Segmentation, Environmental Identity and Stages of Change: An application to a wildlife trust

Keywords: Environmental Identity, Segmentation, Stages of Change, Social Marketing, Charity

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Victoria.K.Wells (corresponding author)

The York Management School, University of York, Freboys Lane, York YO10 5GD, United Kingdom

+44 (0) 1904 325318, victoria.wells@york.ac.uk

Sarah Forbes

Birmingham Business School, University of Birmingham, Birmingham B15 2TT, United Kingdom

+44 (0) 121 414 3456, s.forbes@bham.ac.uk

Madeline Powell

The York Management School, University of York, Freboys Lane, York YO10 5GD, United Kingdom

+44 (0) 1904 326442, madeline.powell@york.ac.uk

Daragh O'Reilly

Independent Researcher

dor.private@gmail.com

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Abstract

Using a quantitative survey approach, cluster analysis is used to assess the relevant target segments of a Wildlife Trust to develop a consumer focused marketing strategy. Using Environmental Identity and Stages of Change the paper identifies and examines a number of clusters for both members and non-members and segments the trust's target audience, providing valuable insights into the character and behaviour of each segment and their openness to different activities. It provides practical recommendations as to which specific groups would be most valuable to target for the trust as well as the potential messages and marketing strategies which be most successful in engaging these groups.

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1.0 Introduction

Forty-six wildlife trusts operate across the UK as independent charities, caretaking 2,300 nature reserves, 98,500 hectares of land and 100 visitor and education centres (Wildlife Trust, 2020). Each individual trust relies on donations, either as discreet single donations, membership or legacies, as well as volunteers to deliver on their mission. To encourage these behaviours, it is important for each trust to understand their audience which includes both members and non-members. Additionally, the trust needs to understand the most effective way to encourage these various behaviours and develop relevant marketing and communications for their audiences. Here, we report on a project, working with one wildlife trust to develop a deep understanding of their target audiences via segmentation. Using the concepts of environmental identity and stages of change to segment their audiences we sought to understand how much individuals are benefiting wildlife, protecting the natural environment, donating to and/or volunteering at the trust (the behavioural focus of any social marketing interventions). These align with the trust's current communications-based approach that focuses on three key messages ("Love wildlife! Wildlife is amazing, notice, learn about it, value it (with emphasis on wild places local to you)"; "Take action/shared responsibility – together we can make a difference to help wildlife to thrive"; "Your Wildlife Trust – Support us to care for the wild places you love"). Via the resulting segmentation, this research ensures understanding of the trust's target audiences, allowing consumer focused marketing planning and design, proposed social marketing strategies and an understanding of the relevance of the trust's current messages (Rundle-Thiele et al, 2017).

In summary, the aims and contributions of the study are as follows. Firstly, the study seeks to establish whether relevant subgroups exist within the trust's audience using a theoretical, behavioural and psychographic segmentation. This is based on Environmental Identity, which has established links with pro-environmental behaviour, and we aim to build on work in this area (Lou and Li, 2021) and Stages of Change, which has been used successfully both broadly within social marketing and specifically in pro-environmental behaviour interventions. In doing so it fulfils a core concept and benchmark of audience segmentation in social marketing (ESMA, 2017), responds to calls to take social marketing segmentation beyond demographic segmentation bases (Kubacki et al, 2017b; Dibb 2017), expands work on social marketing segmentation more generally (Rundle-Thiele, 2015) and specifically in pro-environmental behaviour (Kubacki et al, 2017b). To our knowledge this is the first time Environmental Identity and Stages of Change have been used simultaneously to segment and describe target audiences contributing to the literatures in both areas as well as social marketing. Secondly, we seek to understand the motivations, characteristics and behaviours of the identified segments and to determine the most effective social marketing interventions for these subgroups. This considers a strategic approach to resource allocation to examine which targeted segments should be the focus of social marketing interventions. We examine how individuals in each segment are engaged with the behavioural variables the trust seeks to focus on - benefiting wildlife, protecting the natural environment, donating to and/or volunteering at the trust. Additionally, we go beyond communications to make suggestions using all elements of the social marketing mix which is highlighted by Andreasen (2002) as an important component of effectiveness in social marketing. Thirdly, we examine whether the communications messages used presently by the trust are suitable to the relevant segments and how the trust can use environmental identity and stages of change to refine their communications strategy and align it with all aspects of social marketing.

The paper is organised as follows. The first section reviews the literature around social marketing and segmentation, environmental identity and stages of change. The second section describes the quantitative approach taken and details the cluster analysis used to analyse the data. The third section discusses our findings, while the fourth section discusses implications, limitations and future research.

2.0 Literature

2.1 Social Marketing & Segmentation

Social Marketing "seeks to develop and integrate marketing concepts with other approaches to influence behaviours that benefit individuals and communities for the greater social good." (ESMA, 2017) and focuses on behaviour change, rather than profit maximization (Walsh et al, 2010).

One of its six core concepts is "theory, insight, data and evidence informed audience segmentation" which highlights the need to gather insight into target audiences, cluster people who share similar beliefs and promotes customised interventions (ESMA, 2017). Essentially, segmentation consists of identifying one or more homogeneous segments, with common characteristics within a larger heterogeneous population (Dietrich et al, 2015) allowing for more effective targeted interventions (Niedermeier et al, 2011). The assumption is that people in a segment are likely to respond to interventions in similar ways, but in a dissimilar way to other segments (French, 2017). It is then possible to determine the segments most responsive and willing to change their behaviour. Additionally, segmentation is one of the eight benchmark criteria highlighted by the National Social Marketing Centre (French and Blair-Stevens, 2007), which are designed to increase the impact of social marketing programmes and is also one of Andreasen's (2002) benchmark criteria. Market

segmentation is crucial (Kubacki et al, 2017a) and seeks to design consumer oriented, rather than one size fits all marketing (Dietrich, 2017). This allows businesses to maximise their use of limited resources and direct resources to the most promising segments (Kubacki et al, 2017b). The social media revolution has also enabled social marketers to effectively target smaller segments cost effectively (Kubacki et al, 2017a), further opening up the potential for segmentation-based approaches. This type of approach is nothing new to commercial marketers as segmentation is a fundamental principle of marketing (Kubacki et al, 2017a). However, it is not as widely used in social marketing interventions, due to a lack of expertise and resources (Dibb, 2017) with Kubacki et al (2017b) noting in their review that only 16% of the reviewed social marketing interventions used segmentation. Kubacki et al (2017b) and Rundle-Thiele (2015) call urgently for more work to examine the effectiveness of segmentation while Walsh et al (2010) highlight that future research should investigate what clusters exist in a range of socially responsible behavioural contexts. It is a key strategic tool in tackling direct competition and providing attractive offerings to target audiences (Kubacki et al, 2017a) as non-profits and charities fight for their share of money, donations and days out.

Segmentation has been used in several environmentalism studies to better understand environmental behaviours and to more effectively engage with different sub-groups (e.g. Gray and Bean, 2011, Boivin et al, 2017). However, as Kubacki et al's (2017b) review shows, segmentation in social marketing has not been extensively used in environmental studies, an area which we seek to expand through this work.

Segmentation is used alongside targeting and positioning to ensure effective interventions are developed (Dibb, 2017). Segmentation approaches are based on a number of variables called segmentation bases that can include demographic, geographical, behavioural and

psychographic elements. Kubacki et al (2017b) and Dibb (2017) highlight the over reliance on demographic variables such as age and ethnicity in social marketing and call for research to examine other segmentation bases. Here we also note an important link between theory and segmentation where theory can be utilised to explain and understand behaviours and perceptions within segmentations and can help address social issues more effectively (Boivin et al, 2017). This illustrates a more nuanced view of the target audience (Gordon et al, 2015) and segmentation bases. Here we build the segmentation utilising the theoretical concept of environmental identity and further explore the segments using stages of change. By using psychographic segmentation, we can uncover the segments available to the trust. Additionally, based on the needs of the Wildlife Trust the segmentation presented combines elements of a priori segmentation and posteriori or data-driven segmentation (Dolnicar and Grűn, 2017) to profile the resulting segments. Targeting determines which and how many identified segments to target (based on target market attractiveness, size and significance of problem, resources, organisational capabilities, requirements of stakeholders etc) (Dibb, 2017). Final positioning examines how and where to position the offering in the target segment.

Pires et al (2011) highlight a range of criteria for effective marketing segmentation including identifiability, accessibility and measurability while Dietrich (2017), focusing on social marketing notes five steps that are needed for successful segmentation: **P**riority identification, **A**nalyse, **D**escribe, **A**ssess, and **T**arget (PADAT). Kuckai et al (2017b) also highlight the need for substantial, sustainable and accessible segments. The priority group (**P**riority identification) in this analysis is broad including anyone who might benefit from involvement with the wildlife trust in question. The analysis below seeks to **A**nalyse, **D**escribe, **A**ssess and develop strategies for **T**argeting the trust's audience focusing on identifiable and accessible segments, developed using the theoretical model of Environmental Identity and explored

using SoC. By doing so, it identifies those audiences who are most likely to be responsive to the trust's marketing campaigns (Slater et al, 2006).

Social marketing segmentation can result in segments receiving differing promotional messages (for example highlighting product features) from different messengers through different media channels, different pricing strategies (monetary incentives and discounts as well as recognition and praise), different place strategies (including convenience of access and ambience of location) as well as different products (and augmented products to encourage engagement and/or remove barriers; Lee, 2017). However, Kubacki et al's (2017b) review highlights that the majority of social marketing interventions only use promotions to differentiate their segments. However, Kubacki et al (2017b) and Andreasen's (2002) fifth criteria highlight the importance of using all elements (all four P's of the marketing mix) to target segments and those which did delivered more promising behavioural outcomes.

We next examine the theory that provide the segmentation bases and exploratory theories for this work and the theory that helps to further understand the distinctiveness of the segments.

2.2 Environmental Identity

Identity is a core psychological construct, a way of defining, describing and locating oneself, which can be important in predicting behaviour and affects motivation (Clayton, 2012). Research highlights the importance of identity both in terms of sustainability (Chen, 2020) and in giving preferences and behaviours towards charities (Chapman et al, 2020). One such identity of relevance to wildlife and conservation charities is Environmental Identity (EI) defined as "a sense of connection to some part of the nonhuman natural environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we

perceive and act toward the world; a belief that the environment is important to us and an important part of who we are" (Clayton, 2003: 45/46). EI is motivating, affects our thinking and behaviours and individual differences can be seen in the strength of EI (Clayton, 2003). EI can be nurtured, and socially expressed through gardening, volunteering (observed through research on zoo volunteers - Fraser, Clayton, Sickler, and Taylor, 2009), visiting nature, and zoo membership (Clayton, 2012). It also indicates greater attention and sensitivity to environmental information (Bragg, 1996; Devine-Wright and Clayton, 2010), support for natural resources (Winter and Chavez, 2008) and motivating action to protect the environment (Clayton, 2012). A person's environmental identity gives an indication of how interdependent with or connected an individual feels to the natural world (high correlations are found with connectedness to nature (Balundė, Jovarauskaitė, and Poškus, 2019) and in particular, their level of environmental concern (Clayton, 2012; Lou and Li, 2021). It can also be "recognised, nurtured and used to encourage conservation behaviour" (Clayton, 2003: 60) and encouraged through interventions. Research also suggests that identity campaigning, that is pro-environmental campaigning focused on "those aspects of a person's identity that either lead them to demand more ambitious change on the part of organisations, or that underlie their motivation to engage in pro-environmental behaviour" (Crompton and Kasser, 2009: 4) should be more widely used. All this suggests that EI has potential as a segmentation variable to encourage a wide range of wildlife behaviours and may affect individual's relationships with wildlife charities.

2.3 Stages of Change

Stages of change (SoC), part of the transtheoretical model, evaluates an individual's readiness to adopt or change behaviour and is a dynamic model used to recognise the complex cognitive and behavioural nature of self-change (Prochaska & DiClemente, 1983). First developed by Prochaska and DiClemente (1983) to assess self-change in smoking habits, it

shows how individuals move through six behaviour change stages from precontemplation and contemplation, through preparation and action to maintenance and termination. In precontemplation, individuals may not be aware of the consequences of their existing behaviours and will not have considered changing their behaviours or practices. In contemplation, individuals are aware about the change of practice or behaviour but have not committed to change. In preparation individuals are intending to take action to change their behaviour or practices in the near future. These first three stages have an attitudinal dimension in that there is a focus on changing attitudes and consciousness raising to facilitate behaviour change (Mair and Laing, 2013; Krebs et al, 2008). In the action stage individuals have adopted the change in practice or behaviour for less than 6 months. Individuals in maintenance are continuing with the behaviour/practice change and have successfully done so for more than 6 months. In the final stage, termination, the behaviour is changed for good (Chib et al, 2009). These last three stages have a behavioural dimension as they involve actual behaviour change (Mair and Laing, 2013). Chib et al (2009) highlight that the process of moving through the stages may not be linear with people slipping back to earlier stages and even returning to precontemplation. SoC has been used extensively in encouraging healthy behaviours such as cocaine addiction, condom use, weight control and physical health (Gatersleben and Appleton, 2007; Mair and Laing, 2013). Stages of Change is a process, rather than an event (Gatersleben and Appleton, 2007) and individual's will weigh up barriers and benefits in determining whether they move to the next stage (van Bekkum, Williams and Morris, 2011) and adopt a new practice or behaviour.

At each stage it is important to understand the individuals' behaviours but also their characteristics and attitudes and how these can be nurtured to allow them to move to the next stage. For example, Gatersleben and Appleton (2007), in their study of cycle commuting, identified that those in the precontemplation stage had the least positive attitudes to cycling while those in the Action SoC had very positive attitudes towards cycling. This highlights

the need for social marketers to determine where people are located within the stages of change.

SoC has been used extensively within Social Marketing to aid the examination of behaviours such as physical activity (e.g., Logie-MacIver and Piacentini, 2010), protecting natural shorelines (Shaw, Radler and Haack, 2011), responsible plastic management (Chib et al, 2009), environmental behaviours (Mair & Laing, 2013) and eco-tourism (Mair and Laing, 2013). van Bekkum, Williams and Morris (2011) used SoC to segment staff based on their cycle commuting behaviour and perceptions. They found that pre-contemplators, contemplators and preparers reported different barriers to cycle commuting and therefore different segmented social marketing strategies were proposed to overcome these barriers. Wildlife charities seek behaviour change in terms of benefiting and protecting the natural environment and through membership, donations, volunteering and legacies. An individual may be at a differing stage of change (SoC) for each of these behaviours, making the SoC model relevant in this context, and understanding how these differ can allow tailored marketing to individuals.

In summary, firstly, the study seeks to establish whether relevant subgroups exist within the trust's audience using a theoretical and psychographic segmentation based on Environmental Identity and whether variation exists amongst the segments for temporal, intentional and behavioural aspects as shown by the Stages of Change. Secondly, we seek to understand the motivations, characteristics and behaviours of the identified segments and to determine the most effective social marketing interventions for these subgroups focused on the behaviours the trust wishes to encourage - benefiting wildlife, protecting the natural environment, donating to and/or volunteering at the trust. Thirdly, we examine whether the communications messages used presently by the trust are suitable to the relevant segments

and how the trust can use environmental identity and stages of change to refine their communications strategy and align it with all aspects of social marketing.

3.0 Methods

A quantitative approach was taken and the project focused on real world research where the concern is "problems and issues which are practical, local and grounded in a specific context" (Robson, 2011: 4). Purposive sampling was employed to identify both trust members and non-members within the geographic location of the trust. Members were targeted through the trusts own mailing list while non-members were targeted through the mailing list of a local university. Two online questionnaires were delivered via Qualtrics, with one tailored for members of the local Trust (who pay a monthly donation to the trust and receive membership benefits) and one developed for non-members. Those considering participation in the study were shown the information sheet for the project. Once informed consent was obtained the respondent completed the survey. The study was approved by the relevant university ethics committee.

Questions relating to EI and SoC were included in the same way in both questionnaires. EI was measured using the EID scale (Clayton, 2013) which contained 24 items, adjusted slightly for our use to allow for relevant terrains to be included (See Table Two). The EI measure allows researchers to understand the level of EI but also allows us to understand what aspects of the environment are important (through the factors – Environmental Identity, Appreciation for Nature, Environmentalism, Enjoying Nature – see factor breakdown by Olivos and Aragonés, 2011) and develop effective and relevant communications for each segment. Six questions assessed stages of change for (1) taking action in your own life to benefit wildlife, (2) taking action in your own life to protect the natural environment, (3) supporting the trust through membership, (4) supporting the trust through donations, (5)

supporting the trust through volunteering, and (6) leaving the trust a gift in your will. For example, "Do you take action in your own life to benefit wildlife (e.g. feeding the birds in your garden and recording/reporting your wildlife sightings)?" and "Do you support the Trust through donations?" We utilised Lee and Kotler's (2016) four questions (with some minor grammatical changes) to indicate at which stages of change an individual was at. Participants had the following answer choices: No, and I do not intend to start doing so within the next 6 months - Precontemplation; No, but I intend to start doing so within the next 6 months – Contemplation; No, but I intend to start doing so within the next 30 days – Preparation; Yes, I have been doing so for less than 6 months – Action; Yes, I have been doing so for more than 6 months – Maintenance. The last two questions had the following answer choices: No, I wouldn't consider it – Precontemplation, No, but I will consider it at some time in the future - Contemplation, No, but I would consider it soon - Preparation, No, but I would consider it now – Action, Yes, I have already done it – Maintenance. Additional questions were included from regular Wildlife Trust surveys which asked about valuing nature, knowledge of the Wildlife Trusts and its events. A number of demographic questions were also included (education, employment and household status, age, gender). In addition, the member questionnaire also asked how long they had been members, how often they visited reserves and took part in events.

A non-hierarchical K–Means cluster analysis, used previously in the non-profit research (Bocquet, Cotterlaz-Rannard and Ferrary, 2020), was completed to analyse and segment the data as this best discriminates between non-categorical data. For the purpose of the research, two phases of segmentation were undertaken. First, an analysis of the sample was undertaken. Second, an examination of segments within the key characteristic of membership (or lack thereof) was completed to enable the Wildlife Trust to determine target audiences of priority

for their future marketing efforts. This analysis was completed using IBM Statistics SPSS 26 software.

4.0 Results

Overall, 919 respondents completed all questions. To identify homogenous groups that exist, based on EI, we undertook a cluster analysis using K-Means cluster analysis. A variety of cluster solutions were explored using responses to Clayton's (2013) EID scale and a three-cluster solution was determined according to the pairwise comparisons across the items to ensure the clusters were distinct from one another. Table One contains detail of the sample and cluster characteristics.

[insert Table One here]

Mean responses (and standard deviations) to Clayton's (2013) EID scale are shown in Table Two alongside the corresponding factor. Pairwise comparisons (bonferroni) of the mean responses between each cluster revealed that all were significantly different from one another.

[insert Table Two here]

To determine if particular clusters had a disproportionate number of individuals within particular stages of change, and hence would be more responsive to particular communications and interventions, a contingency table analysis was completed using adjusted residuals (see Table Three; Beasley and Schumacker, 1995; Garcia-Perez and

Nunez-Anton, 2003). *P*-values were calculated from chi-square values and a bonferroni correction (0.0056) was used.

[insert Table Three here]

The post hoc analysis in Table Three shows which clusters deviated from the expected frequency distributions to reveal how the significant difference within the cross tabulation occurred. Specifically, the post hoc analysis (using a bonferroni correction) of the cross tabulation revealed that cluster three had significantly more respondents in the Action or Maintenance SoC for taking action in your own life to benefit wildlife (OWNBEN), taking action in your own life to protect the natural environment (OWNPROT; e.g. volunteering, signing a petition or attending a demonstration related to an environmental cause), supporting the [local] Wildlife Trust through donations (SUPPDON) and supporting the [local] Wildlife Trust through volunteering (SUPPVOL). Cluster one, on the other hand, had significantly fewer respondents in the action or maintenance stage for OWNBEN, OWNPROT and SUPPDON and significantly more respondents in the precontemplation stage for OWNBEN, OWNPROT, SUPPDON and SUPPVOL.

4.1 Cluster Profiles

4.1.1. Cluster one (16.3% of sample): Low levels of Environmental Identity

Cluster one consists of significantly more males ($\chi^2(1)=30.25$, $p<0.001$), significantly more aged 16 to 34 ($\chi^2(1)=28.09$, $p<0.001$) and fewer aged 55+ ($\chi^2(1)=12.25$, $p<.001$), significantly fewer members of the Wildlife Trust ($\chi^2(1)=31.36$, $p<0.001$) and significantly fewer that have heard of the [local] Wildlife Trust ($\chi^2(1)=47.61$, $p<0.001$). Respondents within cluster one had significantly low levels of all EID factors (Environmental Identity, Appreciation for nature, Environmentalism and Enjoying Nature) when compared to cluster two and three

(p<0.001). For cluster three post hoc analysis (using a bonferroni correction) of the cross tabulation revealed that respondents were significantly more likely to be in the Precontemplation SoC for OWNBEN ($\chi^2(1)=108.16$, p<0.001), OWNPROT ($\chi^2(1)=82.81$, p<0.001), SUPPDON ($\chi^2(1)=13.69$, p<0.001) and SUPPVOL ($\chi^2(1)=34.81$, p<0.001). Also, significantly fewer cluster one reported themselves as being in the Action or Maintenance SoC for OWNBEN ($\chi^2(1)=75.69$, p<0.001) and OWNPROT ($\chi^2(1)=68.89$, p<0.001).

These findings suggest this cluster has the lowest environment identity, was likely to be younger and many had not heard of the Wildlife Trust. Additionally, they may not have developed an environmental identity and potentially may have limited income. Therefore, this segment would need to be encouraged to partake in basic/inexpensive actions to protect wildlife. In terms of the trusts current messaging and communications they would be best targeted with communications that emphasise valuing nature (and would be a good target for the trust's "Love wildlife! Wildlife is amazing, notice, learn about it, value it (with emphasis on wild places local to you)" message) but may be unlikely to be more active or engaged at this point. In terms of interventions to target this group the trust might consider an augmented product to encourage basic wildlife supporting behaviours. An augmented product is any tangible product or service which is promoted alongside the desired behaviour (Lee and Kotler, 2011). This might for example include a bird feeder, bird feed and an information pack which could encourage people to value and observe nature in their own garden, yard or balcony. The trust would also need to consider how best to deliver an augmented product and this segment is unlikely to visit the trust and therefore these could be provided by post, at a college (due to the younger age of this group) or in a workplace. Alternatively, a price strategy could be used, providing a discount on bird feeders, insect friendly flowers etc. As this segment is largely in precontemplation/contemplation any social marketing intervention must act on the attitudinal dimension to raise consciousness of the sought behaviours. While

an important target for the future, there is a danger that by actively engaging with this group who are not yet ready, willing and able to act (Lee & Kotler, 2016) that concrete benefits will not materialise. Additionally, this segment is quite small and therefore would not be evaluated as a priority segment (Dietrich, 2017).

4.1.2 Cluster two (40.3% of sample): Moderate levels of Environmental Identity

Cluster two respondents consist of a high proportion of females (67.5%), those in full time employment (36.5%) and those aged 35 to 54 (31.6%). This cluster also has the highest proportion that has obtained a higher degree (i.e., Masters or PhD; 40.5%) when compared to clusters one and three. Respondents within cluster two had moderate levels of EI factors. When compared to the factor levels of EI of cluster three respondents using a multinomial logistic regression, cluster two levels of these factors were significantly lower (i.e., cluster two as baseline; Environmental Identity β=-4.431, p<0.001; Appreciation for nature β=-5.591, p<0.001; Environmentalism β=-7.138, p<0.001; Enjoying Nature β=-4.360, p<0.001) while still significantly higher than cluster one. Post hoc analysis revealed no significant findings for SoC amongst respondents in this cluster except for significantly more cluster two respondents classifying themselves in the Action or Maintenance SoC for OWNPROT (χ2(1)=7.84, p<0.01; 58.4%). In addition to this, a high proportion were in the contemplation or preparation stage for volunteering. These findings suggest a high likelihood to consider donations and volunteering but given levels of employment, this would need to consider working hours, or they could focus on corporate volunteering opportunities. This is also a group with high numbers of families, so any volunteering would need to consider family priorities. Common motives for volunteering are helping others, spending time with family and socialising so these altruistic and social benefits should be emphasised in communications (Dunn, et al, 2016). Additionally, volunteers are motivated by a wish to

understand the organisation, which could lay a good foundation for further engagement of this segment (Randle and Dolnicar, 2017).

Given that this group have a moderate level of EI and this could be nurtured, this group fits well with the trusts message of "Take action/shared responsibility – together we can make a difference to help wildlife to thrive". However, this action doesn't need to be financial support and these groups could be encouraged to use green spaces. An augmented product which could be used as part of an intervention here could be a map, activity pack outlining local green spaces, activities available and a range of games to remind individuals of the green space close to them. This would allow them to relax and enjoy nature with their friends and family while learning more. Events at local wildlife trust locations would also work well with this target group and allow augmented products to be distributed. Sustainability focused events have been shown to play a useful role in encouraging a higher level of environmental awareness (Mair and Laing, 2013). Additionally, discount vouchers for wildlife trust events could be offered to this group.

4.1.3 Cluster three (43.4% of sample): High levels of Environmental Identity

Cluster three consists of a high proportion of females and fewer respondents aged 16 to 34 (34.1%) with many being aged 55 or older (35.8%) and a high proportion being in part time work (20.1%) or retired (22.6%). Analysis of cross tabulations and adjusted z-scores (with bonferroni correction of calculated *p*-values) revealed that cluster three had significantly more Wildlife Trust members ($\chi^2(1)=16.81$, $p<0.001$). Multinomial regression analysis revealed that cluster three had significantly higher levels of EI across all factors (Environmental Identity, Appreciation for Nature, Environmentalism, Enjoying Nature; $p<0.001$) compared to clusters one and two. Analysis of frequency distributions in cross tabulations with adjusted z-scores (and bonferroni correction of calculated *p*-values) for SoC

revealed that significantly more cluster three respondents were in the Action or Maintenance SoC for OWNBEN ($\chi^2(1)=64.00$, $p<0.001$; 84.3%) and OWNPROT ($\chi^2(1)=79.21$, $p<0.001$; 78.70%), while significantly fewer respondents in cluster three were in the pre-contemplation stage for SUPPDON ($\chi^2(1)=12.25$, $p<0.05$) and SUPPVOL ($\chi^2(1)=16.00$, $p<0.001$). Also, significantly more cluster three respondents reported having heard of the [local] Wildlife Trust ($\chi^2(1)=44.89$, $p<0.001$). These findings suggest that cluster three are actively involved in helping wildlife and make efforts to protect wildlife. In consideration of respondents in this cluster potentially being restricted in income (i.e., high proportion in retirement or in part time work), volunteering could be encouraged as opposed to seeking donations. Additionally, as much of this group are older there are also social benefits of volunteering such as social integration and emotional support which could be emphasised in communications (Tang et al, 2010). Furthermore, research has shown that individuals are more likely to volunteer when they perceive the volunteering organisation to be similar to their self-concept (Randle and Dolcinar, 2011) and when the opportunity allows volunteers to make a difference (Mitchell and Clark, 2020) and this appears to fit well with this group that has high environmental identity.

As a group who already cares about the environment, and may already be aware of the trust, this group is likely to respond well to the trust's key message of "Your Wildlife Trust – Support us to care for the wild places you love" to encourage then to go further and support (through donation and volunteering) the trust's work. As these individuals are already in the action/maintenance SoC there is a need to focus on behavioural dimensions here (Mair and Laing, 2013). It would also therefore be important to show that the trust delivers value for money and this support is critical to the trust's work. This might be emphasised through case studies, testimonials and ensuring that the organisation's brand is trusted. This group might respond well to discounts (a price strategy) at local garden centres and nature-based

attractions. Place based strategies may make it easier for them to donate (phone, online and person) and support could be given for those who wish to leave a legacy to the trust (through will writing advice etc) as well as volunteering activities tailored to their needs. As an older group this segment may also be responsive to adaptations to the trust sites making paths easy access and having seating and rain shelters available.

4.2 Separating members and non-members

The initial analysis above, alongside discussions with the trust, highlighted that membership had a significant effect on the cluster characteristics. Additionally, due to financial constraints it was deemed important to target specific groups, who would be most valuable to the trust both now and in the future. This led to a second analysis, which developed clusters for members and non-members separately. Non-members were separated into three clusters (1NM, 2NM, 3NM with cluster 3NM having the highest EI) and members into two clusters (1M, 2M with 1M having the highest EI). Only clusters of particular interest will be discussed further.

[insert Table Four here]

[insert Table Five here]

One non-member cluster is of particular interest. Cluster 3NM has high EI and were more likely to report benefiting and protecting the environment (in action/maintenance stages). Therefore, they are the key non-member target for the trust as they will be more likely to be ready, willing and able to change (French, 2017), and are the non-members more likely to become members in the future. Further to this, their already high EI reveals one way to target

this segment which may be to ask them to do more, and highlight the trust's message of shared responsibility ("Take action/shared responsibility – together we can make a difference to help wildlife to thrive"). The EI responses also show that this segment is likely to use nature to de-stress so by offering discounted relaxing activities (a price strategy) in nature (e.g. yoga, guided walks) might be a way to move them more engaged. This could also target personal growth and positive change motives which have been shown to lead to engagement in volunteering (Dunn, et al, 2016). Cluster 2NM in comparison is extremely disengaged with nature and are largely in the pre-contemplation stage for most actions. This segment is unlikely to be ready, willing or able to change their behaviours, may be resistant to change, and should not therefore be a significant target for the trust. They are neither large enough to warrant attention and are unlikely to provide enough benefit for resources available to target them (French, 2017).

For members, EI is high across the two clusters, but engagement (measured through SoC elements) did increase uniformly with cluster 2M (lower EI) often having less engagement in wildlife protection, donations etc. Surprisingly, many members had not been to any events (40.8% of members) and this may be a route to further engagement if the event schedule could be diversified to include something that may interest this group. Making the trust more attractive to this group through different activities and amenities as part of site infrastructure would be place based strategies to target this group. Donation levels were also low across both member clusters but as a regular monthly donation is paid with membership they may not feel the need to donate further. Members were generally older, and therefore legacies could be a key focus of communications to this audience especially given that past giving behaviour make legacies more likely (Wiepking et al, 2010). Many reported that they would consider these sometime in the future and this result was stronger for those with high environmental identity (Cluster 1M). Wiepking et al (2010) found that if individuals have a

strong belief that the charity will use a legacy efficiency and effectively they are more likely to leave a legacy. Additionally, they found that if individuals did not have children under 18 in their household they were more likely to leave a legacy (14.7% in 1M versus 5.8% in 2M) and this could allow even more focused communications and segmentation. Collating mementos from outdoors were a behaviour engaged in by those members with high environmental identity and therefore these nostalgic elements could be built on in legacy communications. As noted earlier, support could be given to those considering a legacy (will writing advice for example).

5.0 Conclusions and Practical Recommendations

The study sought firstly to establish whether relevant subgroups existed within the trust's audience. Using a cluster analysis, we were able to identify three subgroups in the trust's audience based on level of Environmental Identity. Their subgroups were relatively homogenous and shared a number of characteristics and behaviours. Additionally, we were then able to identify further segments using membership to create five clusters, two for members (1M, 2M) and three for non-members (1NM, 2NM, 3NM). In doing so we were able to show that segmentation is possible and relevant for this audience extending the use of environmental identity into this area. We were also able to show that theoretical identity segmentation is possible and effective, therefore moving away from more popular demographic segmentation to reveal segments based on psychographic variables.
Secondly, the study sought to understand the motivations, characteristics and behaviours of the identified groups and to develop effective social marketing strategies to target individual segments. Additionally, it sought to understand each group in terms of the behaviours the trust sought to encourage - benefiting wildlife, protecting the natural environment, donating to and/or volunteering at the trust. The two questionnaires that were distributed allowed us to

collect a range of data the from target audience, first to allow us to segment the target audience and secondly to be able to detail their motivations, characteristic and behaviours. Key to our understanding was Stages of Change which allowed us to understand what behaviours the target audience were already engaged in and what they might consider in the future, well as understanding more about their demographics allowing us to tailor social marketing strategies effectively. In terms of the first of the three behavioural foci of the trust, encouraging the audience to value nature, it became clear that this was a behaviour that could be encouraged for cluster one which had low levels of EI (members and those with higher EI are already valuing nature). While this cluster currently has low levels of EI, EI can be grown and nurtured (Clayton, 2003) and so engaging with this cluster might be a good long-term strategy. Without developing a stronger EI base it is unlikely that this segment would respond to request for more active engagement through donations etc. However, given that there may be a limited short- and medium-term response from this cluster it would be a group that does not warrant significant financial resource (French, 2017) and a lower cost approach would be needed. For example, given that many of those individuals in cluster one are young they could potentially be targeted through social media which is generally cost-effective (Chaffey, 2020). Additionally, cluster 2NM (non-members with low EI) are not likely to be visitors to trust sites so social marketing could focus on valuing or developing their own and local green spaces, however small (using augmented products noted above in places relevant to them), which could begin to link them to the second trust focus, discussed below.

For the second behavioural focus, encouraging people to act in their own lives, the analysis shows that members are largely engaging already so the most suitable target here is likely to be non-members. As noted above, some individuals, especially with high EI are likely to be open to volunteering strategies and events. But for these to work both volunteering and events need to be tailored to the characteristics of the audience, whether this is families, younger individuals etc. This might include a focus on skill development and experience for

younger audiences, weekend opportunities for those who work full time and child friendly activities and activities, which are suitable for those who are less active, for example seated. This also links to place strategies outlined above about adjusting trust amenities and infrastructure to these target audiences to encourage them to visit trust locations more often. The final focus was for the target audience to financially support the trust through membership, donations and legacies. High EI non-members (cluster 3NM) may be open to one off donations but are also a good target for more sustained donations through membership. This group is predominantly female, often part-time workers or homemakers and may not have the money to become members. However, they could be nurtured specifically through family events. Further and larger donations and legacies are only likely to happen once this engagement has been built initially. The best segments to target for further commitment, especially legacies, is the members who have high EI (cluster 1M). Messages could utilise the research results and highlight that, for example, "55% of members said they would consider a legacy…" or involve case studies or testimonials. Responses to the qualitative questions in the questionnaire also suggested that individuals may be more likely to donate or leave money to the trust when they knew exactly what it would be used for. For example, one respondent added a comment about a land acquisition fund. As noted previously, support could be provided as an augmented product for those who wish to leave a legacy.

Thirdly the study sought to examine whether the communications messages currently used by the trust are suitable to relevant segments. The three behavioural foci of the trust align with their messages (valuing nature – "Love wildlife! Wildlife is amazing, notice, learn about it, value it" – cluster one; protecting the natural environment – "Take action/shared responsibility – together we can make a difference to help wildlife to thrive"- cluster three; donate/volunteer – "Your Wildlife Trust – Support us to care for the wild places you love" - – clusters 3NM/1M). Therefore, based on the above, it is clear each of the messages is better

suited to particular segments and using them individually (rather than across the whole target audience) would result in more successful uptake and engagement in the behaviours. Utilising EI as a variable does also allow us to consider other messages that may be appropriate to the audience. It is clear that there are key aspects of EI that are important to all segments and thus are likely to have a broad appeal to all audiences and could be used in generic 'one-size fits-all' communications. Three EI statements in particular had support:

- Learning about the natural world should be an important part of every child's upbringing;
- I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time;
- Behaving responsibly toward the earth – living a sustainable life – is part of my moral code.

Using these EI statements, it would be possible to use messaging and communications that would work well across all audiences relating to children, play and communing with nature. Additionally, augmented products suggested above (green space guides etc) could further reinforce these messages through activities and games.

In summary, the study was able to identity relevant subgroups/segments using behavioural and psychographic segmentation bases and in doing so has contributed to social marketing segmentation research going beyond demographic bases and in additionally in pro-environmental behaviour. We were also able to understand the motivations, characteristics and behaviours of the segments, allowing us to build relevant social marketing strategies, align the trusts own behavioural foci and communications with relevant subgroups and finally using the EID scale to develop core messages, and relevant social marketing more broadly which could be used across the whole target audience. In doing so we have analysed, described, and assessed each of the subgroups, highlighting the most likely to be responsible

and cost effective to target (French, 2017) to emphasise the most relevant segments for attention (and fulfilling all aspect of the PADAT approach (Dietrich, 2017).

6.0 Limitations and Future Research

This project looked at only one wildlife trust. With 46 across the UK further research could assess whether these clusters can be replicated in other geographical areas or what geographical differences exist. The questionnaire also relied on self-reported data and it would be useful to expand the project using qualitative elements such as focus groups or interviews. This could use the clustering as a basis for sampling with focus groups from each clusters/segment. Focus groups could also be used to check responses to proposed social marketing strategies. Further data collection could also be used to collect information on media preferences (for example use of social media) to further aid communication planning. Additionally, as Clayton (2013) notes that EI can change it would be useful to return to the same audience at a later time to remeasure EI and to examine whether the strategies based on this segmentation has been successful. Finally, Covid-19 has had a significant impact on our behaviours, with one outcome having been an increased visits to parks and open spaces at some points during the pandemic (BBC, 2020). It would therefore be useful to assess whether Covid-19 has affected EI and amongst which groups.

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Table One: Sample Characteristics (with adjusted z-scores)

		Cluster 1 (n=150)	Cluster 2 (n=370)	Cluster 3 (n=399)	Overall (n=919)	*p*
% Member of Wildlife Trust		16.0% (-5.6)*	35.9% (0.0)	43.4% (4.1)*	35.9%	*p*<.001
Sex[1]	Male	53.00% (5.5)*	32.50% (-0.5)	27.20% (-3.6)*	33.60%	*p*<.001
	Female	47.00% (-5.5)*	67.50% (0.5)	72.80% (3.6)*	66.40%	
Age	16 to 34	59.30% (5.3)*	38.10% (-0.9)	34.10% (-3.1)*	39.80%	*p*<.001
	35 to 54	22.00% (-2.2)	31.60% (1.2)	30.10% (0.4)	29.40%	
	55+	18.70% (-3.5)*	30.30% (-0.3)	35.80% (2.9)*	30.80%	
Education	GCSE or equivalent or A level or equivalent	28.70% (2.5)	18.10% (-1.8)	21.10% (0.0)	21.10%	*p*>0.05
	Undergraduate degree	35.30% (-1.1)	41.40% (1.1)	38.80% (-0.2)	39.30%	
	Masters degree or PhD	36.00% (-1.0)	40.50% (0.5)	40.10% (0.3)	39.60%	
Employment status	Not in employment	54.70% (1.9)	47.30% (-0.2)	45.40% (-1.2)	47.70%	*p*>0.05
	In employment (full, part or self-employed)	45.30% (-1.9)	52.70% (0.2)	54.60% (1.2)	52.30%	
Do you have children under 18 living in your household?		17.30% (-1.0)	22.70% (1.5)	19.00% (-0.8)	20.20%	*p*>0.05
Have you heard of the [local] Wildlife Trust?		44.00% (-6.9)*	65.10% (-1.6)	79.90% (6.7)*	68.10%	*p*<.001
Clusters		1 (n=67)	2 (n=243)	3 (n=322)	Overall (n=632)	
Have you been to any Wildlife Trust events?^		31.30% (-3.2)*	46.50% (-1.3)	56.20% (-3.3)*	49.80%	*p*<.001

* Adjusted z-scores are in brackets and a bonferonni correction has been applied to p-values calculated for post hoc analysis.

^ 632 participants responded to this question. Only members and non-members who had heard of the [local] wildlife trust were asked to complete this question.

[1] For the purposes of the analysis, what is reported does not include four respondents that did not identify with either male or female.

Table Two: Mean responses for EIS items

Factor	Items	Cluster			Overall (n=919)
		Cluster 1 (n=150)	Cluster 2 (n=370)	Cluster 3 (n=399)	
Environmental Identity	I like to garden.	3.92 (±1.82)	5.09 (±1.61)	5.89 (±1.21)	5.25 (±1.64)
	Being part of the ecosystem is an important part of who I am.	4.13 (±1.42)	5.42 (±0.97)	6.37 (±0.76)	5.62 (±1.26)
	In general, being part of the natural world is an important part of my self-image.	4.19 (±1.16)	5.49 (±0.91)	6.48 (±0.71)	5.71 (± 1.19)
	I feel that I have a lot in common with other species.	3.86 (±1.39)	4.85 (±1.24)	5.88 (±1.06)	5.14 (± 1.40)
	I think of myself as part of nature, not separate from it.	4.21 (±1.48)	5.55 (±1.04)	6.46 (±0.70)	5.73 (±1.27)
	Average Environmental Identity	4.06 (±0.85)	5.28 (±0.66)	6.22 (±0.55)	5.49 (±1.00)
Appreciation for Nature	I feel that I have roots to a particular geographic location that had a significant impact on my development.	4.69 (±1.695)	5.12 (±1.43)	5.77 (±1.24)	5.33 (±1.46)
	I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.	4.42 (±1.57)	5.50 (±1.32)	6.29 (±0.94)	5.67 (±1.39)
	Sometimes I feel like parts of nature – certain trees, storms or hills – have personalities of their own.	3.18 (±1.63)	4.14 (±1.49)	5.73 (±1.18)	4.68 (±1.70)
	I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	4.31 (±1.82)	5.25 (±1.59)	5.93 (±1.32)	5.4 (±1.62)
	I feel that my experiences with nature have made me feel truly alive.	4.22 (±1.31)	5.52 (±0.95)	6.50 (±0.65)	5.73 (±1.21)
	Average Appreciation for Nature	4.17 (±0.93)	5.11 (±0.63)	6.05 (±0.56)	5.36 (±0.95)
Environmentalism	Behaving responsibly toward the earth – living a sustainable life – is part of my moral code.	5.14 (±1.14)	6.01 (±0.76)	6.60 (±0.60)	6.13 (±0.93)
	Learning about the natural world should be an important part of every child's upbringing.	6.17 (±0.86)	6.65 (±0.67)	6.93 (±0.27)	6.69 (±0.63)
	Engaging in environmental behaviours is important to me.	4.37 (±1.19)	5.57 (±0.85)	6.40 (±0.66)	5.73 (±1.10)
	If I had enough time or money, I would certainly devote some of it to working for environmental causes.	4.51 (±1.41)	5.77 (±1.04)	6.54 (±0.70)	5.90 (±1.21)
	I believe I have a lot in common with environmentalists as a group.	3.33 (±1.38)	4.83 (±1.11)	6.09 (±0.85)	5.13 (±1.45)
	My own interests usually seem to coincide with the position advocated by environmentalists.	3.57 (±1.31)	4.79 (±1.08)	5.93 (±0.88)	5.09 (±1.34)
	I keep mementos from the outdoors, such as shells, rocks or feathers.	3.52 (±1.82)	4.59 (±1.71)	5.80 (±1.49)	4.94 (±1.83)

	Average Environmentalism	4.37 (±0.76)	5.46 (±0.50)	6.33 (±0.41)	5.66 (±0.87
Enjoying Nature	I spend a lot of time in natural settings (e.g. woods, fields, meadows, lakes, uplands, moorlands, coast & sea).	3.92 (±1.60)	5.42 (±1.18)	6.23 (±0.88)	5.53 (±1.40)
	When I am upset or stressed, I can feel better by spending some time outdoors 'communing with nature'.	4.71 (±1.42)	6.17 (±0.96)	6.73 (±0.59)	6.18 (±1.15)
	Being near wildlife is important to me; I would not want to spend all my time in a city.	4.75 (±1.62)	6.20 (±0.94)	6.77 (±0.52)	6.21 (±1.18)
	I really enjoy outdoor activities such as walking, running, cycling, climbing, kayaking and camping.	5.01 (±1.55)	5.99 (±1.02)	6.50 (±0.79)	6.05 (±1.16)
	I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	5.15 (±1.41)	6.40 (±0.73)	6.85 (±0.41)	6.39 (±0.98)
	I take pride in the fact that I could survive outdoors on my own for a few days.	3.11 (±1.60)	3.68 (±1.59)	4.99 (±1.55)	4.16 (±1.74)
	Average Enjoying Nature	4.44 (±0.93)	5.64 (±0.58)	6.35 (±0.47)	5.75 (±0.90)
	I believe that some of today's social problems could be cured by returning to a more rural lifestyle in which people live in harmony with the land.	3.61 (±1.60)	4.94 (±1.29)	6.03 (±1.00)	5.20 (±1.50)

Table Three: Percentage and adjusted z-scores for responses to stage of change questions

	Stage of Change	Cluster 1 (n=150)	Cluster 2 (n=370)	Cluster 3 (n=399)	*p*
Do you take action in your own life to benefit wildlife (e.g. feeding the birds in your garden, recording/ reporting your wildlife sightings or volunteering)?	Pre-contemplation	46.70% (10.4)*	18.40% (0.7)	5.30% (-8.5)*	$p<0.001$
	Contemplation or Preparation	12.70% (0.2)	14.10% (1.3)	10.50% (-1.4)	
	Action or Maintenance	40.70% (-8.7)*	67.60% (-1.5)	84.20% (8.0)*	
Do you take action in your own life to protect the natural environment (e.g. volunteering, signing a petition or attending a demonstration related to an environmental cause)?	Pre-contemplation	54.00% (9.1)*	28.60% (2.3)	10.00% (-9.0)*	$p<0.001$
	Contemplation or Preparation	12.00% (0.2)	13.00% (1.1)	10.00% (-1.3)	
	Action or Maintenance	34.00% (-8.3)*	58.40% (-2.8)*	79.90% (8.9)*	
Do you support Sheffield & Rotherham Wildlife Trust through donations? **	Pre-contemplation	86.60% (3.7)*	69.50% (1.2)	60.20% (-3.5)*	$p<0.01$
	Contemplation or Preparation	1.50% (-2.4)	9.50% (-0.2)	11.80% (1.7)	
	Action or Maintenance	11.90% (-2.4)	21.00% (-1.2)	28.00% (2.6)	
Do you support Sheffield & Rotherham Wildlife Trust through volunteering? **	Pre-contemplation	46.30% (5.9)*	20.20% (0.4)	13.40% (-4.0)*	$p<0.001$
	Contemplation or Preparation	46.30% (-2.7)	62.60% (0.4)	64.00% (1.3)	
	Action or Maintenance	7.50% (-2.5)	17.30% (-0.9)	22.70% (2.4)	

* Adjusted z-scores are in brackets and a bonferonni correction has been applied to p-values calculated for post hoc analysis.

** 632 participants responded to this question. Only members and non-members who had heard of the [local] wildlife trust were asked to complete this question.

Table Four: Sample Characteristics (with post hoc analysis of adjusted z-scores)

		Members				Non-members				
		Cluster 1M (n=134)	Cluster 2M (n=178)	Overall (n=)	P	Cluster 1NM (n=242)	Cluster 2NM (n=89)	Cluster 3NM (n=258)	Overall (n=)	p
Sex	Male	32.30% (-3.4)*	51.10% (3.4)*	40.20%	$p<0.01$	29.20% (-0.3)	52.80% (5.1)*	22.50% (-3.4)*	29.80%	$p<0.001$
	Female	67.70% (3.4)*	48.90% (-3.4)*	59.80%		70.80% (0.3)	47.20% (-5.1)*	77.50% (3.4)*	70.20%	
Age	16 to 34	8.40% (0.6)	6.50% (-0.6)	7.60%	$p>0.05$	58.70% (0.3)	67.40% (2.0)	53.90% (-1.7)	57.90%	$p>0.05$
	35 to 54	27.70% (0.1)	27.30% (-0.1)	27.60%		31.80% (0.6)	20.20% (-2.3)	32.60% (1.0)	30.40%	
	55+	63.90% (-0.4)	66.20% (0.4)	64.80%		9.50% (-1.4)	12.40% (0.2)	13.60% (1.2)	11.70%	
Education	GCSE or equivalent or A level or equivalent	20.40% (1.4)	14.40% (-1.4)	17.90%	$p>0.05$	24.00% (0.5)	27.00% (1.0)	20.50% (-1.2)	22.90%	$p>0.05$
	Undergraduate degree	42.40% (-2.2)	54.70% (2.2)	47.60%		33.50% (-0.5)	33.70% (-0.2)	36.00% (0.6)	34.60%	
	Masters degree or PhD	37.20% (1.2)	30.90% (-1.2)	34.50%		42.60% (0.0)	39.30% (-0.6)	43.40% (0.4)	42.40%	
Employment status	Not in employment	49.70% (-1.4)	57.60% (1.4)	53.00%	$p>0.05$	43.00% (-0.7)	58.40% (2.8)*	41.50% (-1.4)	44.70%	$p<0.05$
	In employment (full, part or self-employed)	50.30% (1.4)	42.40% (-1.4)	47.00%		57.00% (0.7)	41.60% (-2.8)*	58.50% (1.4)	55.30%	
Do you have children under 18 living in your household?		15.20% (-1.5)	21.60% (1.5)	17.90%	$p>0.05$	23.60% (1.0)	14.60% (-1.7)	22.10% (0.3)	21.60%	$p>0.05$
Clusters		Cluster 1M (n=134)	Cluster 2M (n=178)	Overall (n=312)		Cluster 1NM (n=125)	Cluster 2NM (n=85)	Cluster 3NM (n=39)	Overall (n=465)	
Have you heard of the [local] Wildlife Trust?		98.40% (0.4)	97.80% (-0.4)	98.20%	$p>0.05$	45.50% (-2.4)	30.30% (-4.3)*	64.00% (5.4)*	51.30%	$p<0.001$

* Adjusted z-scores are in brackets and a bonferonni correction has been applied to p-values calculated for post hoc analysis

Table Five: Mean responses for EIS items for cluster analysis of members and non-members

		Member			Non-member			
Factor	**Items**	Cluster 1M (n=191)	Cluster 2M (n=139)	Overall (n=330)	Cluster 1NM (n=242)	Cluster 2NM (n=89)	Cluster 3NM (n=258)	Overall (n=589)
Environmental Identity	I like to garden.	6.09 (±1.15)	5.45 (±1.56)	5.82 (±1.37)	4.58 (±1.66)	3.69 (±1.84)	5.69 (±1.26)	4.93 (±1.69)
	Being part of the ecosystem is an important part of who I am.	6.51 (±0.66)	5.45 (±1.07)	6.06 (±1.01)	5.04 (±1.08)	3.96 (±1.48)	6.18 (±0.82)	5.38 (±1.32)
	In general, being part of the natural world is an important part of my self-image.	6.57 (±0.65)	5.35 (±1.03)	6.05 (±1.03)	5.2 (±1.02)	4.08 (±1.18)	6.31 (±0.77)	5.52 (±1.23)
	I feel that I have a lot in common with other species.	5.70 (±1.17)	4.54 (±1.28)	5.21 (±1.35)	4.79 (±1.20)	3.61 (±1.47)	5.89 (±1.04)	5.09 (±1.43)
	I think of myself as part of nature, not separate from it.	6.50 (±0.70)	5.26 (±1.13)	5.98 (±1.09)	5.33 (±1.14)	4.03 (±1.62)	6.37 (±0.73)	5.59 (±1.35)
	Average Environmental Identity	6.28 (±0.53)	5.21 (±0.74)	5.83 (±0.82)	4.99 (±0.71)	3.87 (±0.90)	6.09 (±0.58)	5.30 (±1.05)
Appreciation for Nature	I feel that I have roots to a particular geographic location that had a significant impact on my development.	5.64 (±1.27)	4.94 (±1.31)	5.35 (±1.33)	5.23 (±1.47)	4.49 (±1.84)	5.71 (±1.32)	5.33 (±1.53)
	I would rather live in a small room or house with a nice view than a bigger room or house with a view of other buildings.	6.19 (±0.98)	5.47 (±1.31)	5.88 (±1.18)	5.24 (±1.45)	4.2 (±1.62)	6.29 (±0.91)	5.54 (±1.47)
	Sometimes I feel like parts of nature – certain trees, storms or hills – have personalities of their own.	5.49 (±1.24)	3.72 (±1.49)	4.74 (±1.61)	4.24 (±1.51)	2.73 (±1.54)	5.67 (±1.25)	4.64 (±1.75)
	I have never seen a work of art that is as beautiful as a work of nature, like a sunset or a mountain range.	5.66 (±1.52)	5.09 (±1.68)	5.42 (±1.61)	5.25 (±1.57)	3.91 (±1.82)	6.01 (±1.21)	5.38 (±1.63)
	I feel that my experiences with nature have made me feel truly alive.	6.38 (±0.68)	5.06 (±0.99)	5.82 (±1.05)	5.52 (±0.95)	3.87 (±1.39)	6.47 (±0.72)	5.68 (±1.29)
	Average Appreciation for Nature	5.87 (±0.62)	4.86 (±0.72)	5.44 (±0.83)	5.10 (±0.65)	3.84 (±0.88)	6.03 (±0.58)	5.31 (±1.00)
Environmentalism	Behaving responsibly toward the earth – living a sustainable life – is part of my moral code.	6.62 (±0.59)	5.87 (±0.83)	6.31 (±0.80)	5.81 (±0.82)	5.1 (±1.31)	6.55 (±0.62)	6.02 (±0.98)
	Learning about the natural world	6.95 (±0.21)	6.65 (±0.62)	6.82 (±0.46)	6.57 (±0.73)	6.02 (±0.94)	6.88 (±0.35)	6.62 (±0.70)

	should be an important part of every child's upbringing.							
	Engaging in environmental behaviors is important to me.	6.40 (±0.68)	5.40 (±0.92)	5.98 (±0.93)	5.34 (±0.93)	4.24 (±1.31)	6.3 (±0.70)	5.59 (±1.16)
	If I had enough time or money, I would certainly devote some of it to working for environmental causes.	6.48 (±0.72)	5.54 (±1.11)	6.08 (±1.02)	5.56 (±1.19)	4.4 (±1.48)	6.5 (±0.75)	5.8 (±1.30)
	I believe I have a lot in common with environmentalists as a group.	6.21 (±0.78)	4.76 (±1.13)	5.60 (±1.18)	4.49 (±1.19)	3.04 (±1.48)	5.86 (±0.95)	4.87 (±1.52)
	My own interests usually seem to coincide with the position advocated by environmentalists.	5.98 (±0.85)	4.78 (±1.11)	5.48 (±1.13)	4.46 (±1.10)	3.37 (±1.43)	5.77 (±0.96)	4.87 (±1.40)
	I keep mementos from the outdoors, such as shells, rocks or feathers.	5.82 (±1.39)	4.41 (±1.70)	5.22 (±1.68)	4.31 (±1.71)	3.18 (±1.84)	5.77 (±1.50)	4.78 (±1.90)
	Average Environmentalism	6.35 (±0.38)	5.34 (±0.55)	5.93 (±0.68)	5.22 (±0.56)	4.19 (±0.85)	6.23 (±0.44)	5.51 (±0.92)
Enjoying Nature	I spend a lot of time in natural settings (e.g. woods, fields, meadows, lakes, uplands, moorlands, coast & sea).	6.28 (±0.79)	5.39 (±1.27)	5.91 (±1.11)	5.22 (±1.26)	3.44 (±1.58)	6.04 (±0.99)	5.31 (±1.49)
	When I am upset or stressed, I can feel better by spending some time outdoors 'communing with nature'.	6.70 (±0.67)	5.74 (±1.17)	6.29 (±1.03)	6.11 (±0.93)	4.35 (±1.55)	6.72 (±0.55)	6.11 (±1.21)
	Being near wildlife is important to me; I would not want to spend all my time in a city.	6.84 (±0.42)	6.09 (±0.99)	6.53 (±0.80)	6.04 (±1.03)	4.19 (±1.66)	6.66 (±0.63)	6.03 (±1.31)
	I really enjoy outdoor activities such as walking, running, cycling, climbing, kayaking and camping.	6.43 (±0.78)	5.79 (±1.11)	6.16 (±0.99)	5.87 (±1.10)	4.74 (±1.66)	6.53 (±0.77)	5.99 (±1.24)
	I would feel that an important part of my life was missing if I was not able to get out and enjoy nature from time to time.	6.87 (±0.38)	6.25 (±0.84)	6.61 (±0.69)	6.26 (±0.84)	4.78 (±1.52)	6.8 (±0.45)	6.27 (±1.09)
	I take pride in the fact that I could survive outdoors on	4.65 (±1.57)	3.37 (±1.52)	4.12 (±1.67)	3.72 (±1.59)	2.93 (±1.64)	5.03 (±1.58)	4.18 (±1.78)

	my own for a few days.							
	Average Enjoying Nature	6.30 (±0.46)	5.44 (±0.65)	5.94 (±0.69)	5.54 (±0.63)	4.07 (±0.93)	6.30 (±0.49)	5.65 (±0.98)
	I believe that some of today's social problems could be cured by returning to a more rural lifestyle in which people live in harmony with the land.	5.95 (±0.99)	4.54 (±1.40)	5.36 (±1.37)	4.77 (±1.35)	3.38 (±1.63)	6.02 (±1.00)	5.11 (±1.56)

Table Six: Percentage and adjusted z-scores for responses to stage of change questions

		Members			*Non-members*			
	Stage of Change	Cluster 1M (n=191)	Cluster 2M (n=139)	*p*	Cluster 1NM (n=242)	Cluster 2NM (n=89)	Cluster 3NM (n=258)	*p*
Do you take action in your own life to benefit wildlife (e.g. feeding the birds in your garden, recording/ reporting your wildlife sightings or volunteering)?	Pre-contemplation	2.10% (-2.0)	6.50% (2.0)	*p*>.05	26.90% (1.0)	59.60% (8.2)*	10.90% (-6.9)*	*p*<.001
	Contemplation or Preparation	2.60% (-0.5)	3.60% (0.5)		20.20% (1.5)	13.50% (-1.1)	16.30% (-0.7)	
	Action or Maintenance	95.30% (1.9)	89.90% (-1.9)		52.90% (-2.0)	27.00% (-6.4)*	72.90% (6.6)*	
Do you take action in your own life to protect the natural environment (e.g. volunteering, signing a petition or attending a demonstration related to an environmental cause)?	Pre-contemplation	7.30% (-5.3)*	29.50% (5.3)*	*p*<.001	36.00% (3.0)*	57.30% (6.3)*	13.20% (-7.6)*	*p*<.001
	Contemplation or Preparation	6.30% (-0.3)	7.20% (0.3)		15.70% (0.8)	13.50% (-0.2)	13.20% (-0.7)	
	Action or Maintenance	86.40% (4.9)*	63.30% (-4.9)*		48.30% (-3.3)*	29.20% (-5.6)*	73.60% (7.4)*	
	Stage of Change	Cluster 1 (n=134)	Cluster 2 (n=178)	*p*	Cluster 1NM (n=101)	Cluster 2NM (n=27)	Cluster 3NM (n=165)	*p*
Do you support Sheffield & Rotherham Wildlife Trust through donations? ^	Pre-contemplation	47.10% (-3.3)*	65.50% (3.3)*	*p*<.01	80.90% (0.5)	96.30% (2.3)	75.80% (-1.8)	*p*>.05
	Contemplation or Preparation	6.80% (0.4)	5.80% (-0.4)		12.70% (-0.3)	0.00% (-2.2)	16.40% (1.6)	
	Action or Maintenance	46.10% (3.2)*	28.80% (-3.2)*		6.40% (-0.3)	3.70% (-0.7)	7.90% (0.7)	
Do you support Sheffield & Rotherham Wildlife Trust through volunteering? ^	Pre-contemplation	10.50% (-2.9)*	22.30% (2.9)*	*p*<.05	21.80% (-0.6)	63.00% (5.0)*	18.80% (-2.3)	*p*<.001
	Contemplation or Preparation	61.30% (1.2)	54.70% (-1.2)		71.80% (1.9)	33.30% (-3.6)*	65.50% (0.2)	
	Action or Maintenance	28.30% (1.1)	23.00% (-1.1)		6.40% (-2.0)	3.70% (-1.3)	15.80% (2.7)	

* Adjusted z-scores are in brackets and a bonferonni correction has been applied to p-values calculated for post hoc analysis

^ Only members and non-members who had heard of the [local] wildlife trust were asked to complete this question.