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From objectors to supporters: developing targeted pro-environmental behavioural change interventions

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ABSTRACT

This study applies the Values-Belief-Norm (VBN) theory to develop pro-environmental behaviour change interventions for Peak District National Park (PDNP), England, UK, which can be used to influence travellers. Through 14 semi-structured interviews with 18–25-year-old PDNP visitors, the research identified two distinct groups: Supporters and Objectors. The analysis revealed three key interventions: (1) visual demonstrations of personal environmental impact targeting Objectors to enhance awareness, (2) enhanced local government involvement in issues such as litter management to strengthen the connection between awareness and responsibility, promoting shared responsibility, and (3) the use of peer influence and rewards to transform individual values into collective pro-environmental actions to enhance social impact. The proposed interventions allow destination managers and policymakers to address individuals' psychological barriers, leveraging their social norms, and provide tangible infrastructural support to enhance pro-environmental behaviours.

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Values-beliefs-norms theory; pro-environmental behavioural change; social marketing; protected areas; over-tourism; destination management

Introduction

Protected areas are vital sanctuaries for biodiversity conservation and significant contributors to national economies worldwide. These areas face escalating pressures from increasing visitor numbers, including traffic congestion, litter, unauthorised parking, and path erosion (Mose & Mehnen, 2021). The phenomenon of over-tourism has become particularly acute in protected areas (Akbar et al., 2023), especially following the COVID-19 pandemic's impact on travel behaviours and the rise of staycations (Jones & McGinlay, 2020). With protected areas often situated within accessible distance of major population centres, the growing influx of visitors has created complex challenges, such as resource allocation, stakeholder engagement, community struggles (Abukari & Mwalyosi, 2020) and opportunities for financing the conservation of these areas, which demand innovative management solutions (Kruczek et al., 2023). In response to these over-tourism challenges, this research proposes interventions as a potential solution for protected areas. These proposed interventions are underpinned by the Values-Belief-Norm (VBN) theory as a framework to inductively theorise interventions that can better fit the context of the protected area.

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The VBN theory is particularly relevant because it allows the exploration of how personal values and Environmental Worldview (EWV) shape beliefs about consequences and personal norms, ultimately influencing pro-environmental behaviour (Stern et al., 1999; Wynveen et al., 2015). While VBN theory has been extensively employed to evaluate pro-environmental behaviours (Han et al., 2017; Wynveen et al., 2015), to our knowledge, its applications to young travellers remain underexplored. For example, it does not account for young travellers' value structures, such as social identity, adventure-seeking, and peer influence and approval, and how these mediate environmental action in tourism (Musgrave et al., 2025). Additionally, the literature does not elaborate on behavioural inconsistencies among young travellers, particularly when values do not lead to corresponding actions (Juvan & Dolnicar, 2014; Long et al., 2013). Such limitations highlight an important research gap. To address this gap, this study used the VBN theory as a useful framework for addressing visitor-driven environmental challenges in protected areas. Such a tailored approach is crucial, which may have different meanings for visitors, from a source of connecting with nature to a venue for personal challenges.

The context

The Peak District National Park (PDNP), located in central England (UK), provides an important case study for understanding sustainable tourism challenges facing protected natural areas. Spanning 555 square miles and home to approximately 38,000 residents and thriving wildlife, the PDNP attracts an astounding 20 million visitors annually, a testament to its natural beauty and accessibility to major population centres (Peak District Authority, 2023). While the £1.5 billion in annual tourism revenue is a boon for the local economy (Peak District Authority, 2023), this immense popularity also puts considerable strain on the natural environment, such as environmental degradation costs, highlighting the urgency of the issue. Over 90% of visits are made by personal car, leading to traffic congestion that disrupts residents' daily lives (Booth, 2019; Shaker & Hermans, 2021). Overusing hiking trails has also caused significant erosion, especially in the park's sensitive peat moorlands (Mose & Mehnen, 2021).

Further, the PDNP holds different meanings and levels of intimacy for visitors, ranging from the romanticised vision of the traditional English countryside to self-discovery and character-building. These divergent perceptions can lead to social and environmental conflicts as different user groups impose their priorities on the landscape, particularly in conflicts between the local population and visitors (Abukari & Mwalyosi, 2020). Recognising these threats, the Peak District Authority has set ambitious goals to enhance the park's resilience, natural beauty, and community cohesion by 2040 (Peak District Authority, 2023). Achieving these aims will require close collaboration with the tourism industry and consumers, making it crucial to understand visitors' behaviour and identify effective strategies to foster more sustainable visitation.

The unique context of PDNP is significant to this study for various reasons. Firstly, it is the first national park designated in 1951 in the UK, establishing its pioneering role in conservation (PDNP, 2025). Secondly, the park represents a diverse landscape, rich history, cultural heritage, and national significance (National Parks, 2025). Lastly, the park is known for its biodiversity, contributing to the distinct wildlife and habitats of both local and international significance (Report PDNP, 2021). Such context and unique characteristics make it an important case study to investigate compared to other protected areas.

Aim and objectives

Using the VBN theory, this research aims to recommend tourism management strategies for protected areas (e.g. PDNP) with potential global applicability by understanding how visitors' values influence their pro-environmental behaviours. The findings will serve as a model for balancing

conservation, accessibility, and environmental preservation amid growing visitor pressures. The research, ultimately, pursues two primary objectives:

- To explore the relationship between travellers' values and EWV and their impact on beliefs and norms regarding environmentally responsible behaviours.
- To recommend interventions that the protected area authorities can implement to promote pro-environmental behaviours among visitors.

Literature review

Social marketing

Social marketing tackles social issues and influences behavioural changes (Andreasen, 2006; French, 2011) and is defined by the Australian Association of Social Marketing as an approach that '*integrates marketing principles with other methodologies to shape behaviours benefiting individuals and communities, ultimately serving the greater social good*' (Brennan et al., 2014, p. 1). While social marketing is experiencing renewed attention, its roots trace back to antiquity with applications in public health, health communication, behaviour change and individual and social well-being using traditional marketing fundamentals (Hastings & Domegan, 2017; Kotler et al., 2002). The integration of marketing concepts with other domains for behavioural change offers a promising framework for addressing social issues (Akbar et al., 2022; French & Gordon, 2020; Rundle-Thiele et al., 2024). Such a framework goes beyond traditional awareness-raising interventions to foster voluntary behavioural change that benefits individuals and communities (Akbar et al., 2019; Tkaczynski et al., 2020; Truong et al., 2024).

The research has shown the successful use of social marketing in promoting pro-environmental behaviours among tourists (Borden et al., 2017; Tkaczynski et al., 2020; Truong & Hall, 2017). For example, Bright's research in 2000 pioneered the exploration of social marketing's potential within tourism management by local authorities (McKenzie-Mohr et al., 2012). The study highlighted the applications of social marketing to '*manage private spaces for biodiversity preservation and wildlife habitat protection while supporting controversial policies around endangered species restoration and hunting practices*' (Hall, 2014, p. 9). However, Lane (2009, p. 26) notes that '*social marketing and behavioural change promotion remain largely unexplored in sustainable tourism research*'. Truong and Hall (2017) observed that organisations frequently employ social marketing principles to minimise negative impacts, though these initiatives often go unlabelled as 'social marketing'. Examples include hotel programmes promoting towel and linen reuse for resource conservation (Shang et al., 2010), government-initiated interventions to enhance hospitality industry resource efficiency (Gössling, 2010; Hall & Wood, 2021), and efforts to encourage responsible tourism practices among Cape Town tour operators (Bramwell & Lane, 2012). One reason for this oversight is the over-reliance on cognitive behavioural approaches, specifically the theory of reasoned action, the theory of planned behaviour, and norm activation theory, to examine sustainable behaviour (Abdullah et al., 2024; Hadinejad et al., 2025). This being the most common framework leaves little scope for alternative, novel approaches, such as the use of social marketing (Truong et al., 2024), thereby presenting significant research opportunities. Combining social marketing with cognitive behavioural approaches provides a unique advantage by aligning psychological intention models with practical behaviour change strategies. The cognitive behavioural approaches justify behaviour through attitudes, social norms, and perceived control, while social marketing explains these insights into actionable, context-specific interventions (Akbar et al., 2024; Rundle-Thiele et al., 2024). This integration enhances the efficacy of interventions by addressing both internal motivations and external barriers (Truong et al., 2024).

Social marketing interventions, when underpinned by behavioural theories, help explain how and why people adopt sustainable behaviours. The theory of planned behaviour (Ajzen, 1985) emphasises the role of behavioural intentions and perceived control, serving as a foundation for

understanding decision-making processes in sustainable tourism choices (McKenzie-Mohr et al., 2012). For example, it explains people's intentions to use public transport instead of personal cars based on perceived ease, social norms, and environmental attitudes. Similarly, the social cognitive theory (Bandura, 1985) highlights the interplay between personal, behavioural, and environmental influences, particularly relevant when examining how tourists learn and adopt new sustainable practices through observation and social reinforcement. Social reinforcement is used through interventions to showcase peer behaviour and social proof. The transtheoretical model, also known as the stages of change (Prochaska & DiClemente, 1983), recognises behaviour change as a process occurring through distinct stages, rather than a single event, helping practitioners design interventions appropriate to tourists' readiness for change. For example, this model encourages first-time hikers to adopt 'leave-no-trace' principles. Additionally, the VBN theory (Stern, 2000) has proven particularly valuable for market segmentation and targeted communication strategies. By examining the causal chain of personal values, environmental beliefs, and moral norms (Stern et al., 1999), VBN enables practitioners to identify distinct tourist profiles based on their underlying value systems and environmental worldviews. This segmentation allows for developing tailored interventions that resonate with individual value orientations, making it especially effective for promoting sustainable tourism behaviours among different segments (Han et al., 2017).

The ability to integrate theories that underpin interventions demonstrates the flexibility of social marketing. In this study, we employed the VBN theory to extend the applications of social marketing, a combination recognised in recent scholarship. For example, Hadinejad et al. (2025) emphasise the need to expand beyond conventional cognitive frameworks. Hadinejad et al. (2025) argue to integrate metacognitive perspectives in sustainable tourism behaviour scholarship, suggesting that '*this perspective explores the reflective awareness and control individuals exert over their cognitive processes, which can uncover nuanced factors shaping sustainable tourism behaviour that may be overlooked in traditional cognitive models*' (p.1). While both approaches share a behaviour change philosophy, metacognition focuses on individuals' self-awareness, emphasising internal reflection and cognitive control. In contrast, social marketing targets external behavioural change by applying marketing principles to influence actions, making it applicable to the PDNP context through audience-centred strategies.

VBN theory

Unlike traditional approaches focusing solely on altering attitudes, VBN recognises that attitudinal changes do not guarantee behavioural transformation (Stern et al., 1999). Instead, the theory provides practitioners with insights into predicting the establishment of societal norms (Ross, 2022). This approach delves into understanding people's core values and barriers to pro-environmental behaviours, and how this knowledge enables more nuanced interventions (Wynveen et al., 2015). This is because individuals who embrace an intervention's fundamental values, perceive a threat to those values, and believe their actions can restore them are more likely to develop a sense of personal obligation and responsible behaviour, even if such behaviour deviating from reported attitudes and intentions (Brennan et al., 2014), establishing a direct causal pathway between values, beliefs, norms, and behaviours (Stern et al., 1999).

The values component asserts that values are stable, general, and often formed early in life (Wynveen et al., 2015), suggesting that individuals subscribing to biospheric values behave in a way that benefits the whole ecosystem and biosphere (i.e. prioritising the environment) (Harring et al., 2017). Whereas altruistic values refer to behaviours that benefit people's well-being (i.e. prioritising others and their well-being), egoistic values are conceptualised as part of a personal value structure where individuals consider the costs and benefits of pro-environmental behaviours for themselves (i.e. prioritising self-interest and personal comfort) (Harring et al., 2017). Such assessment contributes to EWV representing an individual's general beliefs and attitudes about human-environment relations. EWV includes biocentric and anthropocentric dimensions, with the former

advocating for the harmonious coexistence of all living creatures and the latter only measuring nature's value in its contributions to human society. When not acting responsibly, the awareness of consequences (AC) indicates an individual's awareness of the negative impact on others or the environment (Han et al., 2017). Meanwhile, ascription of responsibility (AR) represents an individual's attitude toward their ability to mitigate adverse impacts on the environment (Wynveen et al., 2015). This sense of responsibility plays a crucial role in forming personal norms that shape positive behaviour; if an individual believes it is someone else's responsibility and not theirs to address an issue, they are less likely to engage in the desired action and vice versa (Brennan et al., 2014). This suggests that analysing values and EWV enhances AC and AR.

VBN theory, being an environmental psychology approach, underscores individual cognition and assumes that behaviour change originates from individuals' internal motivation (Raghu & Rodrigues, 2020). However, tourism behaviours can also be influenced by external factors such as the context of the destination and experience, travellers' social norms, group dynamics, and situational barriers, for example, the cost and convenience of travelling to the destination. Such external factors often override travellers' values (Juvan & Dolnicar, 2014). This suggests that travellers' behaviours can be emotionally charged and spontaneously influenced by hedonic motivation, which requires rational decision-making towards the environment, highlighting experiential dimensions that are often overlooked in VBN theory (Cheng et al., 2012). VBN theory also promotes that travellers make deliberate, conscious decisions based on their internal motivation and moral obligation. However, travellers' behaviours can be habitual and shaped by routines, especially in the case of repeat travel (Barr et al., 2011; Friedrichsmeier et al., 2013), where the VBN theory may be less effective in explaining these unconscious, automatic and routine behaviours. This can be linked with the argument where the VBN theory is known for effectively influencing low-effort behaviours (e.g. reusing towels, recycling at hotels), compared to high-effort behaviours (e.g. choosing not to fly), where consumers are expected to have aspirational motivations towards their pro-environmental attitudes (Esfandiar et al., 2019; Higham et al., 2014). This is maybe because the VBN theory is primarily psychological and individualistic, not addressing structural and policy barriers. Whereas, pro-environmental behaviours can be influenced by management, infrastructure, and regulations, which are not part of the VBN theory (Hall, 2014), requiring systems-level assessment.

While VBN theory promotes pro-environmental behaviours in tourism, particularly among young travellers, it does not adequately address social and contextual factors that influence behaviours. These factors are particularly salient to young travellers, whose motivations extend beyond environmental concerns, including adventure, social belonging, and self-expression. To address these weaknesses of the VBN theory, we used a hybrid framework, integrating the VBN theory with social marketing applications. Social marketing extends the focus from internal to external factors that influence behaviours (Lee & Kotler, 2019), enabling a more holistic understanding of behaviour, acknowledging that pro-environmental actions are not solely the result of individual moral commitment but are also shaped by external motivations. First, the framework uses the VBN theory to segment and profile the audience based on their value orientations (biospheric, altruistic, egoistic), environmental beliefs, and personal norms. Second, social marketing provides targeted interventions, such as educational nudges, digital prompts, and group-based activities, that resonate with each segment's motivations and contextual realities.

Methodology

Methods and analysis

This study employs an inductive, qualitative approach to uncover the values, beliefs, emotional responses, and interpretations of young travellers regarding environmental issues in the PDNP. We used semi-structured interviews that generated new insights (Saunders et al., 2018; Yin, 2018). Convenience sampling, integrated with snowball sampling, was utilised to recruit participants; all

participants were 18–25-year-olds who had previously visited the PDNP, providing relevant and informed knowledge. In this hybrid sampling strategy, convenience sampling enabled willing and voluntary recruitment (Stratton, 2021). Meanwhile, snowball sampling enabled the leveraging of participants' social networks, thereby accessing a broader group with shared experiences and characteristics (Noy, 2008). This integrated approach helped reach out to young, mobile, and socially interconnected travellers. Random sampling, while methodologically rigorous (Ahmed, 2024), would have been logistically challenging and potentially unfeasible, and may have resulted in a non-representative sample. However, some biases can be associated with the chosen sampling approach, such as selection and homophily bias (Goodman, 1961). We used various approaches to mitigate these potential biases, such as the use of various online platforms in the recruitment process to capture a more diverse sample, including individuals with different environmental attitudes and travel motivations. 18–25-year-olds were chosen due to the generational demographic cohort being a significant influencer of how people interact and value nature. This justification is grounded in both empirical and theoretical realms. Firstly, young travellers demonstrate strong environmental concerns because of higher climate literacy that encourages willingness to adopt behaviours that are environmentally friendly compared to older cohorts (Lee et al., 2020). Secondly, studies proved that '*emerging adulthood is a distinct period demographically, subjectively, and in terms of identity explorations*' (Arnett, 2000, p. 1). This shows that 18–25-year-olds are not only early adopters of behaviour change but also for cultivating long-term societal transformation, making them a suitable cohort for this study. See Table 1 for participants' demographics.

Eventually,14 interviews were conducted, which enabled the team to achieve saturation during the interview process and considered sufficient to draw findings. We considered various criteria to ensure data saturation. First, interviews were conducted and analysed simultaneously, identifying preliminary codes and themes, and evaluating whether new information was being generated. Second, the independent evaluation of themes by each team member also allowed for consistency. Third, using the approach recommended by Guest et al. (2006/2006) and Hennink et al. (2016), where no new themes emerged across at least three consecutive interviews, saturation was ensured. This iterative monitoring process added data richness, thematic consistency, and enhanced the credibility of the data collected.

The interview script was structured according to the VBN theory, with 24 questions (see Appendix A) adapted from Denley et al. (2020) and van Riper and Kyle (2014). The average length of each interview was 42 minutes and 5 s. All interviews were transcribed and analysed through thematic analysis (Braun & Clarke, 2006). This approach was chosen as the researchers became more immersed in the data and began to code it to manage it more effectively. This approach allowed staying within predetermined boundaries derived from the literature whilst being flexible and introducing new themes to achieve the research objectives.

Table 1. Participants' demographics.

Participant	Age	Gender	Education
P1	25	Male	Master
P2	23	Female	A-Levels
P3	22	Male	A-Levels
P4	22	Female	A-Levels
P5	20	Female	A-Levels
P6	25	Female	Master
P7	24	Female	Master
P8	20	Male	A-Levels
P9	21	Female	A-Levels
P10	21	Male	A-Levels
P11	25	Male	Bachelor
P12	24	Female	Master
P13	20	Male	A-Levels
P14	24	Male	Bachelor

Ethics and research protocol

To guarantee the validity of this study, it was crucial to ensure that the research reflects the phenomenon being studied and that the findings are well-founded. To achieve this, the questions used in the interviews were constructed based on past research on the VBN theory, ensuring valid and relevant responses. Additionally, the study was approved by the ethical committee of the University of Derby, UK, which helps comply with relevant research protocols, including informed consent, information sheets, and anonymity.

Findings and discussion

The application of VBN theory in this study is twofold: first, it is used to understand participants' values and EWV, thereby profiling them into two groups, namely Supporters and Objectors. Second, participants' profiling helps to understand their beliefs, which potentially affect their norms and behavioural intentions, and this understanding informs the proposal of three social marketing interventions for the PDNP authorities.

Participants' profiling

Table 2 details the profiling of the participants' values and EWV, and how these were used as a base for profiling them into two distinctive groups: Supporters and Objectors. Gaining knowledge about these aspects assists in making recommendations on how to approach people with different sets of attitudes. Understanding the values and EWV allows comparisons between the participants and helps follow the participants' pseudonyms. During each interview, the participants were asked questions about their values and EWV; however, they were not informed about the purpose of those questions so as not to create biased answers.

Supporters VS objectors

Our findings show that Supporters and Objectors differ not only in values but also in their emotional responses to environmental issues. Table 3 presents an analysis highlighting various behavioural dimensions of both personality traits.

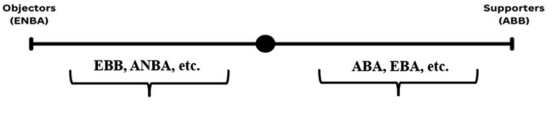
The analysis suggests that Supporters are motivated internally and intrinsically, which shapes their behaviour towards the environment, whereas external and extrinsic motivations influence the behaviour of Objectors. Their emotional responses are less morally anchored and more self-referential. However, there is an overlap, albeit limited, between both groups' values and EWV. For example, some Supporters (e.g. P11) exhibit an EBA profile (i.e. a combination of egoistic and biospheric/altruistic values), as seen in the value spectrum presented in Table 2. This means that individuals with strong environmental concerns may still be occasionally influenced by their social surroundings and peers, resulting in behaviours that are not fully aligned with their pro-environmental values. Similarly, Objectors (e.g. P4) may exhibit limited altruistic characteristics and lack biospheric depth (i.e. ANBB). Such a situation indicates that with suitable support, Objectors will be able to translate their limited empathy into strong environmental concerns. In addition, both groups possess general social responsibility towards the environment, such as litter picking, which is another overlapping area (see Figure 1).

Figure 1 effectively presents a group-level difference in value orientations, highlighting areas that can be leveraged, such as shared environmental concerns, as a basis for social marketing targeting (Lee & Kotler, 2019). However, such categorical identities do not fully capture behavioural change, which is at the heart of VBN theory (Cheng et al., 2012; Stern et al., 1999). Therefore, based on this profiling, a thorough understanding of AC, AR, personal norms and behavioural intention is required, which is presented in the next section.

Table 2. Participants' profiling based on values and EWV during interviews, participants were asked the following questions to help identify their values and EWV.

Key Questions	VBN Components	Participants' Responses (Selection)
How do you perceive your role within society?	**Altruistic Values (A)** These values are adopted from Denley et al. (2020). **Equality:** Equal opportunity for everyone. **Social justice:** Addressing injustice and promoting the well-being of others. **A world at peace:** A world free of war and conflict.	'*One of the most important values for me, in terms of how people perceive me, is to be supportive. And I would say a good person to people. Do good, be good and receive good … '* (P5).
	Egoistic Values (E) These values are adopted from Denley et al. (2020). **Social Power:** Control over others, dominance. **Authority:** The right to lead or command. **Influence:** Having an impact on people and events.	'*I imagine myself leading others … I am more leaning towards influencing communities or businesses … '* (P8).
What is your connection with nature?	**Biospheric Values (B)** These values are adopted from Denley et al. (2020). **Protecting the environment:** Preserving nature. **Unity with nature:** Fitting into nature. **A world of beauty:** Beauty of nature and the arts.	'I am very respectful towards nature and society. I do not hunt. I will always help animals in danger, and I would not litter. We only have one planet, so we must respect everything about it' (P10).
Do you agree/disagree with the given statements and why?	**Biocentric EWV (B)** These statements are adopted from van Riper and Kyle (2014). • When humans interact with nature, it often produces damaging results. • Humans are severely abusing the environment. • The balance of nature is very delicate and easily upset. • If things continue their present course, we will soon experience a major ecological catastrophe.	'I think everything will get better [in nature]. All feels the same to me [regarding climate change] as it used to be for me' (P8).
Do you agree/disagree with the given statements and why?	**Anthropocentric EWV (A)** These statements are adopted from van Riper and Kyle (2014). • Humans can modify the natural environment to suit their needs. • Humans will eventually learn enough about how nature works to be able to control it. • The balance of nature is strong enough to cope with the impacts of modern industrial nations. • Humans were meant to rule over the rest of nature.	'I do not have anything against nature. It is just that personally, I am an indoor person. But when I am in nature and open space, and there are not so many bugs around, I am cool with it' (P1).

This process ultimately revealed two distinct personality traits as shown in the value/EWV spectrum below:



- **Supporters** possess altruistic (A) and biospheric values (B) as well as biocentric EWV (B). This group believes that with only one planet, fostering harmony in our coexistence is fundamental. They are inclined to promote responsible behaviour, among others, and they support environmental organisations. Their challenge to adopt pro-environmental behaviours lies in rational limitations.

(*Continued*)

Table 2. Continued.

Key Questions	VBN Components	Participants' Responses (Selection)

- **Objectors** hold egoistic (E) and non-biospheric values (NB) as well as anthropocentric EWV (A). Objectors show less concern for the issues affecting others, prioritising their own self-development. They define themselves as indoor people. However, nature can act as a retreat if it provides sufficient comfort. Objectors are more receptive to interventions that highlight the negative impacts of behaviours on their personal experiences rather than on someone else's.

Based on this, we identified 8 Supporters (characterised by traits such as ABB, EBA, and ABA) and 6 Objectors (characterised by traits such as ENBA, EBB, and ANBB), as shown in the table below.

Participants' Profile					
Participant	Values	Connection with nature	EWV	Pseudonym	Personality traits
P1	E	NB	A	ENBA	Objector
P2	E	B	B	EBB	Objector
P3	E	B	B	EBB	Objector
P4	A	NB	B	ANBB	Objector
P5	A	B	A	ABA	Supporter
P6	E	B	B	EBB	Objector
P7	A	B	B	ABB	Supporter
P8	E	NB	A	ENBA	Objector
P9	A	B	B	ABB	Supporter
P10	A	B	B	ABB	Supporter
P11	E	B	A	EBA	Supporter
P12	A	B	B	ABB	Supporter
P13	A	B	B	ABB	Supporter
P14	A	B	B	ABB	Supporter

Table 3. Behavioural dimension comparisons.

Dimension	Supporters	Objectors
AC	High awareness of environmental degradation. Understand climate change, erosion and their impacts.	Superficial awareness of environmental degradation. Require personal relevance to care.
AR	Strong sense of personal and collective responsibility. Willing to adjust behaviour voluntarily.	Deflects responsibility to authorities. Unlikely to act unless prompted or incentivised.
Emotional Response	Show empathy, guilt, and moral concerns. Likely to feel shame if they harm nature, even if unseen.	Conditional emotional responses. Show apathy unless personally affected.
Support Required	Require emotionally charged messaging.	Require reminders, such as benefits and consequences. Motivated through incentives.
Social Role	Willing to volunteer, influence and encourage peers.	Followers, when it comes to behaviours related to the environment, may change if influenced by trusted peers or authorities.
Motivation	Engage through internal and intrinsic motivation.	Engage through external and extrinsic motivation.
Intentions	Likely to adopt sustainable practices.	Resist or delay behaviour change.

Thematic analysis

Table 4 presents key themes that emerged from the interview data.

Impact awareness

The travellers' diverse levels of environmental awareness, characterised by a general awareness of climate change but an unclear understanding of personal impact, were revealed. VBN theory illuminates how individuals navigate environmental consciousness, showing that Supporters typically possess appropriate AC (Stern, 2000), while Objectors demonstrate significant knowledge gaps of personal impacts:

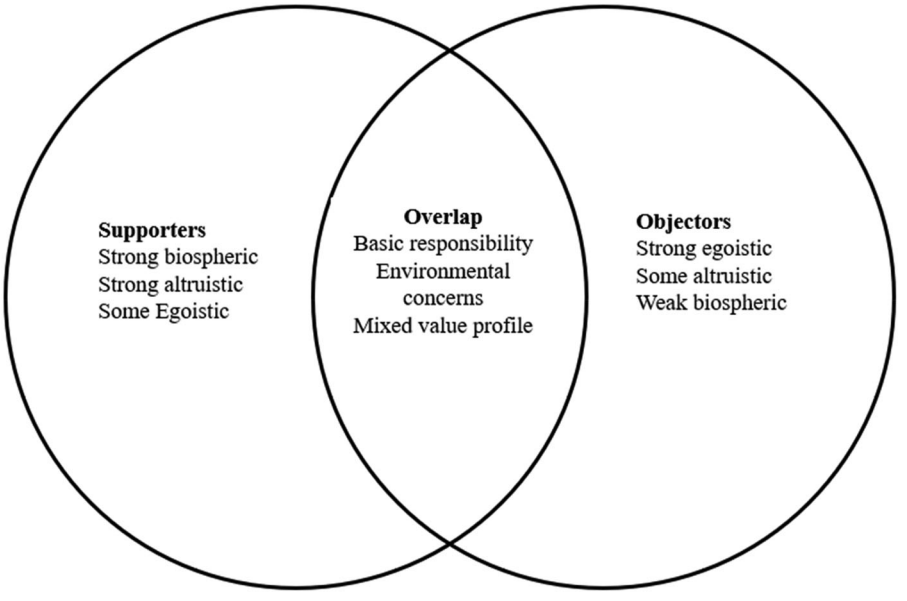


Figure 1. Overlap between supporters and objectors' values.

Table 4. Thematic analysis process.

Codes from the Interviews	Themes from the Interviews	Proposed Interventions
• Lack of general knowledge about nature protection • Relevant information about personal impact is required • Emotional and cognitive responses	• Knowledge and Awareness • Motivation, Rewards, and Emotional Drivers • Guidance and Solutions	Impact Awareness (This intervention is proposed to target Objectors)
• Inconvenience of pro-environmental choices (e.g. limited public transport options). • Structural challenges, such as inadequate information on the environmental impact of car usage. • Issues such as littering are linked to insufficient infrastructure (e.g. lack of bins). • Preference for private transport due to perceived enjoyment and convenience over public transport.	• Barriers to Pro-Environmental Behaviour • Social Accountability and Responsibility • Local Authority's Initiatives and Role	Promoting Shared Responsibility (This intervention is proposed to target Objectors)
• Allowing people to influence others within their social setting. • Encouraging people to share social responsibilities • Using rewards to engage people in successful pro-environmental behaviours • Highly engaged people would become advocates for pro-environmental behaviours	• Reward and Advocacy • Sharing roles and responsibilities to enhance the impact.	Enhancing Social Impact (Supporters nudging the Objectors)

> I do not really have awareness and knowledge of how big of an impact CO2 emission leaves within the park (P8).

> There are so many different impacts. I know there are loads of different environmental changes, but I do not think I am motivated enough to do my own research and read about it (P6).

Therefore, impact awareness interventions consider improvements that are mainly relevant to the Objectors, despite the type of information that would nevertheless be helpful towards Supporters. The findings show that most people care about nature; however, concern or empathy for environmental issues can differ. However, AC among Objectors can be achieved by raising awareness about the realistic effects of certain behaviours. For example:

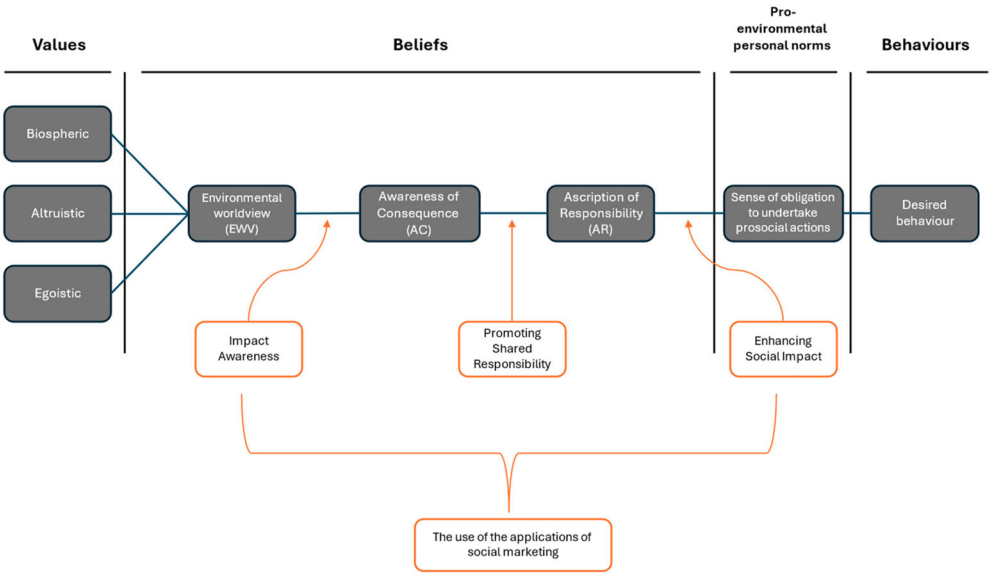


Figure 2. Proposed interventions.

> The most effective intervention would be the one that explains what is our damage and what can be done to make it better. What would the result be if I took the steps (P8).

For instance, instead of warning against parking on the grass, tourists could be presented with a picture/poster/visual of the impact one vehicle leaves and then a picture presenting a compounded impact of many vehicles (e.g. the images of rutted grass due to the vehicular or cumulative impact of one car vs multiple cars over time). Additionally, the timing and place of the interventions must be strategically presented, as Objectors are less likely to search for alternative behaviours (Kotler et al., 2002), including actionable steps, such as parking alternatives, direct benefits of behaving responsibly, etc. Visuals/posters depicting negative environmental impacts can significantly influence behavioural intentions, particularly when they connect emotional responses with clear, step-by-step instructions. For example, snippets evoke empathy and the wildlife struggle due to environmental degradation caused by human actions. In addition, quantitative data/statistics showcasing the measurable benefits of positive actions would be vital (e.g. reducing car parking on grass improved the PDNP's vegetation cover by X% in Y month/year). Such messaging should be clearly visible on the PDNP website/social media/or third party such as Trustpilot/Tripadvisor, or at eye level printed copies throughout the park, while avoiding information overload.

The visual messaging is more effective than other communication strategies for several reasons. First, visuals are particularly useful for Objectors, as they simplify information and evoke emotional responses (Murray et al., 2016). According to dual-process theories of cognition, visuals facilitate heuristic, low-effort processing, which is essential when engaging individuals with low intrinsic motivation (Lawrie et al., 2024; Warren et al., 2018). This means that emotionally engaging visuals can be more effective for Objectors who have limited awareness of their environment and actions while in PDNP. Second, visuals reduce messaging fatigue and avoid information redundancy (Keating & Skurka, 2024), which results from text-heavy communication. Lastly, visual nudges placed at key decision points (e.g. car parks, tourist attractions) serve as behavioural cues that bypass deliberate resistance and activate immediate responses (Frederiks et al., 2015).

Participants also highlighted that excessive or overly negative information can confuse and discourage behavioural adoption of personal responsibility (AR), whilst clear instructions can enhance it:

> I think for me; it always worked when an advertisement was connected to my emotions and could act on my emotions so if it would make me feel sorry. However, at the same time, it gave me a solution on how to help. There would be a high chance that I would react to it, but give me a solution …. (P5).

Alternatively, if the information becomes overly negative, travellers want to escape and reject the message (Brennan et al., 2014). Additionally, to avoid over-inducing negative emotions, the message could outline the long-term impact that positive behavioural actions can have. The intervention design must prioritise actionable solutions and step-by-step instructions over information overload. However, this depends on how much the person subscribes to the specific matter, and if they do, it will enhance the impact. For example:

> I would do it naturally if I were generally thinking that is really good information. If I believed in [the sustainability-related information], I would definitely share it with other people willingly (P6).

The results also highlighted the significance of rewards. For example:

> All the people that are not as willing to do things necessary to protect nature, I think they would be more willing to do the things if they were to get a reward (P12).

This suggests that strategies should focus on specific behaviour instructions and potentially include reward mechanisms to motivate less environmentally engaged individuals. This indicates that information dissemination alone is ineffective for Objectors. Thus, impact awareness targeting Objectors to increase their AC must include clear and specific actions, nudging Objectors towards positive behaviour alongside the negative consequences on wildlife, the environment and other humans because of bad behaviour. Though the focus remained on Objectors by offering suggestions on using a wider range of impactful messages and step-by-step instructions for motivation, there should be some focus on offering information about deeper involvement opportunities, like volunteering or donations, for Supporters. This is where social marketing would come in handy by offering its variety of tools to develop interventions that go beyond information awareness (Akbar et al., 2022; French, 2011). This integrated approach would be more robust in enhancing overall impact awareness, which would lead to potentially actionable behaviours. This showcases the implications of VBN theory, underpinning environmental consciousness, which enhances awareness and responsibility and results in desired actions (Stern et al., 1999). This also aligns travellers' personal values and perceived consequences for more sustained positive behaviours.

Impact awareness requires engagement between the PDNP's authorities and management, as well as other stakeholders. However, the authorities may face barriers in securing buy-in from local businesses (e.g. car parks, hospitality sector and other attractions) in the local area to host visual interventions. They may also face financial difficulties in producing such visuals, requiring creative expertise (e.g. digital and graphic designers), alongside the maintenance of the visuals (e.g. weather-proof posters and updated statistics), and digital dissemination across multiple platforms (e.g. social media and TripAdvisor), necessitating digital integration in the PDNP's promotion and communication. Similarly, travellers, being the main stakeholders, may resist negative and emotionally charged messaging, especially if it disrupts their leisure experience.

Promoting shared responsibility

The findings remind us that the linkage between AC and AR needs strengthening, especially for the Objectors. Regardless of an individual's connection with nature, EWV or values, most people are aware of environmental concerns and potential issues. While AC may be low in specific individuals, many are confident in managing essential personal responsibilities. For example:

> … If they go and have a trip there, then they are responsible to take everything back [rubbish] with them (P3).

> I am always considerate of nature; when I was there, I always made sure that I never left anything [rubbish] behind (P13).

> I would take all my stuff with me after walking and doing picnic, for example, all the trash and everything, so I believe I was consuming nature healthily (P2).

However, regarding broader social responsibility, such as opting for public transport, sacrificing comfort for pro-environmental behaviours, or paying extra for sustainable alternatives, people expect proactive involvement from authorities, policymakers, and local governments.

> Depends on comfort because, for example, if I am travelling, if I am choosing to travel by bus, there should be a convenient stop somewhere nearby Peak District. Otherwise, I would drive my car. At the same time, the bus should be quite fast because when I was using the bus, it was really, really slow. And like you have to go a few kilometres for an hour. So, of course, you would choose a car because time is quite expensive for us (P2).

> …. It is not as easy to come to the Peak District as it should be … We know for a fact that the trains and buses there are a bit of a joke [Referring to the long bus journey] (P13).

Such expectations stem from a normative belief that collective action is necessary for meaningful environmental change. Objectors, in particular, are more likely to assume responsibility when they observe coordinated efforts from the authorities to address environmental challenges. As one participant said:

> The one who created the rules, unfortunately, is the government. What I can see is that the governments are holding the upper hand, so once the government starts making the right decisions, it will create some domino effect (P1).

The findings highlight a clear relationship between the Objectors' low sense of personal responsibility and the need for more decisive collective and governmental action. According to VBN theory, individuals are more likely to take pro-environmental actions when they perceive these behaviours as socially expected and when they see that authorities are also acting (Stern, 2000). Most people believe it is the authorities/(local) government's role to drive a sustainable development agenda within destinations (Knez, 2016) and tackle climate change (Wells et al., 2011). When individuals perceive that the government is actively involved in environmental management and enforcing regulations, they are more likely to align their own behaviours with collective norms. This aligns with the idea that social norms around environmental stewardship are often influenced by the behaviour of the authorities and other prominent societal actors (Cialdini et al., 1991). This finding aligns with the Theory of Planned Behaviour (Ajzen, 1985), which suggests that perceived behavioural control influences whether individuals take pro-environmental actions.

In PDNP, visitors held the local government most accountable for litter caused by the lack of bins. From a social marketing perspective, bins represent an augmented product, a tangible intervention that can accommodate behavioural change by making it easier for individuals to dispose of waste appropriately (Kotler et al., 2002). Participants believe that the authorities should either install more bins around the park or provide bin/trash bags at critical locations where waste pollution is most common:

> … there is an issue with bins around touristy places [lack of bins within PDNP]; there is just not enough of them (P6).

> … there were no bins, so people just left things on the ground (P8).

In addition to providing bins in high-traffic areas, implementing nudges to encourage the use of bins for litter, offering bin bags for personal waste collection, or displaying signage with information on how to dispose of such waste would be effective.

Other issues include crowd management and a lack of parking spaces with PDNP. For example:

> … when there are no parking spaces, you either have to leave and you cannot go to that place, or you have to park miles away. There were too many people. We had to queue. We stood in the queue to cross the stepping-stones (P6).

> … it is more limiting if you get to the viewpoint, and you sort of like want to see your clear view … So, crowdedness (P8).

People tend to see their role as handling basic actions, such as simple waste disposal, while expecting authorities to manage more complex or large-scale interventions, such as providing infrastructure or regulating environmental practices. This division of responsibility supports a sense of fairness and reduces feelings of being overwhelmed by environmental sustainability challenges.

Therefore, interventions should emphasise this shared responsibility and communicate how individuals' actions, when paired with the right institutional support, can contribute to larger environmental goals in a domino effect. Consequently, it aims to enforce norms and social accountability for objectors. Signposting the role of authorities, such as messaging about limited parking spaces, encouraging people to use shared cars, incentives for using local transport, improved waste management systems or public clean-up initiatives, or the number of bins installed and tons of plastic collected. The benefit of such interventions is that they provide powerful cues that inspire a higher sense of responsibility. However, such interventions may face financial constraints, for example, the PDNP authorities may not prioritise traveller-driven environmental challenges. The local council and transport operators may not view improving services to PDNP as profitable, thereby limiting collaboration. More importantly, substantial public investment in the infrastructure (e.g. more bins and improved public transport) hinders the enforcement capacity of shared responsibility. As a result, travellers may not internalise shared responsibility if local stakeholders are perceived as disengaged or ineffective.

Enhancing social impact

This study recognised that people establish different norms depending on their upbringing or connection to nature, their AC, and their AR. Such insights provide crucial understandings of variability, explaining how individual EWVs are constructed through complex personal and social experiences (Stern et al., 1999). Consequently, while Objectors need more encouragement to adopt pro-environmental behaviours, Supporters could be advocates for the environmental movement. We found that Supporters are willing to encourage others to behave sustainably, which aligns with Carrico and Riemer's (2011) study, which states that peer feedback and encouragement significantly influence behavioural change. This echoes with the Supporters' view. For example:

> I tell people to pick up their trash. I always tell my friends or my partner to do certain things that I think are right to prevent pollution and in general like just prevent us from damaging nature in any way (P12).

Encouraging others to behave responsibly is one of the most acceptable behaviours people are willing to engage in. However, only under the conditions when the person believes in the message and perceives themselves as socially significant enough to influence others. This exemplifies the VBN theory's core mechanism: how personal values naturally propagate through social networks, creating a normative cascade of environmental behaviours (Stern, 2000). Therefore, the recommendation is an intervention that would encourage Supporters to comply with small, specific, and clear requests and then share them with their peers to encourage Objectors to comply and enhance the overall social impact. Such an intervention becomes a sophisticated psychological tool for normative transformation.

For this, a similar approach to the Icelandic Pledge can be applied. The Pledge requests that travellers pledge to seven simple statements that keep them accountable for acting responsibly on the island (Icelandic Pledge, 2017). The Pledge is distributed to multiple stakeholders, such as car rental businesses and tour guides. Thus, a link to the Pledge is available on multiple websites. In the later stage, the travellers could be introduced to a concept similar to Iceland Academy's, which encourages prospective visitors to enrol in an interactive course about responsible behaviour in the country (Visit Iceland, 2023). Whilst the course requires more effort, it could be the second

step of the intervention and a more significant commitment to targeting the Supporters. VBN theory suggests that this escalating commitment strategy effectively transforms initial small actions into more substantial environmental engagement (Cialdini, 2003). The enhancing social impact intervention completes the VBN theoretical journey, where individual values are fully translated into publicly demonstrated environmental commitment. Integrating VBN theory with enhancing the social impact intervention offers a psychologically grounded approach to environmental behaviour change, transforming passive awareness into active ecological stewardship. However, the challenge lies with Supporters who may not be willing or, in some cases, may be unprepared to act as ambassadors without suitable training and recognition. In addition, incentivising peer-led behaviours involves ongoing funding and coordination with local businesses who may resist the distribution of pledges and learning modules if they do not align with their business goals.

Implications and limitations

Our findings propose three distinctive interventions grounded in VBN theory and further supported by social marketing principles, as summarised in Figure 2. For destination authorities, managers and policymakers, these interventions provide actionable steps which are psychologically grounded and contextually sensitive. The *Impact Awareness* intervention focused on emotional engagement, leveraging visual storytelling and providing step-by-step instructions to enhance the Objectors' AC. The *Promoting Shared Responsibility* intervention addressed the critical need for collective action and governmental involvement, recognising that Objectors require institutional scaffolding to transform environmental awareness into meaningful behaviour. By strategically positioning waste management infrastructure, implementing nudge techniques, and signalling a governmental commitment to sustainability, this intervention sought to activate social norms and perceived behavioural control. The *Enhancing Social Impact* intervention completed the VBN theoretical journey by transforming individual values into publicly demonstrated environmental commitment; this intervention should encourage Supporters to become active environmental ambassadors, utilising peer-to-peer influence and escalating commitment strategies that propagate sustainable behaviours among the Objectors too.

The findings suggest that adequate, sustainable tourism strategies must simultaneously address individual psychological barriers, leverage social norms, and provide tangible infrastructural support. The three proposed interventions would offer an integrated approach to strengthening the links in the VBN chain and driving pro-environmental behaviour change in the PDNP context. Such profiling of visitors and identifying weak links in the VBN chain and practical applications can be readily adapted and replicated in other protected area settings or tourism areas negatively affected by over-tourism. As such, this study is a valuable resource for academics and practitioners seeking to address the complex social and ecological issues facing protected areas through innovative, theoretically grounded approaches. Authorities can foster a sense of shared responsibility and collective action towards environmental stewardship by aligning behaviour change initiatives with visitors' core values, beliefs, and norms.

From a theoretical perspective, the study demonstrates the value of the VBN theory as a robust framework for understanding and segmenting tourist behaviours. By revealing the heterogeneity of environmental attitudes and behaviours, the research challenges one-size-fits-all approaches to sustainable tourism communication. The differentiated strategies for Supporters and Objectors highlight the importance of tailored interventions that recognise the unique psychological profiles of different tourist segments. Such qualitative profiling of visitors through the application of the VBN model in the context of protected area settings or tourism areas negatively affected by over-tourism is an underutilised approach in literature; the study extends, therefore, the application of VBN to social marketing in exploratory contexts such as marketing profiling. These findings are very much rooted in the VBN theory. In contrast, the link with the social marketing applications is only theoretical and adopted based on the context to give more meaning to the key findings. It

is essential to note that such links were crucial to elaborate on the findings and implications; however, the adopted social marketing link must be further investigated for more practical implications.

This study analysed travellers' intention to adopt pro-environmental behaviours; however, past research suggests that intention does not always translate into action. Thus, more accurate results could be achieved through a longitudinal study observing participants' behaviour compared to their intention over a longer period. Furthermore, this study did not consider travellers' gender or background as a variable but attempted to generalise the results. Therefore, a cross-cultural study could add more knowledge about behavioural intentions based on upbringing. In addition, this study focuses on only one age group (i.e. 18–25-year-olds) because they influence nature engagement and environmental values. While this cohort offers valuable insight into behavioural patterns, the findings may not be generalisable across other age groups. For example, people belonging to the older age bracket may hold more entrenched environmental attitudes, greater willingness to engage in civic responsibilities, and different mobility patterns. These factors may affect their response to pro-environmental interventions; therefore, further research is required on multiple age groups.

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Author contributions

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Appendix

Appendix A – interview questions

VBN component	Area	Questions
Values		
		How would you describe your purpose and role in life? How would you like people to perceive you? What is important to you in life?
	Egoistic	
		Social Power (Control over others)
		Authority (leading or control)
		Influence (having an impact on people or events)
	Altruistic	
		Equality (equal opportunity for all)
		Social justice (correcting injustice, caring for others)
		A world at peace (a world free of conflicts)
	Biospheric	
		Protecting the environment (preserving nature)
		Unity with nature (fitting into nature)
		A world of beauty (the beauty of nature and the art)
Beliefs		
	Environmental Worldview	
		How much do you agree with the statements? Explain how these statements make you feel.
	Biocentric	
		1. When humans interact with nature that often produces damaging results
		2. Humans are severely abusing the environment.
		3. The balance of nature is very delicate and easily upset.

(*Continued*)

Continued.

VBN component	Area	Questions
		4. If things continue on their present course, we will soon experience a major ecological catastrophe.
	Anthropocentric	
		5. Humans have the right to modify the natural environment to suit their needs.
		6. Humans will eventually learn enough about how nature works to be able to control it.
		7. The balance of nature is strong enough to cope with the impacts of modern industrial nations.
		8. Humans were meant to rule over the rest of nature.
Awareness of Consequence (AC)		
		Tell me a bit about your experience at the park what did you do what did you like/dislike?
		When you were at the park did you notice any negative impacts on the environment?
		Are you aware of any environmental issues in the park? Or people behaviour.
		Can you think of any issues that the park might be facing?
	How do you think these issues impact?	
		Locals
		Nature
		Tourists
		Attractiveness of the park
Ascription of Responsibility (AR)		
		Do you think every visitor has a responsibility for the health of the environment?
		Are you concerned/scared/worried about the health of the environment?
		Do you believe that you have the ability to participate in activities at the park in a manner that limits your impact on the health of the environment?
		Do you believe that you are able to influence how other travellers impact nature at the park?
		Do you think you have enough knowledge to limit your impact on the environment?
Personal Norms		
		Do you feel a personal obligation to behave in a way that is healthy and sustainable, when in the national park?
		If yes, would you still have the same sense of obligation if your travel group would engage in an environmentally unhealthy manner? What would be your reaction?
		Would you feel guilty if you did something that you know is environmentally unhealthy?
		Would you feel ashamed if somebody saw you doing any of the above activities?
		Would you feel ashamed If nobody saw?
		Do you feel more obliged to respect nature when you are at the national park, rather than at home?
Behaviour intention		
	Willingness to sacrifice.	
		Would you be willing to pay more for your trip/put more effort if you knew that your trip is zero carbon?
		What would encourage you to use public transport instead of your own car?
	Word-of-mouth intention.	
		Would you be willing to encourage your friends to choose sustainable means of travelling?
		What would encourage you to share about it?
		Would you be willing to adopt environmentally friendly behaviours if you knew exactly what you can do?
	Motivation to change	
		What would encourage you to change your behaviour?