolerance for lifestyle diversity, mode of experience and their individual definition of tranquillity all seem to play a role, resulting in a wide range of variation in the way each image was rated. Similar phenomena are widely reported in the literature (eg. Devesa *et al.*, 2010; Jacob & Schreyer, 1980; Pheasant *et al.*, 2010; Shackley, 1996).

The qualitative data highlighted some factors affecting expressed perceptions which were not incorporated in the study design. These included how 'friendly' the group looked (particularly smiling and making eye contact when passing on the coast path), their attire (particularly the wearing of helmets when on the coast path) and gender / ethnicity / age structure of the group.

Objective 3

To analyse how the findings could be used to develop and improve management actions to reduce or resolve potential recreational conflicts in relation to coasteering in the study area.

The median summed Likert response is positive, with 62.1% (n=164) of respondents reporting that encounters with coasteerers would improve the quality of their recreational experience. If the objective of the management of recreation in the National Park was to maximise positive recreational experiences of users of the Park, these simple statistics would be sufficient to promote further development of coasteering in the area. However, the PCNPA is required to protect the special features of the Park, one of which is tranquillity. Since tranquillity is not a tangible feature of the Park (such as landscape features), there is a need for PCNPA to deal with the subjective in an objective manner.

30.3% (n = 80) of respondents considered that encounters with coasteering groups would detract from the quality of their own recreational experience with 22.9% (n=105) of negative comments associated directly with disruption to tranquillity. This is notable as visitors to the Park overwhelmingly regard tranquillity as important to their visit (PCNPA, 2003; PCNPA, 2004) and the lack of development along the coastline has been identified as significant in maintaining visitor spending (PCC/PCNPA, 2006).

Figures on trends in visitor numbers to the sites (RAWG, 2010) and reported levels of satisfaction in the National Park (PCNPA, 2008) confirm the assertions of Arnberger & Haider (2005) and Shackley (1996) that such issues would not be apparent through simple data on visitor numbers or reported levels of satisfaction, due to the potential for displacement of other recreationists into areas of the Park which can still provide a setting appropriate for their chosen form of recreation. It should also be noted that coasteerers themselves are users of the National Park and anecdotal evidence highlighted in the literature review suggests that they too, value tranquillity and avoid crowding (Luddington, 2008). These observations highlight the need to manage the development of coasteering in Pembrokeshire in order to ensure that the sport continues to

provide novel experiences for participants, whilst protecting the special features of the Park and reducing the potential for it to impact on the experience of other recreational users of the area.

It is clear that the cognitive processes involved are both subjective and multi-dimensional. However, several variables have been identified in this study as being significant in forming perceptions of both positive and negative impacts of coasteering amongst those engaged in other forms of recreation. These are supported by qualitative information which provides insight into the nature of such assessments. Some of these variables provide suitable opportunities for management to ensure the sustainable development of coasteering in Pembrokeshire. These are discussed below.

The level of supervision of a coasteering group was important in forming perceptions amongst respondents in this study. Professionally led groups were viewed more positively than ad-hoc or un-led groups. Tombstoning groups were consistently viewed negatively by other recreationists, mainly due to safety concerns.

- **Recommendation 1:** Promote professionally led coasteering groups. Those involved in the promotion of adventure tourism in the National Park should be aware of best practice in adventure recreation and should direct enquiries to responsible activity providers such as those who are members of the Pembrokeshire Outdoor Charter Group. Coasteering group leaders should be identifiable by observers, both by their attire (perhaps a different colour helmet) and their actions. Conspicuous safety briefings and clear instruction of group members are likely to enhance the image of coasteering amongst other recreational users of the area. It may be in the interests of responsible activity providers to clearly identify themselves as complying with Pembrokeshire Outdoor Charter Group standards through badging of equipment to maximise positive perceptions of their groups amongst those engaged in other forms of recreation at coasteering venues.

- **Recommendation 2:** Tombstoning should not be promoted in the National Park. Care should be taken when promoting outdoor recreation in Pembrokeshire to stress the positive values and motivations associated with coasteering and to distinguish them from the thrill-seeking associations of tombstoning.

Perceptions of encounters with coasteering groups were generally positive amongst respondents, but became significantly more negative with increased frequency of encounter. Consequently there is a need to manage the number of groups at each site to ensure a high quality experience for all recreational site users.

- **Recommendation 3:** Research should be undertaken to determine the limits of acceptable change in relation to coasteering amongst all key stakeholders in order to guide future management of the development of the sport.

Zoning is a method often employed in the National Park (eg PCNPA, 2009; POCG, undated a, b & c). Coasteering groups could be zoned spatially or temporally. However, since 'site' was also a significant variable, caution should be exercised when proposing new sites. Existing usage types at potential new sites should also be considered, since the main activity of other site users was significant in predicting perceptions. Those engaged in social activities at beaches with easy access and some tourist facilities responded more positively to encounters with coasteerers than those who chose undeveloped sites for 'quiet enjoyment' or other active pursuits.

- **Recommendation 4:** Develop coasteering access points at beaches with existing infrastructure, but exercise caution when developing into remote or undeveloped sites. Sites popular for traditional family beach activities may be the most appropriate venues as visitors to these sites are most likely to view encounters with other types of recreational user positively. The PCNPA's current policy of leaving some sites undeveloped for commercial activity (PCNPA, 2008) should continue in

order to ensure that the full spectrum of recreational opportunity remains available in the Park.

However, season and time of arrival were not significant in predicting respondent's attitudes to coastering groups. There may, therefore be potential to increase capacity by temporal means. Weekends are particularly busy in the high season and the perception of crowding may explain the less positive responses elicited at these times.

- **Recommendation 5:** Increase temporal capacity. Extending the season could increase temporal capacity and reduce the seasonality of employment in the area, which has been identified as a concern for local people (PCNPA, 2004). This may be practical as wetsuit technology improves. Running sunset sessions may also increase temporal capacity without increasing recreational conflict. It may be possible to increase capacity by promoting coastering on weekdays.

Specific behaviours and their context appear to be significant in the formation of both positive and negative perceptions of coastering. The most negative responses were elicited for images depicting groups passing at close quarters and groups jumping from height. When passing groups on the coast path, negative comments were frequently associated with disruption to a walk, group size and frequency of encounter. Positive comments were often associated with how friendly or approachable the group appeared. When jumping from height, negative comments were most often associated with disruption to tranquillity and noise.

- **Recommendation 6:** Raise awareness amongst group leaders of the importance of behavioural and contextual factors in the formation of perceptions of coastering amongst other recreational users of the area. For example, the potential for recreational conflict is particularly high when moving between venues on the coast path. Contextual factors which may reduce perceived conflict include removing helmets and acknowledging other recreationists when passing at close quarters.

Whilst this study has identified the potential for recreational conflict in relation to coastering in the study area, perceived disruption to one of the special features of the National Park and potential recreational displacement, levels of these negative impacts were objectively quite low. Perceptions of coastering amongst those engaged in other forms of recreation were generally positive. Many recreational users appeared highly tolerant of different user types, even when they stated that they were seeking tranquillity. This provides a solid platform from which to build consensus amongst different user groups where conflict occurs. The pro-active approach of the PCNPA in managing recreation in the Park through engagement with bodies such as the Pembrokeshire Coastal Forum and the Pembrokeshire Outdoor Charter Group is key in ensuring the sustainable development of this novel and inherently non-polluting way of enjoying the special features of the National Park.

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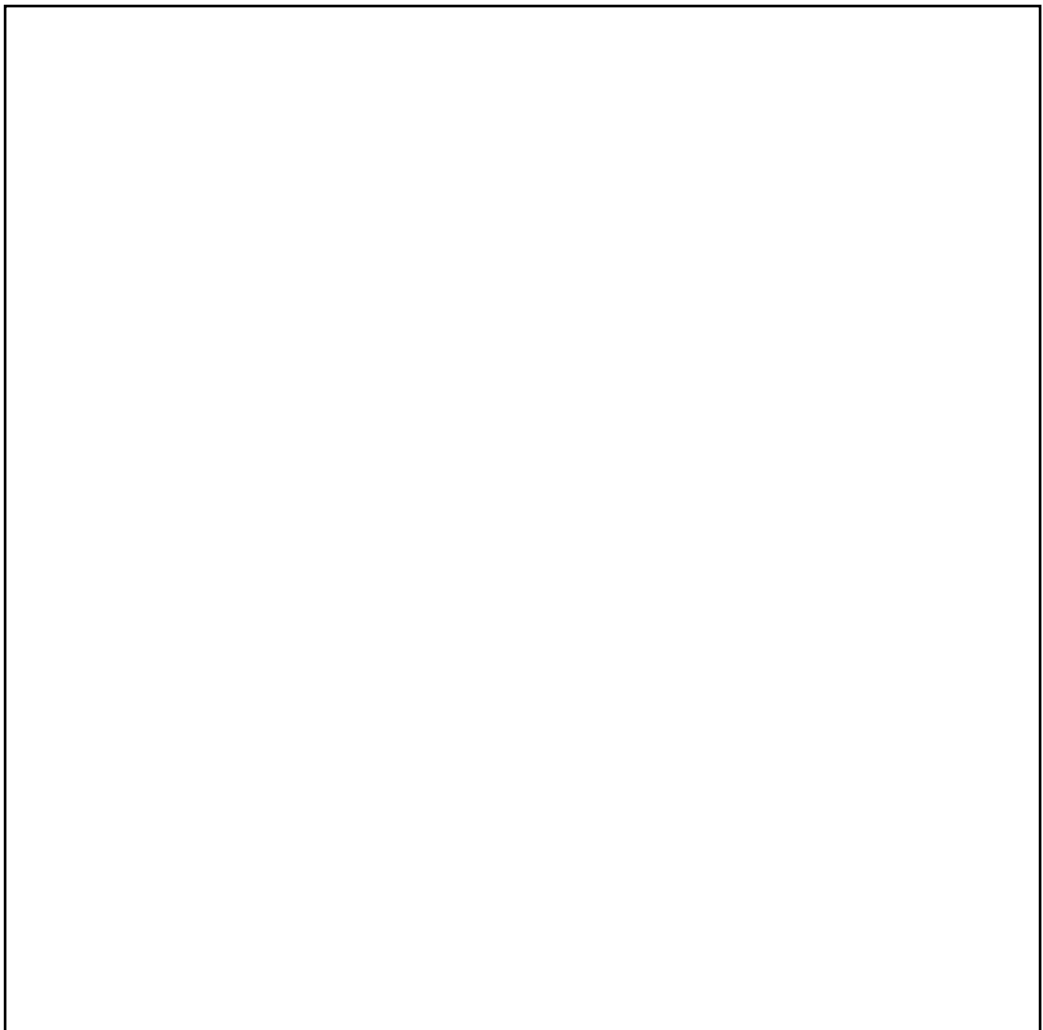
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Appendix 1

Video Images as Presented in Sequence 1

(WMV files supported by Microsoft Windows Media Player)



Appendix 2

Questionnaire and Researcher Script

General

Are you aware of the sport of coasteering?	Yes	No
Have you ever encountered a coasteering group?	Yes	No
Have you ever been coasteering?	Yes	No

Motivation & Expectations

What is the main recreational activity you plan to engage in today?

What qualities of this site are important for your chosen activity today?

With reference to the main recreational activity you have in mind for today, how far do you plan to walk from here to reach a suitable setting for your activity?
 Miles

Which of the following was important to you in your choice of destination today? Please tick any which apply.	
<input type="checkbox"/>	Natural landscape and scenery
<input type="checkbox"/>	The opportunity to see wildlife
<input type="checkbox"/>	Tranquillity
<input type="checkbox"/>	Less busy than other sites
<input type="checkbox"/>	The opportunity to participate in a specific activity
<input type="checkbox"/>	The presence of other people nearby
<input type="checkbox"/>	Visitor facilities (eg toilets, refreshments)
<input type="checkbox"/>	Ease of access
<input type="checkbox"/>	Others in your group wanted to come
<input type="checkbox"/>	Other (please specify)

Do you associate yourself with any particular recreational groups? (For example anglers, climbers, bird-watchers etc)? Please specify.

How did you first hear about this site?

Do you think this site has any legal protection as a nature conservation or heritage site? Please describe.

How often have you visited this site? Please tick.	
<input type="checkbox"/>	Never before
<input type="checkbox"/>	Occasionally
<input type="checkbox"/>	Often

Why have you chosen to visit this site at this time of day?

Why have you chosen to visit this site at this time of year?

Perceptions

I would like to show you five very short video clips, each depicting a group of coasteerers. With reference to the question below, please rate each image using the scale provided, at each of the frequencies specified.

How would an encounter with the groups depicted affect the quality of your recreational experience today?

(1= very negatively, 2= negatively, 3= not at all, 4= positively, 5= very positively).

	Single encounter with group depicted	Frequent encounters with similar groups	What is the main factor which shapes your perception of the group depicted?
Image 1			
Image 2			
Image 3			
Image 4			
Image 5			

The images depict a group with a professional guide. Would your perception be different if the group appeared unsupervised? Please tick.	
<input type="checkbox"/> Yes	<input type="checkbox"/> No

If you answered 'yes' to the last question, how would your perceptions alter?

Are you aware of the sport of 'tombstoning' (cliff jumping)? Please tick.

Yes	No	If no, please ask for the standard description
-----	----	--

Using the same scale you used earlier, please rate how an encounter with a tombstoning group would affect the quality of your recreational experience.

Single encounter	Frequent encounters	What is the main factor which shapes your perception of tombstoning?

Do you have any further comments you would like to make about any of the issues raised in this questionnaire?

Socio-demographics

Finally, a few questions about you to help me understand your responses better.

Gender. Please tick

Male	Female
------	--------

What is your age? Please tick.

18 - 29	50 -59
30 - 39	60 - 69
40 - 49	70 or above

If you are (or have been) in paid work, please describe your most recent occupation.

Which of the following best describes you now? Please tick any which apply.

<input type="checkbox"/>	Full time employment
<input type="checkbox"/>	Part time employment
<input type="checkbox"/>	Unemployed / looking for work
<input type="checkbox"/>	Student
<input type="checkbox"/>	Home / carer
<input type="checkbox"/>	Retired
<input type="checkbox"/>	Other. Please specify:

What is the highest level of educational qualification you have attained?

Which of the following areas is your normal residence? Please tick.	
<input type="checkbox"/>	Pembrokeshire
<input type="checkbox"/>	Wales
<input type="checkbox"/>	UK
<input type="checkbox"/>	EU
<input type="checkbox"/>	Other – please specify:

Who are you visiting the site with? Please tick.	
<input type="checkbox"/>	Alone
<input type="checkbox"/>	With friends
<input type="checkbox"/>	With partner
<input type="checkbox"/>	With family group
<input type="checkbox"/>	Other – please specify:

How many people are in your group today?	
<input type="checkbox"/>	Adults
<input type="checkbox"/>	Children

Thank you for taking the time to participate in this study. Your help is greatly appreciated.

Office use only

Clips shown in the order:

Coastering group visible during interview? Yes / No.

Data coding

	Frequency 1	Frequency 2
Clip 1		
Clip 2		
Clip 3		
Clip 4		
Clip 5		

Interview Date:

Interview Time:

Case No:

Interview Location:

Interviewer:

Notes:

Greeting & Permission

Good morning/afternoon,
I'm conducting some research into public perceptions of adventure sports in Pembrokeshire. Could you spare a few minutes to answer some questions for me?

I need to show you some short video clips. When you are ready, could you step over to my research base, where the equipment is set up? The interview will take about 10 minutes.

About the Research

This study is part of an MSc dissertation being undertaken at Sheffield Hallam University. The aim is to establish whether non participants perceive that encounters with coasteering groups affect the quality of their own recreational experience. Hopefully, the results will inform debate about the sustainable development of tourism and recreation in Pembrokeshire.

First, I will ask you a few simple questions about your visit here today, and then I will show you five short (18 second) video clips of coasteering and ask you to rate the images on a scale for me.

About Coasteering

The sport of coasteering involves traversing the coast by a combination of climbing, scrambling, cliff jumping and swimming [British Coasteering Federation, 2010]. Participants often form groups of between 8 and 20 people with professional guides, although some prefer to act in private groups.

About Tombstoning

Tombstoning (also known as cliff jumping) involves leaping into the water from a height. It is often practiced by small, unsupervised groups.

Appendix 3

Data Coding Scheme

Code	Description	
Single response (Y/N) questions		
1	Yes	
2	No	
Study site		
1	Abereiddy	
2	Aberbach / Abermawr	
3	Ceibwr Bay	
Season		
1	High (August)	
2	Shoulder (October)	
Day of the week		
1	Weekday (Monday – Friday)	
2	Weekend (Saturday, Sunday)	
Time of interview (as time of arrival)		
1	08:30 – 09:29	
2	09:30 – 10:29	
3	10:30 – 11:29	
4	11:30 – 12:29	
5	12:30 – 13:29	
6	13:30 – 14:29	
7	14:30 – 15:29	
8	15:30 – 16:29	
9	16:30 – 17:29	
10	17:30 – 18:29	
11	18:30 – 19 29	
Prior Knowledge of coasteering		
1	No prior knowledge of the sport	
2	Aware of the sport, but never encountered a group or participated in it	
3	Previous encounter(s) with a group, but never participated in the sport	
4	Previously participated in the sport	
Respondent Age - groupings aligned with census data		
1	18 – 29 years	
2	30 – 39 years	
3	40 – 49 years	
4	50 – 59 years	
5	60 – 69 years	
6	70 years or above	
Area of residence		
1	Pembrokeshire	
2	Wales (outside Pembrokeshire)	
3	United Kingdom (outside Wales)	
4	European Union (outside the UK)	
5	Other	
Education – adapted from UNESCO (1997) International Standard Classification of Education		
		ISCED Equivalent
1	Primary and secondary education up to O'level or equivalent	0, 1, 2
2	Secondary up to A'level or equivalent	3
3	Tertiary. Pre-degree including technical & vocational eg HND, HNC	4
4	Bachelor's degree, post-graduate certificate, diploma or degree	5
5	Advanced research degree	6

Gender			
0	Male		
1	Female		
Economic activity			
0	Inactive eg Retired, unemployed, student, carer		
1	Active eg part / full time employed / self-employed		
Occupation – adapted from ONS (2000), Standard Occupational Classification			
0	No occupation		
1	Managers & senior officials		
2	Professional occupations		
3	Associate professional & technical occupations		
4	Administrative & secretarial occupations		
5	Skilled trades		
6	Personal service		
7	Sales & customer service		
8	Process, plant & machinery operatives		
9	Elementary occupations		
Structure of respondent's group			
1	Alone		
2	With Friends		
3	With Partner		
4	With a family group		
5	Other		
Conservation awareness			
0	Not aware of any conservation designations in the area		
1	Some awareness eg National Park (may confuse with National Trust or Coast Path National Trail		
2	Conservation aware. Cites National Park and at least one other designation eg SSSI, Pembrokeshire Marine SAC, Heritage Coast.		
Image number	Description	Position in sequence 1	Position in sequence 2
1	Group of 14 passing on the coast path	1	4
2	Group of 8 observing features in a rock pool	2	2
3	Group of 14 with one member jumping from a height. Associated noise.	3	5
4	Group of 8 passing on the coast path	4	3
5	Group of 14 traversing the rocks and entering rough water	5	1
Likert coding			
-2	Very negative. Value of 1 on questionnaire		
-1	Negative. Value of 2 on questionnaire		
0	Not at all (neutral). Value of 3 on questionnaire		
1	Positive. Value of 4 on questionnaire		
2	Very Positive. Value of 5 on questionnaire		
Perceptions of unsupervised groups			
-1	More negative than those expressed for video images		
0	The same as those expressed for video images		
1	More positive than those expressed for video images		

Main activity of respondent		
1	Traditional quiet enjoyment of natural features – Walk, picnic (with a walk), wildlife watching, photography, fishing.	
2	Social activity – company and provision of visitor facilities important. No apparent desire for solitude eg Family picnic (without walk)/ BBQ, bathing / surfing as a group, rockpooling with children, ice cream, sightseeing, sunbathing, motor touring.	
3	Active / adventure sports – natural resource provides a platform for specific activity eg surfing, kayaking, climbing, running.	
Potential for place attachment in respondent		
-1	Never visited site before	
0	Occasionally visited site before	
1	Often visited site before	
Resource specificity		
1	Visited to participate in a specific activity which is dependant upon features of the site	
0	Visit not linked to a specific activity which is dependant upon features of the site	
Identification with recreational groups		
-1	Respondent does not identify with recreational groups	
0	Identifies with recreational groups unlikely to conflict with coastering eg tennis, cycling	
1	Identifies with recreational groups using the coast eg surfers, kayakers, anglers	
Valued site attributes – scores for all ticked boxes summed to provide index of expectation of tranquillity / solitude		
1	Natural landscape & scenery	Environmental features valued
1	Opportunity to see wildlife	
1	Tranquillity	
1	Less busy than other sites	
-1	Presence of other people nearby	Infrastructure / social interaction valued
-1	Visitor facilities	
-1	Ease of access	
-1	Others in the group wanted to come	
As appropriate	Other	
Factors influencing choice of time of day		
1	Some expectation of solitude eg quieter, less busy, avoid crowds, sunset	
0	Neutral eg convenience, stumbled on it, on my route, tides, weather, bus times,	
-1	Little expectation of solitude unimportant eg meeting people, taking part in a group activity	
Factors influencing choice of season		
1	Some expectation of solitude eg quieter, less busy, good for wildlife	
0	Neutral eg come all year, better weather, live here, no reason, annual leave	
-1	Little expectation of solitude eg school holidays, bank holiday, meeting friends and relatives	

Appendix 4

Frequency Tables and Summary
Statistics for Significant Variables

Behaviour Type (Image): Summed Likert Response by Case

Statistics

		Image 1 Summed Score	Image 2 Summed Score	Image 3 Summed Score	Image 5 Summed Score
N	Valid	264	264	264	264
	Missing	1056	1056	1056	1056
Median		.0000	.0000	1.0000	1.0000
Range		8.00	8.00	8.00	8.00
Minimum		-4.00	-4.00	-4.00	-4.00
Maximum		4.00	4.00	4.00	4.00
Percentiles	25	-1.0000	.0000	.0000	.0000
	50	.0000	.0000	1.0000	1.0000
	75	1.0000	2.0000	2.0000	2.0000

Image 1 Summed Score

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -4.00	1	.1	.4	.4
-3.00	18	1.4	6.8	7.2
-2.00	17	1.3	6.4	13.6
-1.00	68	5.2	25.8	39.4
.00	90	6.8	34.1	73.5
1.00	16	1.2	6.1	79.5
2.00	32	2.4	12.1	91.7
3.00	4	.3	1.5	93.2
4.00	18	1.4	6.8	100.0
Total	264	20.0	100.0	
Missing System	1056	80.0		
Total	1320	100.0		

Image 2 Summed Score

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -4.00	1	.1	.4	.4
-3.00	4	.3	1.5	1.9
-2.00	4	.3	1.5	3.4
-1.00	25	1.9	9.5	12.9
.00	103	7.8	39.0	51.9
1.00	25	1.9	9.5	61.4
2.00	68	5.2	25.8	87.1
3.00	4	.3	1.5	88.6
4.00	30	2.3	11.4	100.0
Total	264	20.0	100.0	
Missing System	1056	80.0		
Total	1320	100.0		

Image 3 Summed Score

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-4.00	4	.3	1.5	1.5
	-3.00	9	.7	3.4	4.9
	-2.00	15	1.1	5.7	10.6
	-1.00	30	2.3	11.4	22.0
	.00	52	3.9	19.7	41.7
	1.00	31	2.3	11.7	53.4
	2.00	76	5.8	28.8	82.2
	3.00	6	.5	2.3	84.5
	4.00	41	3.1	15.5	100.0
	Total	264	20.0	100.0	
Missing	System	1056	80.0		
Total		1320	100.0		

Image 5 Summed Score

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-4.00	3	.2	1.1	1.1
	-3.00	5	.4	1.9	3.0
	-2.00	12	.9	4.5	7.6
	-1.00	22	1.7	8.3	15.9
	.00	62	4.7	23.5	39.4
	1.00	33	2.5	12.5	51.9
	2.00	75	5.7	28.4	80.3
	3.00	7	.5	2.7	83.0
	4.00	45	3.4	17.0	100.0
	Total	264	20.0	100.0	
Missing	System	1056	80.0		
Total		1320	100.0		

Education Code (Aggregated Groups): Summed Likert Response by Case

Statistics

		Education Code 1	Education Code 2	Education Code 3	Education Codes 4 and 5 aggregated
N	Valid	44	28	62	130
	Missing	220	236	202	134
Median		6.00	2.0000	4.5000	1.0000
Range		31	33.00	30.00	36.00
Minimum		-11	-13.00	-10.00	-16.00
Maximum		20	20.00	20.00	20.00
Percentiles	25	2.00	-2.0000	.0000	-3.0000
	50	6.00	2.0000	4.5000	1.0000
	75	9.50	6.7500	10.2500	6.0000

Education Code 1

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -11	1	.4	2.3	2.3
-5	1	.4	2.3	4.5
-3	2	.8	4.5	9.1
-1	1	.4	2.3	11.4
0	3	1.1	6.8	18.2
1	1	.4	2.3	20.5
2	4	1.5	9.1	29.5
3	3	1.1	6.8	36.4
4	3	1.1	6.8	43.2
5	2	.8	4.5	47.7
6	6	2.3	13.6	61.4
8	6	2.3	13.6	75.0
10	3	1.1	6.8	81.8
12	1	.4	2.3	84.1
14	1	.4	2.3	86.4
17	1	.4	2.3	88.6
18	1	.4	2.3	90.9
20	4	1.5	9.1	100.0
Total	44	16.7	100.0	
Missing System	220	83.3		
Total	264	100.0		

Education Code 2

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-13.00	1	.4	3.6	3.6
	-5.00	2	.8	7.1	10.7
	-4.00	1	.4	3.6	14.3
	-3.00	2	.8	7.1	21.4
	-2.00	2	.8	7.1	28.6
	-1.00	1	.4	3.6	32.1
	.00	2	.8	7.1	39.3
	1.00	1	.4	3.6	42.9
	2.00	4	1.5	14.3	57.1
	4.00	4	1.5	14.3	71.4
	6.00	1	.4	3.6	75.0
	7.00	2	.8	7.1	82.1
	8.00	1	.4	3.6	85.7
	10.00	1	.4	3.6	89.3
	11.00	1	.4	3.6	92.9
	20.00	2	.8	7.1	100.0
	Total	28	10.6	100.0	
Missing	System	236	89.4		
Total		264	100.0		

Education Code 3

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-10.00	1	.4	1.6	1.6
	-9.00	1	.4	1.6	3.2
	-5.00	2	.8	3.2	6.5
	-4.00	3	1.1	4.8	11.3
	-3.00	2	.8	3.2	14.5
	-2.00	3	1.1	4.8	19.4
	-1.00	2	.8	3.2	22.6
	.00	5	1.9	8.1	30.6
	1.00	3	1.1	4.8	35.5
	2.00	5	1.9	8.1	43.5
	3.00	1	.4	1.6	45.2
	4.00	3	1.1	4.8	50.0
	5.00	2	.8	3.2	53.2
	6.00	1	.4	1.6	54.8
	7.00	1	.4	1.6	56.5
	8.00	5	1.9	8.1	64.5
	9.00	1	.4	1.6	66.1
	10.00	6	2.3	9.7	75.8
	11.00	1	.4	1.6	77.4
	12.00	2	.8	3.2	80.6
	14.00	2	.8	3.2	83.9
	16.00	2	.8	3.2	87.1
	18.00	5	1.9	8.1	95.2
	19.00	1	.4	1.6	96.8
	20.00	2	.8	3.2	100.0
	Total	62	23.5	100.0	
Missing	System	202	76.5		
Total		264	100.0		

Education Codes 4 and 5 aggregated

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	2	.8	1.5	1.5
	-15.00	1	.4	.8	2.3
	-13.00	1	.4	.8	3.1
	-12.00	1	.4	.8	3.8
	-9.00	2	.8	1.5	5.4
	-8.00	4	1.5	3.1	8.5
	-7.00	3	1.1	2.3	10.8
	-6.00	5	1.9	3.8	14.6
	-5.00	6	2.3	4.6	19.2
	-4.00	4	1.5	3.1	22.3
	-3.00	7	2.7	5.4	27.7
	-2.00	6	2.3	4.6	32.3
	-1.00	10	3.8	7.7	40.0
	.00	10	3.8	7.7	47.7
	1.00	5	1.9	3.8	51.5
	2.00	9	3.4	6.9	58.5
	3.00	9	3.4	6.9	65.4
	4.00	4	1.5	3.1	68.5
	5.00	3	1.1	2.3	70.8
	6.00	7	2.7	5.4	76.2
	7.00	2	.8	1.5	77.7
	8.00	3	1.1	2.3	80.0
	9.00	6	2.3	4.6	84.6
	10.00	6	2.3	4.6	89.2
	11.00	3	1.1	2.3	91.5
	12.00	3	1.1	2.3	93.8
	13.00	4	1.5	3.1	96.9
	14.00	1	.4	.8	97.7
	18.00	1	.4	.8	98.5
	20.00	2	.8	1.5	100.0
	Total	130	49.2	100.0	
Missing	System	134	50.8		
Total		264	100.0		

Factors Influencing Time of Arrival Code: Summed Likert Response by Case

Statistics

		Code 1	Code 0	Code -1
N	Valid	30	229	5
	Missing	234	35	259
Median		1.0000	3.0000	10.0000
Range		36.00	36.00	14.00
Minimum		-16.00	-16.00	3.00
Maximum		20.00	20.00	17.00
Percentiles	25	-3.5000	-1.0000	6.5000
	50	1.0000	3.0000	10.0000
	75	7.5000	8.0000	14.5000

Code 1

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -16.00	1	.4	3.3	3.3
-15.00	1	.4	3.3	6.7
-13.00	1	.4	3.3	10.0
-9.00	1	.4	3.3	13.3
-8.00	1	.4	3.3	16.7
-5.00	2	.8	6.7	23.3
-3.00	1	.4	3.3	26.7
-2.00	2	.8	6.7	33.3
-1.00	1	.4	3.3	36.7
.00	3	1.1	10.0	46.7
1.00	3	1.1	10.0	56.7
2.00	2	.8	6.7	63.3
3.00	2	.8	6.7	70.0
6.00	1	.4	3.3	73.3
7.00	1	.4	3.3	76.7
9.00	1	.4	3.3	80.0
12.00	2	.8	6.7	86.7
18.00	1	.4	3.3	90.0
19.00	1	.4	3.3	93.3
20.00	2	.8	6.7	100.0
Total	30	11.4	100.0	
Missing System	234	88.6		
Total	264	100.0		

Code 0

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	.4	.4
	-13.00	1	.4	.4	.9
	-12.00	1	.4	.4	1.3
	-11.00	1	.4	.4	1.7
	-10.00	1	.4	.4	2.2
	-9.00	2	.8	.9	3.1
	-8.00	3	1.1	1.3	4.4
	-7.00	3	1.1	1.3	5.7
	-6.00	5	1.9	2.2	7.9
	-5.00	9	3.4	3.9	11.8
	-4.00	8	3.0	3.5	15.3
	-3.00	12	4.5	5.2	20.5
	-2.00	9	3.4	3.9	24.5
	-1.00	13	4.9	5.7	30.1
	.00	17	6.4	7.4	37.6
	1.00	7	2.7	3.1	40.6
	2.00	20	7.6	8.7	49.3
	3.00	10	3.8	4.4	53.7
	4.00	14	5.3	6.1	59.8
	5.00	7	2.7	3.1	62.9
	6.00	14	5.3	6.1	69.0
	7.00	4	1.5	1.7	70.7
	8.00	15	5.7	6.6	77.3
	9.00	6	2.3	2.6	79.9
	10.00	14	5.3	6.1	86.0
	11.00	5	1.9	2.2	88.2
	12.00	3	1.1	1.3	89.5
	13.00	4	1.5	1.7	91.3
	14.00	4	1.5	1.7	93.0
	16.00	2	.8	.9	93.9
	18.00	6	2.3	2.6	96.5
	20.00	8	3.0	3.5	100.0
	Total	229	86.7	100.0	
Missing	System	35	13.3		
Total		264	100.0		

Code -1

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	1	.4	20.0	20.0
	10.00	2	.8	40.0	60.0
	12.00	1	.4	20.0	80.0
	17.00	1	.4	20.0	100.0
	Total	5	1.9	100.0	
Missing	System	259	98.1		
Total		264	100.0		

Frequency of Encounter: Summed Likert Response by Case

Statistics

		Frequency 1	Frequency 2
N	Valid	264	264
	Missing	0	0
Median		2.0000	.0000
Range		18.00	20.00
Minimum		-8.00	-10.00
Maximum		10.00	10.00
Percentiles	25	.0000	-2.0000
	50	2.0000	.0000
	75	5.0000	4.0000

Frequency 1

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -8.00	1	.4	.4	.4
-7.00	1	.4	.4	.8
-5.00	2	.8	.8	1.5
-4.00	3	1.1	1.1	2.7
-3.00	5	1.9	1.9	4.5
-2.00	10	3.8	3.8	8.3
-1.00	8	3.0	3.0	11.4
.00	43	16.3	16.3	27.7
1.00	24	9.1	9.1	36.7
2.00	36	13.6	13.6	50.4
3.00	37	14.0	14.0	64.4
4.00	18	6.8	6.8	71.2
5.00	27	10.2	10.2	81.4
6.00	12	4.5	4.5	86.0
7.00	11	4.2	4.2	90.2
8.00	3	1.1	1.1	91.3
9.00	11	4.2	4.2	95.5
10.00	12	4.5	4.5	100.0
Total	264	100.0	100.0	

Frequency 2

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -10.00	1	.4	.4	.4
-9.00	4	1.5	1.5	1.9
-8.00	2	.8	.8	2.7
-7.00	4	1.5	1.5	4.2
-6.00	7	2.7	2.7	6.8
-5.00	19	7.2	7.2	14.0
-4.00	13	4.9	4.9	18.9
-3.00	11	4.2	4.2	23.1
-2.00	17	6.4	6.4	29.5
-1.00	19	7.2	7.2	36.7
.00	40	15.2	15.2	51.9
1.00	22	8.3	8.3	60.2
2.00	15	5.7	5.7	65.9
3.00	21	8.0	8.0	73.9
4.00	22	8.3	8.3	82.2
5.00	16	6.1	6.1	88.3
6.00	7	2.7	2.7	90.9
7.00	3	1.1	1.1	92.0
8.00	3	1.1	1.1	93.2
9.00	8	3.0	3.0	96.2
10.00	10	3.8	3.8	100.0
Total	264	100.0	100.0	

Group Size: Summed Likert Response by Case

Statistics

		Image 4 Summed Likert Response by Case	Image 1 Summed Likert Response by Case
N	Valid	264	264
	Missing	1056	1056
Median		.0000	.0000
Range		8.00	8.00
Minimum		-4.00	-4.00
Maximum		4.00	4.00
Percentiles	25	-1.0000	-1.0000
	50	.0000	.0000
	75	1.0000	1.0000

Image 4 Summed Likert Response by Case

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -4.00	1	.1	.4	.4
-3.00	6	.5	2.3	2.7
-2.00	8	.6	3.0	5.7
-1.00	64	4.8	24.2	29.9
.00	103	7.8	39.0	68.9
1.00	17	1.3	6.4	75.4
2.00	44	3.3	16.7	92.0
3.00	5	.4	1.9	93.9
4.00	16	1.2	6.1	100.0
Total	264	20.0	100.0	
Missing System	1056	80.0		
Total	1320	100.0		

Image 1 Summed Likert Response by Case

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -4.00	1	.1	.4	.4
-3.00	18	1.4	6.8	7.2
-2.00	17	1.3	6.4	13.6
-1.00	68	5.2	25.8	39.4
.00	90	6.8	34.1	73.5
1.00	16	1.2	6.1	79.5
2.00	32	2.4	12.1	91.7
3.00	4	.3	1.5	93.2
4.00	18	1.4	6.8	100.0
Total	264	20.0	100.0	
Missing System	1056	80.0		
Total	1320	100.0		

Respondent's Main Activity: Summed Likert Response by Case

Statistics

		Activity Code 1	Activity Code 2	Activity Code 3
N	Valid	175	72	17
	Missing	89	192	247
Median		2.0000	4.0000	2.0000
Range		36.00	30.00	27.00
Minimum		-16.00	-10.00	-7.00
Maximum		20.00	20.00	20.00
Percentiles	25	-3.0000	.2500	-1.0000
	50	2.0000	4.0000	2.0000
	75	8.0000	10.0000	3.5000

Activity Code 1

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -16.00	2	.8	1.1	1.1
-15.00	1	.4	.6	1.7
-13.00	2	.8	1.1	2.9
-12.00	1	.4	.6	3.4
-11.00	1	.4	.6	4.0
-9.00	3	1.1	1.7	5.7
-8.00	3	1.1	1.7	7.4
-7.00	2	.8	1.1	8.6
-6.00	5	1.9	2.9	11.4
-5.00	9	3.4	5.1	16.6
-4.00	7	2.7	4.0	20.6
-3.00	8	3.0	4.6	25.1
-2.00	8	3.0	4.6	29.7
-1.00	9	3.4	5.1	34.9
.00	15	5.7	8.6	43.4
1.00	7	2.7	4.0	47.4
2.00	11	4.2	6.3	53.7
3.00	5	1.9	2.9	56.6
4.00	9	3.4	5.1	61.7
5.00	3	1.1	1.7	63.4
6.00	11	4.2	6.3	69.7
7.00	4	1.5	2.3	72.0
8.00	10	3.8	5.7	77.7
9.00	4	1.5	2.3	80.0
10.00	11	4.2	6.3	86.3
11.00	2	.8	1.1	87.4
12.00	4	1.5	2.3	89.7
13.00	1	.4	.6	90.3
14.00	3	1.1	1.7	92.0
16.00	1	.4	.6	92.6
18.00	4	1.5	2.3	94.9
19.00	1	.4	.6	95.4
20.00	8	3.0	4.6	100.0
Total	175	66.3	100.0	
Missing System	89	33.7		
Total	264	100.0		

Activity Code 2

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -10.00	1	.4	1.4	1.4
-8.00	1	.4	1.4	2.8
-5.00	2	.8	2.8	5.6
-4.00	1	.4	1.4	6.9
-3.00	5	1.9	6.9	13.9
-2.00	1	.4	1.4	15.3
-1.00	2	.8	2.8	18.1
.00	5	1.9	6.9	25.0
1.00	2	.8	2.8	27.8
2.00	7	2.7	9.7	37.5
3.00	6	2.3	8.3	45.8
4.00	4	1.5	5.6	51.4
5.00	3	1.1	4.2	55.6
6.00	4	1.5	5.6	61.1
7.00	1	.4	1.4	62.5
8.00	4	1.5	5.6	68.1
9.00	2	.8	2.8	70.8
10.00	6	2.3	8.3	79.2
11.00	3	1.1	4.2	83.3
12.00	2	.8	2.8	86.1
13.00	3	1.1	4.2	90.3
14.00	1	.4	1.4	91.7
16.00	1	.4	1.4	93.1
17.00	1	.4	1.4	94.4
18.00	3	1.1	4.2	98.6
20.00	1	.4	1.4	100.0
Total	72	27.3	100.0	
Missing System	192	72.7		
Total	264	100.0		

Activity Code 3

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -7.00	1	.4	5.9	5.9
-2.00	2	.8	11.8	17.6
-1.00	3	1.1	17.6	35.3
1.00	1	.4	5.9	41.2
2.00	4	1.5	23.5	64.7
3.00	2	.8	11.8	76.5
4.00	1	.4	5.9	82.4
5.00	1	.4	5.9	88.2
9.00	1	.4	5.9	94.1
20.00	1	.4	5.9	100.0
Total	17	6.4	100.0	
Missing System	247	93.6		
Total	264	100.0		

Site: Summed Likert Response by Case

Statistics

		Site 1	Site 2	Site 3
N	Valid	107	86	71
	Missing	157	178	193
Median		4.0000	3.0000	1.0000
Range		35.00	36.00	36.00
Minimum		-15.00	-16.00	-16.00
Maximum		20.00	20.00	20.00
Percentiles	25	-1.0000	-1.0000	-3.0000
	50	4.0000	3.0000	1.0000
	75	9.0000	10.0000	6.0000

Site 1

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -15.00	1	.4	.9	.9
-12.00	1	.4	.9	1.9
-8.00	1	.4	.9	2.8
-7.00	1	.4	.9	3.7
-6.00	2	.8	1.9	5.6
-5.00	3	1.1	2.8	8.4
-4.00	5	1.9	4.7	13.1
-3.00	7	2.7	6.5	19.6
-2.00	2	.8	1.9	21.5
-1.00	5	1.9	4.7	26.2
.00	8	3.0	7.5	33.6
1.00	2	.8	1.9	35.5
2.00	10	3.8	9.3	44.9
3.00	5	1.9	4.7	49.5
4.00	5	1.9	4.7	54.2
5.00	4	1.5	3.7	57.9
6.00	7	2.7	6.5	64.5
7.00	4	1.5	3.7	68.2
8.00	5	1.9	4.7	72.9
9.00	5	1.9	4.7	77.6
10.00	7	2.7	6.5	84.1
12.00	2	.8	1.9	86.0
13.00	3	1.1	2.8	88.8
14.00	3	1.1	2.8	91.6
16.00	1	.4	.9	92.5
17.00	1	.4	.9	93.5
18.00	3	1.1	2.8	96.3
19.00	1	.4	.9	97.2
20.00	3	1.1	2.8	100.0
Total	107	40.5	100.0	
Missing System	157	59.5		
Total	264	100.0		

Site 2

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	1.2	1.2
	-10.00	1	.4	1.2	2.3
	-9.00	1	.4	1.2	3.5
	-8.00	2	.8	2.3	5.8
	-7.00	1	.4	1.2	7.0
	-6.00	3	1.1	3.5	10.5
	-5.00	1	.4	1.2	11.6
	-4.00	2	.8	2.3	14.0
	-3.00	2	.8	2.3	16.3
	-2.00	3	1.1	3.5	19.8
	-1.00	8	3.0	9.3	29.1
	.00	6	2.3	7.0	36.0
	1.00	4	1.5	4.7	40.7
	2.00	6	2.3	7.0	47.7
	3.00	4	1.5	4.7	52.3
	4.00	5	1.9	5.8	58.1
	5.00	2	.8	2.3	60.5
	6.00	3	1.1	3.5	64.0
	7.00	1	.4	1.2	65.1
	8.00	5	1.9	5.8	70.9
	9.00	2	.8	2.3	73.3
	10.00	9	3.4	10.5	83.7
	11.00	3	1.1	3.5	87.2
	12.00	1	.4	1.2	88.4
	13.00	1	.4	1.2	89.5
	14.00	1	.4	1.2	90.7
	16.00	1	.4	1.2	91.9
	18.00	3	1.1	3.5	95.3
	20.00	4	1.5	4.7	100.0
	Total	86	32.6	100.0	
Missing	System	178	67.4		
Total		264	100.0		

Site 3

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	1.4	1.4
	-13.00	2	.8	2.8	4.2
	-11.00	1	.4	1.4	5.6
	-9.00	2	.8	2.8	8.5
	-8.00	1	.4	1.4	9.9
	-7.00	1	.4	1.4	11.3
	-5.00	7	2.7	9.9	21.1
	-4.00	1	.4	1.4	22.5
	-3.00	4	1.5	5.6	28.2
	-2.00	6	2.3	8.5	36.6
	-1.00	1	.4	1.4	38.0
	.00	6	2.3	8.5	46.5
	1.00	4	1.5	5.6	52.1
	2.00	6	2.3	8.5	60.6
	3.00	4	1.5	5.6	66.2
	4.00	4	1.5	5.6	71.8
	5.00	1	.4	1.4	73.2
	6.00	5	1.9	7.0	80.3
	8.00	4	1.5	5.6	85.9
	10.00	1	.4	1.4	87.3
	11.00	2	.8	2.8	90.1
	12.00	3	1.1	4.2	94.4
	18.00	1	.4	1.4	95.8
	20.00	3	1.1	4.2	100.0
	Total	71	26.9	100.0	
Missing	System	193	73.1		
Total		264	100.0		

Valued Site Attributes (Aggregated Codes): by Case & by Site

Statistics

		Valued Attributes Aggregated Code 1	Valued Attributes Aggregated Code 2	Valued Attributes Aggregated Code 3	Valued Attributes Aggregated Code 4
N	Valid	61	67	105	31
	Missing	203	197	159	233
Median		4.0000	2.0000	2.0000	1.0000
Range		25.00	36.00	36.00	33.00
Minimum		-5.00	-16.00	-16.00	-13.00
Maximum		20.00	20.00	20.00	20.00
Percentiles	25	.0000	-2.0000	-2.0000	-3.0000
	50	4.0000	2.0000	2.0000	1.0000
	75	10.0000	8.0000	7.5000	9.0000

Valued Attributes Aggregated Code 1 by Case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-5.00	3	1.1	4.9	4.9
	-4.00	3	1.1	4.9	9.8
	-3.00	1	.4	1.6	11.5
	-2.00	1	.4	1.6	13.1
	-1.00	5	1.9	8.2	21.3
	.00	3	1.1	4.9	26.2
	1.00	3	1.1	4.9	31.1
	2.00	3	1.1	4.9	36.1
	3.00	4	1.5	6.6	42.6
	4.00	6	2.3	9.8	52.5
	5.00	1	.4	1.6	54.1
	6.00	3	1.1	4.9	59.0
	7.00	2	.8	3.3	62.3
	8.00	3	1.1	4.9	67.2
	9.00	3	1.1	4.9	72.1
	10.00	6	2.3	9.8	82.0
	11.00	2	.8	3.3	85.2
	12.00	2	.8	3.3	88.5
	16.00	1	.4	1.6	90.2
	17.00	1	.4	1.6	91.8
18.00	3	1.1	4.9	96.7	
19.00	1	.4	1.6	98.4	
20.00	1	.4	1.6	100.0	
	Total	61	23.1	100.0	
Missing	System	203	76.9		
Total		264	100.0		

Valued Attributes Aggregated Code 2 by Case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	1.5	1.5
	-11.00	1	.4	1.5	3.0
	-9.00	2	.8	3.0	6.0
	-8.00	1	.4	1.5	7.5
	-7.00	1	.4	1.5	9.0
	-6.00	2	.8	3.0	11.9
	-5.00	2	.8	3.0	14.9
	-4.00	2	.8	3.0	17.9
	-3.00	3	1.1	4.5	22.4
	-2.00	2	.8	3.0	25.4
	-1.00	1	.4	1.5	26.9
	.00	8	3.0	11.9	38.8
	1.00	3	1.1	4.5	43.3
	2.00	10	3.8	14.9	58.2
	3.00	1	.4	1.5	59.7
	4.00	2	.8	3.0	62.7
	5.00	4	1.5	6.0	68.7
	6.00	2	.8	3.0	71.6
	8.00	3	1.1	4.5	76.1
	9.00	1	.4	1.5	77.6
10.00	5	1.9	7.5	85.1	
11.00	1	.4	1.5	86.6	
13.00	1	.4	1.5	88.1	
14.00	2	.8	3.0	91.0	
18.00	1	.4	1.5	92.5	
20.00	5	1.9	7.5	100.0	
Total		67	25.4	100.0	
Missing	System	197	74.6		
Total		264	100.0		

Valued Attributes Aggregated Code 3 by Case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	1.0	1.0
	-15.00	1	.4	1.0	1.9
	-13.00	1	.4	1.0	2.9
	-12.00	1	.4	1.0	3.8
	-9.00	1	.4	1.0	4.8
	-8.00	3	1.1	2.9	7.6
	-6.00	3	1.1	2.9	10.5
	-5.00	6	2.3	5.7	16.2
	-4.00	1	.4	1.0	17.1
	-3.00	6	2.3	5.7	22.9
	-2.00	7	2.7	6.7	29.5
	-1.00	5	1.9	4.8	34.3
	.00	7	2.7	6.7	41.0
	1.00	3	1.1	2.9	43.8
	2.00	7	2.7	6.7	50.5
	3.00	8	3.0	7.6	58.1
	4.00	6	2.3	5.7	63.8
	5.00	2	.8	1.9	65.7
	6.00	7	2.7	6.7	72.4
	7.00	3	1.1	2.9	75.2
	8.00	7	2.7	6.7	81.9
	9.00	1	.4	1.0	82.9
	10.00	4	1.5	3.8	86.7
	11.00	2	.8	1.9	88.6
	12.00	4	1.5	3.8	92.4
	14.00	1	.4	1.0	93.3
	16.00	1	.4	1.0	94.3
18.00	3	1.1	2.9	97.1	
20.00	3	1.1	2.9	100.0	
	Total	105	39.8	100.0	
Missing	System	159	60.2		
Total		264	100.0		

Valued Attributes Aggregated Code 4 by Case

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-13.00	1	.4	3.2	3.2
	-10.00	1	.4	3.2	6.5
	-7.00	2	.8	6.5	12.9
	-4.00	2	.8	6.5	19.4
	-3.00	3	1.1	9.7	29.0
	-2.00	1	.4	3.2	32.3
	-1.00	3	1.1	9.7	41.9
	.00	2	.8	6.5	48.4
	1.00	1	.4	3.2	51.6
	2.00	2	.8	6.5	58.1
	6.00	3	1.1	9.7	67.7
	8.00	2	.8	6.5	74.2
	9.00	2	.8	6.5	80.6
	10.00	1	.4	3.2	83.9
	13.00	3	1.1	9.7	93.5
	14.00	1	.4	3.2	96.8
	20.00	1	.4	3.2	100.0
	Total		31	11.7	100.0
Missing	System	233	88.3		
Total		264	100.0		

Statistics: Valued Attributes (Aggregated Codes) by Site

		Site 1	Site 2	Site 3
N	Valid	107	86	71
	Missing	157	178	193
Median		2.0000	3.0000	3.0000
Range		3.00	3.00	3.00
Minimum		1.00	1.00	1.00
Maximum		4.00	4.00	4.00
Percentiles	25	1.0000	2.0000	2.0000
	50	2.0000	3.0000	3.0000
	75	3.0000	3.0000	3.0000

Weekday / Weekend: Summed Likert Response by Case

Statistics

		Weekday	Weekend
N	Valid	130	134
	Missing	134	130
Median		3.0000	2.0000
Range		36.00	36.00
Minimum		-16.00	-16.00
Maximum		20.00	20.00
Percentiles	25	-1.0000	-2.0000
	50	3.0000	2.0000
	75	10.0000	6.2500

Weekday

Summed Likert Response	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -16.00	1	.4	.8	.8
-13.00	1	.4	.8	1.5
-11.00	1	.4	.8	2.3
-9.00	2	.8	1.5	3.8
-8.00	3	1.1	2.3	6.2
-7.00	2	.8	1.5	7.7
-6.00	1	.4	.8	8.5
-5.00	5	1.9	3.8	12.3
-4.00	3	1.1	2.3	14.6
-3.00	4	1.5	3.1	17.7
-2.00	4	1.5	3.1	20.8
-1.00	8	3.0	6.2	26.9
.00	9	3.4	6.9	33.8
1.00	6	2.3	4.6	38.5
2.00	7	2.7	5.4	43.8
3.00	9	3.4	6.9	50.8
4.00	3	1.1	2.3	53.1
5.00	2	.8	1.5	54.6
6.00	9	3.4	6.9	61.5
7.00	1	.4	.8	62.3
8.00	8	3.0	6.2	68.5
9.00	4	1.5	3.1	71.5
10.00	8	3.0	6.2	77.7
11.00	5	1.9	3.8	81.5
12.00	4	1.5	3.1	84.6
13.00	2	.8	1.5	86.2
14.00	1	.4	.8	86.9
16.00	2	.8	1.5	88.5
18.00	7	2.7	5.4	93.8
19.00	1	.4	.8	94.6
20.00	7	2.7	5.4	100.0
Total	130	49.2	100.0	
Missing System	134	50.8		
Total	264	100.0		

Weekend

Summed Likert Response		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-16.00	1	.4	.7	.7
	-15.00	1	.4	.7	1.5
	-13.00	1	.4	.7	2.2
	-12.00	1	.4	.7	3.0
	-10.00	1	.4	.7	3.7
	-9.00	1	.4	.7	4.5
	-8.00	1	.4	.7	5.2
	-7.00	1	.4	.7	6.0
	-6.00	4	1.5	3.0	9.0
	-5.00	6	2.3	4.5	13.4
	-4.00	5	1.9	3.7	17.2
	-3.00	9	3.4	6.7	23.9
	-2.00	7	2.7	5.2	29.1
	-1.00	6	2.3	4.5	33.6
	.00	11	4.2	8.2	41.8
	1.00	4	1.5	3.0	44.8
	2.00	15	5.7	11.2	56.0
	3.00	4	1.5	3.0	59.0
	4.00	11	4.2	8.2	67.2
	5.00	5	1.9	3.7	70.9
	6.00	6	2.3	4.5	75.4
	7.00	4	1.5	3.0	78.4
	8.00	7	2.7	5.2	83.6
	9.00	3	1.1	2.2	85.8
	10.00	8	3.0	6.0	91.8
	12.00	2	.8	1.5	93.3
	13.00	2	.8	1.5	94.8
	14.00	3	1.1	2.2	97.0
	17.00	1	.4	.7	97.8
	20.00	3	1.1	2.2	100.0
	Total	134	50.8	100.0	
Missing	System	130	49.2		
	Total	264	100.0		

Appendix 5

Raw Data Set

(CD Opens in Microsoft Excel 2007)

