2018-01

Moor Health and Wellbeing. An evaluation of two National Park projects: Dartmoor Naturally Healthy and Exmoor Moor to Enjoy.

Howes, Sarah

MOOR HEALTH AND WELLBEING

An evaluation of two National Park projects: Dartmoor Naturally Healthy and Exmoor Moor to Enjoy

January 2018

Sarah Howes, Andrew Edwards-Jones and Sue Waite

Acknowledgements

We would like to thank the project officers and staff at the two National Parks for their enthusiastic collaboration in the evaluation, and all the stakeholders and participants who have shared their thinking.

The projects were made possible by funding from Devon and Somerset Public Health bodies and supported by the Devon Local Nature Partnership.

Photographs were kindly provided by Dartmoor and Exmoor National Park Authorities with permission from those featured.

We would also like to thank Vicki Norris and Ian Blackwell who were involved in the early stages of the project.

Executive summary

Exmoor and Dartmoor National Park Authorities (ENPA and DNPA) commissioned an evaluation of two linked 3-year projects that explored the relationships between National Parks and health and wellbeing, beginning in November 2014. The intention was to explore similarities and differences and successes and challenges across and within the two projects (Naturally Healthy in Dartmoor National Park and Moor to Enjoy in Exmoor National Park) to provide recommendations for practice both within these projects and for future development. Each project adopted different recruitment and delivery strategies and the hope was to learn from commonalities and differences across the two National Park projects about what contributes to 'moor health and wellbeing'.

The feedback from stakeholders indicated that multiple models of engagement might best serve the widest range of potential beneficiaries. Community engagement and partnership with existing groups seemed to be more effective than direct GP referral where there was no existing green prescriptions champion (Bragg and Atkins, 2016). However, certain individuals were less likely to self-refer and for those with low mood or depression, more formal written prescriptions might help to extend the opportunities to them. Clear communication between referrer, referee and providers of services would help match patient attributes and types of activity to gain most benefit. Agreed and transparent delineation of roles and responsibilities, especially regarding health and safety issues, might also help to build increased confidence in programmes.

It was vital that programmes offered a range of activities suitable for different needs (SWPLF, 2007) that were clearly described and well-advertised, utilising existing networks and building strong sustainable relationships and partnerships. The key elements to include in activities were novelty, social opportunities and natural environment aspects. Although it seems that the schemes appealed especially to those with an already established feeling of nature relatedness, a progression from familiar to more novel experiences might scaffold access for a broader range of potential beneficiaries. The National Park projects have inspired new initiatives such as Somerset's Natura and Wellbeing Project and encouraged participants to seek out other opportunities to engage with nature independently.

Participants were positive about the projects' effects on their wellbeing. Intended outcomes from the two projects were achieved, including enjoying, socialising, relaxing and feeling uplifted, but physical activity increases were less evident. This suggests that if evidence is required for certain outcomes, a closer targeting of groups and matching of activities would be needed. A mixture of generic and specific targeted activities might be appropriate to demonstrate the most appropriate pathway to particular desired outcomes.

The **top four** outcomes from participants' experiences of activities across both projects were:


Enjoyment
(52 NH; 20 MTE)


Sense of belonging
(52 NH; 17 MTE)


Learning
(18NH; 49 MTE)


Relaxation
(27 NH; 17 MTE)

The initial start-up and establishment of trusted relationships takes time and investment of resources at all points in the chain of referral. Due to the short time frame, decisions were made to focus on the modes of referral that seemed to be yielding more successful engagement. To access other groups and individuals, a longer timeframe and establishment of green prescription champions would be productive to help build trust in the programme's sustainability. An embedded and tiered approach that would draw on GP written prescription through to partnerships with existing groups and community engagement might be the most effective format. While many participants were positive about deriving benefits from nature, access issues were a barrier and extension of schemes so that they included local green space use as well as the exceptional quality of National Parks seems useful. Community transport solutions might also allow National Parks to open up their resources more widely. Lift sharing was extensively and successfully used in many cases but was not universally welcomed.

Recommendations

- Programmes designed using the developed toolkit will need to be championed and disseminated through Public Health and other policy channels to influence practice. Funding is also needed so that the services are sustainable and therefore more attractive as a credible alternative amongst other prescribed health services.
- Organisations with an interest in nature and/or wellbeing should work together to establish partnerships to develop programmes built upon good mutual understanding. Green prescription champions could provide the catalyst to support this and increase trust and uptake.
- More research is needed to determine if there is added value through the quality of National Park contexts for nature-based social prescribing and to assess the effectiveness of different referral methods for different groups.

Contents

Context to the two National Park projects and their evaluation

Exmoor and Dartmoor National Park Authorities (ENPA and DNPA) commissioned an evaluation of two linked 3-year projects that explored the relationships between National Parks and health and wellbeing, beginning in November 2014. The intention was to explore similarities and differences and successes and challenges across and within the two projects (Naturally Healthy in Dartmoor National Park and Moor to Enjoy in Exmoor National Park) to provide recommendations for practice both within these projects and for future development. Each project adopted different recruitment and delivery strategies and the hope was to learn from commonalities and differences across the two National Park projects about what contributes to 'moor health and wellbeing'.

Exmoor's Moor to Enjoy project used a Mosaic type model based around bringing together environmental sector providers and health and wellbeing groups. It was funded by Somerset and Devon Public Health and Exmoor National Park Authority over 3 years. There was a full-time project officer until March 2017 when a part time project officer (3 days per week) was appointed. The primary aims of the Project were:

- To demonstrate the benefits to mental and emotional health and wellbeing through interaction and engagement with the landscapes, wildlife, habitats and recreational opportunities of Exmoor National Park
- To establish sustainable networks bringing together environmental & countryside practitioners and professionals in the health, wellbeing and social care arenas to ensure long term engagement with Exmoor National Park.

With the key outcomes being:

- Health and wellbeing benefits of engagement with Exmoor National Park demonstrated
- Increased use of, and visits to, the National Park by groups and individuals experiencing mental/emotional health issues as part of their intervention/recovery programmes

These aims and outcomes were to be achieved by:

Networking:

- Establishing contact between health & social care professionals and organisations and environmental organisations on Exmoor National Park to share and promote the opportunities offered within the National Park.
- Establishing a sustainable network of individuals and organisations to enable and facilitate access to Exmoor for people who would not normally consider visiting the National Park

Targeting communities and organisations:

- Researching and targeting communities and/or organisations in key geographic locations – e.g. Bridgwater, Taunton, Wiveliscombe, Barnstaple, Tiverton
- Undertaking research and targeted activity to ensure representative engagement with organisations addressing mental health and emotional wellbeing

Training and supporting visits:

- Organising an annual programme of tailored training events to build capacity within organisations (e.g. local fundraising, leading walks, organising group visits) to undertake unsupported visits to Exmoor National Park.
- Organising minimum of 3 Group Leader Visits per year leading to unsupported group visits
- Organising a minimum of 5 group visits per year

The Moor to Enjoy Project actively promoted the Five Ways to Wellbeing (connect, be active, take notice, keep learning and give) [1] and the Government's Chief Medical Officer's recommendations for physical activity, which are 180 minutes per day for under 5s; 60 minutes a day for children and young people (5-18 years) and 150 minutes per week for adults[2].

Dartmoor's Naturally Healthy project employed a part-time project officer and used a community development model to undertake action research to understand barriers for key stakeholders and, importantly, to leave a legacy at the end of project.

[1] https://www.gov.uk/government/publications/five-ways-to-mental-wellbeing
[2] https://www.gov.uk/government/publications/uk-physical-activity-guidelines

DNPA was approached by DCC Public Health to develop a joint project that would help deliver some tangible outcomes for local communities and add to a wider evidence base. Its aim was to:

- develop greater understanding of health benefits, particularly mental wellbeing benefits of accessing outdoor space;
- link GPs in a small pilot area with the National Park Authority through exploring a 'green prescription' programme;
- through action research to understand the barriers all stakeholders face – community and individual barriers to accessing the natural environment; health professional barriers to prescribing; National Park (environment provider) barriers to making the connections to communities and GPs.

The pilot focused primarily on the Buckfastleigh area to build on work that DCC Public Health undertook to understand the demographics and some associated health risks within this community. The delivery and action research were considered equally important in order to share learning more widely and find a sustainable model to replicate in other Dartmoor communities.

In practical terms, the Dartmoor Naturally Healthy project provided a weekly programme of activities across the National Park based on both physical gentle exercise including walking, cycling and forest tai chi as well as creative and 'mindful' activities including art therapy, creative writing and craft work in the natural environment between 2015 and 2017.

The project focused on bringing together people living in the Buckfastleigh area with lower than average physical and/or emotional health. Participants met as a group each week with a trained community 'Walking for Health' leader and/or the Naturally Healthy project officer. Transport was provided or shared between participants to enable participation in activities with qualified leaders in various locations across Dartmoor.

The project also provided activities and events with other community organisations including carers group, children's centres and Hikmat Devon UK, an organisation supporting minority ethnic communities. A group of young people, some of whom had reported experiencing emotional stress, were enabled through the project to

write and produce their own Dartmoor film, working with the Buckfastleigh-based Jellyfish Community Youth Project.

As a short term (three-year) project, there was a succession strategy to develop community mentors so that long term benefit was secured. The first volunteer in this role from within the target community has successfully started and other participants have undergone walk leader training towards this goal.

Exmoor and Dartmoor were the first National Parks engaging directly with health commissioners to explore 'green prescriptions', so wider audiences for the evaluation are other NPs, GPs and commissioners and community groups/services. The initiatives were developmental, so it was essential that the evaluation included the ability to feedback information into the projects during their lifetimes to maximise their effectiveness and success. Thus, our collaborative evaluation approach was both formative and summative.

Both project officers were willing to collect data and carry out some of the fieldwork with guidance. To ensure successful partnership and to support the formative nature of the evaluation, regular meetings were convened so that learning *across* the two projects from the evaluation was integral to the evaluation framework.

Health, wellbeing and nature – the current landscape

"Access to nature can significantly contribute to our mental capital and wellbeing"
(Department of Health, 2010).

There is a significant body of evidence supporting the therapeutic use of green space, such as parks, gardens and moorland, alongside blue space, such as aquatic, coastal and waterside environments, for mental and physical wellbeing (Natural England, 2017; Lee & Maheswaran, 2011; Bowler et al, 2010; Bell et al, 2008; Mitchell & Popham, 2008; Bird, 2007). Seventy three percent of people in the U.K. identify that the environment is important to both personal and national well-being (Office for National Statistics, 2015). Health benefits are reported for individuals suffering from a range of health conditions, including long-term conditions, cardiovascular disease and mental health problems such as depression, anxiety, post-traumatic stress disorder and dementia (Bell et al, 2015; Bragg & Atkins, 2016; Bratman et al, 2012; Grindle et al, 2009). This may in part be due to

the potential for the natural environment to provide relief from stress, promote mental restoration and improve capacity for concentration and attention (Ulrich et al., 1991; Chang & Chen, 2005; Kaplan & Kaplan, 1989; Hartig et al., 2003; Korpela & Ylen, 2007; van den Berg et al., 2007).

Several theories attest to the stress reducing effects of nature, supporting its use for enhancing wellbeing. Perhaps the most prominent of these, attention restoration theory (Kaplan & Kaplan, 1989), asserts that nature provides a healing psychological environment, facilitating relief from stress and restoring mental capacity. However, not all may experience and interpret time in nature as a positive experience initially, and so it is important to demonstrate that it is a potentially therapeutic ally in supporting well-being (Jordan & Hinds, 2016).

It is difficult to separate the wellbeing effects of nature itself from positive outcomes associated with the impacts of social or physical activities undertaken within it (Grinde et al, 2009; Drayson, 2014). Yet even the simple act of viewing images of nature on a screen or through a window can have positive impacts for physical and mental wellbeing, which suggests that the influence of nature may well be independent of the other factors present, at least to some extent (Ulrich et al., 1991; Ulrich, 1999; Parsons et al., 1998). The literature clearly identifies that exercising in green space produces increased benefits for physical and psychological environments as compared to an indoor gym environment (Pretty et al, 2007; Turner & Stevinson, 2017).

Environmental factors

Bowler et al. (2010) carried out a systematic literature review of twenty-five studies, comparing the evidence of health and wellbeing benefits of activity within green space compared with built environments. They reported that participation in activity within a natural environment produced a direct and positive effect on wellbeing compared to a built environment.

The U.K. mental health charity, MIND (2007) tested the difference in affect between walks in an indoor shopping centre and a green, outdoor environment in the U.K. Positive effects on mood and self-esteem were noted in the nature-based walk, with fewer negative effects compared to the indoor walk. This suggests that it is not just exercise that is important, but the environment in which it takes place and indeed, an

undesirable environment may have a negative impact on mental well-being. A second study commissioned by the charity found that 90% of participants felt that the combination of exercise and being outside in nature was a leading determinant in delivering health benefits, and 94% reported mental health benefits.

Understanding the factors which contribute to a positive experience is important in developing meaningful recreational and recovery based activities for wellbeing. Several factors influence the positive correlations between wellbeing and time in nature. The more *scenic* a space is the more pronounced the wellbeing effects might be (Seresinhe et al, 2015). In addition, *biodiversity* is argued to enhance human wellbeing, species richness correlating with positive psychological impacts (Fuller et al, 2007; White et al, 2013). Activities such as gardening, walking and conservation work provide nature contact and an opportunity to participate in physical activity, a combination thought to be particularly powerful.

People who live within one mile of green space may have better self-rated health with increased periods of physical activity (Pietilä et al., 2014). People living near green space, such as parks and gardens, are reported to have greater life satisfaction than those who do not, with the strongest effects reported in older adults (Krekel et al., 2016). It is hypothesised that the life expectancy for older adults able to access green space for walking, increases regardless of socioeconomic status (Takano, 2002). People living within 3km of green space were found to be more resilient to stressful life events, suffering fewer physical and mental health complaints (van den Berg et al., 2010). A study in the UK identified that mortality rates are 25% lower in areas with higher concentrations of green space (Mitchell & Popham, 2008) and blue space is noted to increase wellbeing effects, mitigating against some impacts of deprivation, the effect being more pronounced in areas of higher social deprivation (Wheeler et al., 2012).

Time in nature which incorporates a social component may further enhance wellbeing effects. A shared therapeutic experience in nature with opportunities for meaning making may help to create feelings of connection to each other and to the place itself (Bell et al., 2015). Yet some groups are less likely to engage in nature-based activities (Figure 1).

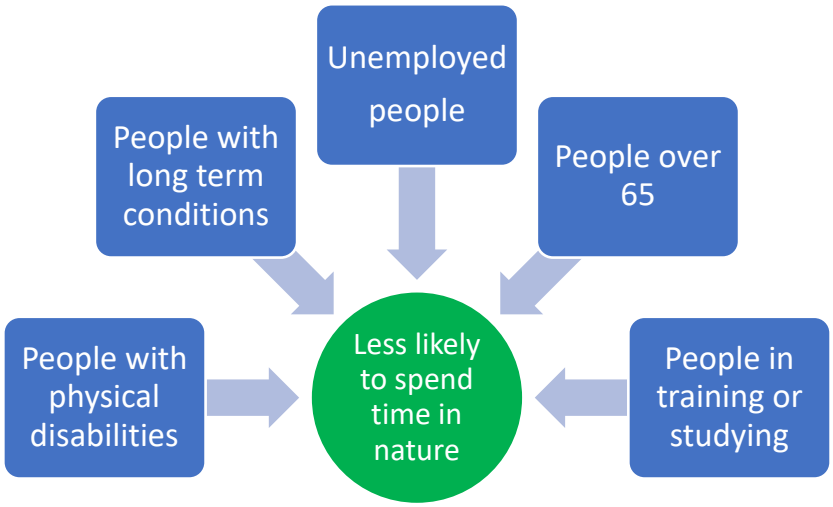


Figure 1: People less likely to access natural environments for recreation and wellbeing (Burt et al, 2013; Natural England, 2013; SWPLF, 2007)

People with poor mental health are more likely to experience social exclusion, and those who come from poorer communities are more likely to experience persistent health inequalities (Travlou & Ward-Thompson, 2007). Other groups less likely to visit green spaces include people with physical disabilities or long-term illness, who are reported to access outdoor space only up to three times per year (Burt et al., 2013). It is therefore important to build a picture of what specifically limits access to understand how best to remediate this inequality. A report by the South West Protected Landscapes Forum (SWPLF, 2007) suggests certain groups need to be specifically targeted, with emphasis placed on building and maintaining relationships over time. Engagement may begin geographically closer to home, within the individuals' comfort zone, progressing to opportunities further afield. Specific information may also aid engagement, such as knowing what to expect, discussing concerns about support and access, travel, available facilities, terrain and weather contingencies (SWPLF, 2007)

Pinder et al. (2009) suggest that engagement with green space for health should be viewed as a process, rather than an event to help us understand how it is interpreted and consequently made more accessible. If people understand how they can access and use a space, they are more likely to use it. Barriers may emerge at any stage of the process, from pre- to post visit and it is important to have an understanding at each stage what might get in the way (Physical Activity Task Force, 2002; SWPLF, 2007). Known obstacles include individual perceptions that they are too old, have insufficient time due to conflicting commitments, do not enjoy exercise, are overweight, suffering

from ill health, injury or disability. Further concerns may emerge about a lack of suitable facilities, transport, skill availability, confidence, money, fears about safety, the environment or weather conditions alongside suitable opportunities to provide feedback (Physical Activity Task Force, 2002; SWPLF, 2007).

A vicious circle exists in that depression and low mood decrease motivation and potential engagement (MIND, 2007); while Korpela et al. (2010) suggest that those that feel less energetic are likely to feel more stressed, and are less likely to visit places that they find restorative. Similarly, the more energetic and less stressed they feel, the more likely they are to visit natural places and experience stronger restorative effects. This indicates that personal motivation can act as a significant barrier to accessing green spaces, but that once overcome, and the benefits are experienced, the more engaged a person is likely to be. Thus, breaking this cycle is critical to successful and sustained engagement for the maintenance of wellbeing.

Social and Green prescribing

Social prescribing offers healthcare professionals the opportunity to prescribe to non-clinical services to support the health and wellbeing of referred individuals (King's Fund, 2017). The Marmot Review (Marmot et al, 2010) promotes the use of social prescribing to help to tackle health inequalities, recognising that it may be a useful ally in addressing some of the social, environmental and economic factors underpinning poor mental health, such as social exclusion and a lack of meaningful occupation (Husk, 2017). Green prescribing offers a nature-based social prescription intended to promote health and wellbeing (Natural England, 2017).

Despite the existence of a wide body of research documenting the benefits of natural spaces on health and wellbeing, there are few studies exploring the use of green prescribing in England (Ecominds, 2013). The largest study focussing on nature-based social prescribing in the United Kingdom examined green prescription schemes in Scotland (Jepson et al, 2010). This work offers a useful consideration of relevant issues and highlights the need for ongoing research due to the lack of reliable evidence. Evidenced comparisons between schemes may help to build confidence of health professionals and increase their willingness to subscribe to green prescription schemes (Husk, 2017). The individual nature of each scheme available, with differing delivery models, impact measurement and claimed potential benefits presents a challenge for commissioning bodies (Bragg & Atkins, 2016).

Typically, green prescription referrals can be made within both primary and secondary health services and through social care providers, informally or formally. Jepson et al. (2010) found that primary care referral schemes tend to focus on walking activities, whereas secondary care referrals tend to be for horticulture, conservation or green gym activities. Schemes targeting secondary health care more commonly target groups with specific health issues, with referrals only being open to that specific group of people (Jepson et al., 2010) and referrals can be made by any healthcare practitioner involved in a patient's recovery journey.

The current emphasis on formal referral to green prescription schemes relies upon the health provider (usually a GP) passing information about the activity to the patient, who is advised to contact the scheme themselves (Jepson et al., 2010). The advantages to such an approach are that the GP has access to a large proportion of the population, is ideally placed to establish trust and that a prescription is a familiar and respected mechanism for the receipt of treatment (Swinburn et al., 1998).

Barriers to Engagement

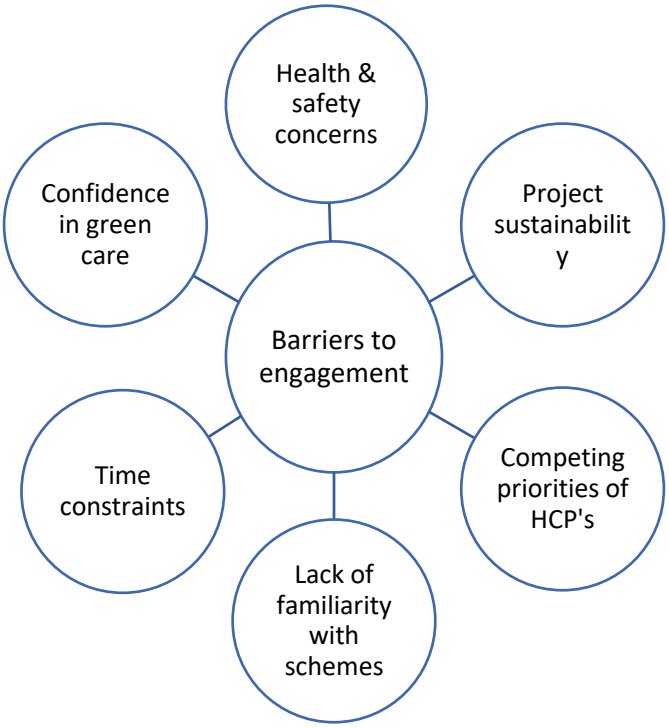


Figure 2: Barriers to engagement

Several factors may prevent healthcare professionals from referring to green prescription schemes (Figure 2). With many projects staffed by volunteers, concerns have arisen about clients who may have complex health needs and for vulnerable groups who may need more specialist input. The financial security of schemes is also cited; referrers may be hesitant to promote schemes which may lack longevity (Natural England, 2017. Jepson et al, 2010). The current financial landscape inevitably places a strain on the delivery of health interventions across clinical and voluntary sectors alike, with limited funding available to third sector organisations providing nature based services (Natural England, 2017). With limited time and resources available, it is suggested that potential referrers may feel more inclined to promote treatments with a more extensive, familiar and established evidence base (Jepson et al., 2010; Husk, 2017). The issues outlined above may prevent potential prescribers from calling upon green prescribing during their consultations (Van Aalst & Daly, 2004). Green prescribing tends to happen more in areas where there are active champions, and this may help to secure referrals to nature-based health promotion activities (Jepson et al., 2010). Helping prescribers to understand that green prescription activities are not promoted as a wholesale replacement for appropriate medical or therapy based interventions and to appreciate their potential to *add value* is vital.

From the participants' perspective, other issues may prevent them taking up the offer of a green prescription. Pringle (2008) suggests that an individual's perception of schemes is an important determinant of whether they engage. If an individual has faith in medical advice, enjoys exercise or is concerned about their own personal health, they are more likely to participate. Identifying and realising personal goals such as weight loss, social connection and perceived enhancement of self-worth and enjoyment further influence uptake (Pringle, 2008; Elley et al., 2007).

An evident problem is the lack of formal prescription system in operation across green prescribing schemes, presenting a challenge for the NHS's intention to increase green prescribing in the U.K. (Natural England, 2017). Written prescriptions may be more likely to result in engagement than verbal advice alone. A study undertaken by Swinburn et al. (1998) found that 59% of participants referred in this way had maintained or increased activity eleven months post completion. This is important, as written referrals are less likely when the Healthcare professional believes that the patient is unlikely to follow the advice given (Jepson et al., 2010). Where motivation

is low, as in for individuals suffering from low mood or depression, it is less likely that they will make contact with green prescription schemes personally, and so this mode of referral may influence potential take up.

Other social, economic and environmental factors influence the uptake and continuation of participation in green prescription schemes, for example weather, condition of the physical environment, individual health and level of psychological wellbeing (Pringle, 2008; Elley et al., 2007). The perceived authority of the prescribing health professional and support accessible through prescribing schemes can be motivating, but may be seen as intrusive and patronising and finding the right balance of healthcare professional involvement and interpersonal style is important in helping a person to move forward with a prescription (Elley et al., 2007). Additionally, a more coordinated approach by providers, working together, can help tackle some of the above barriers to make the services more accessible and streamlined for commissioning bodies and service users alike (Bragg & Atkins, 2016; Richardson et al., 2012).

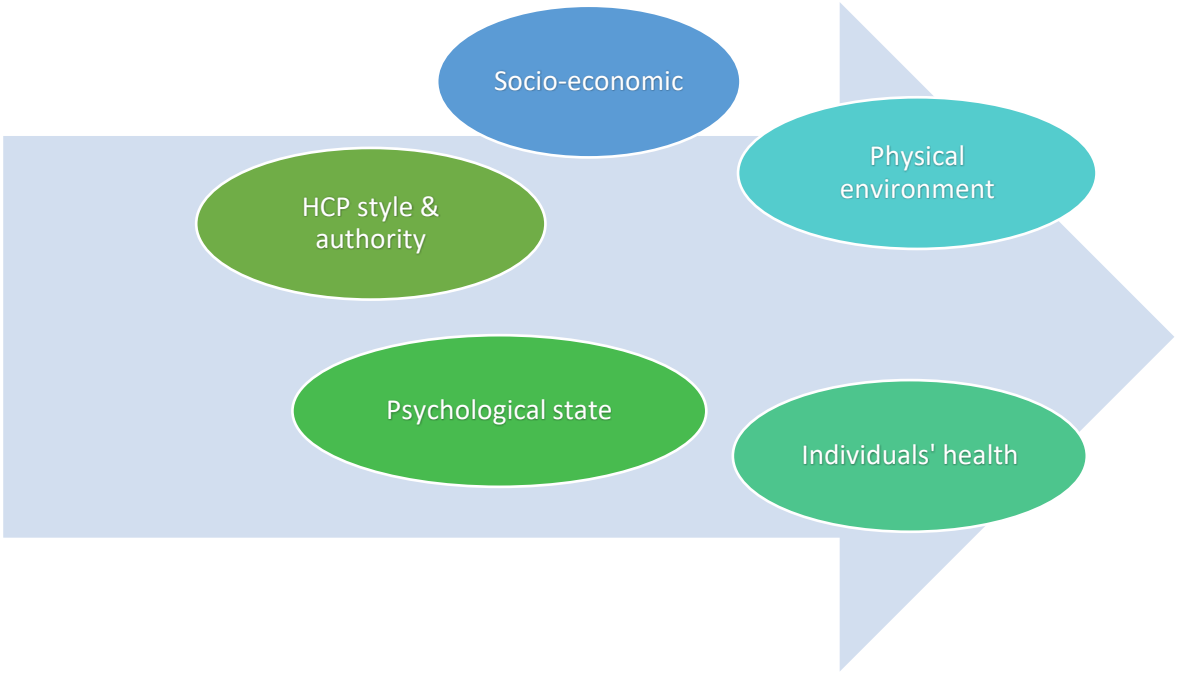


Figure 3: What influences uptake & continued engagement? (Elley et al., 2007, Pringle, 2008)

A sense of ownership and community coupled with the development of strong partnership working improves access to opportunities (Natural England, 2017; Burls 2007; Urban Green Spaces Task Force, 2007). It is suggested that closer working arrangements between service providers, service users, commissioners and policy makers with key organisations could result in the formation of a green care partnership to increase local and national opportunity (Bragg & Atkins, 2016; Burls, 2007; Urban Green Spaces Task Force, 2002). Involvement of a health professional in the role of 'champion' at the heart of the development and promotion of the scheme can provide credibility as well as practical contacts, guidance and support (Jepson et al., 2010). Natural England (2017) suggest that a link worker plays a central role in taking referrals and helping to establish contact between the patient and the most appropriate service.

To this end, service providers might register with a local online directory of services and make use of a variety of advertising to reach potential referrers and participants (Bragg & Atkins, 2010). Jepson et al. (2010) put forward the development of an accreditation scheme, with accredited activities available for people with specific health needs such as depression or obesity. This might increase referrer confidence and encourage the development of professional schemes within their locality.

Ongoing and consistent use of standardised outcome measures and evaluations could give useful information on project outcomes disseminated through provision of an annual report by the green care partnership (Bragg & Atkins, 2016; Jepson et al., 2010; Natural England, 2017). Large-scale demonstration trials may help to secure more comprehensive health and social care contracts and more sustainable funding. However, attending to the feedback and suggestions of participants should remain central in all schemes to ensure they are fit for purpose. The findings arising from our study and the literature review above have resulted in the formation of a 'toolkit' for prescribers accompanying this report.

A theory of change model - evaluation

To underpin the report, the following logic model (Figure 4) sets out some of the key questions that guide the assessment of the projects' success, drawing on the literature relevant to supporting health and wellbeing through natural environments.

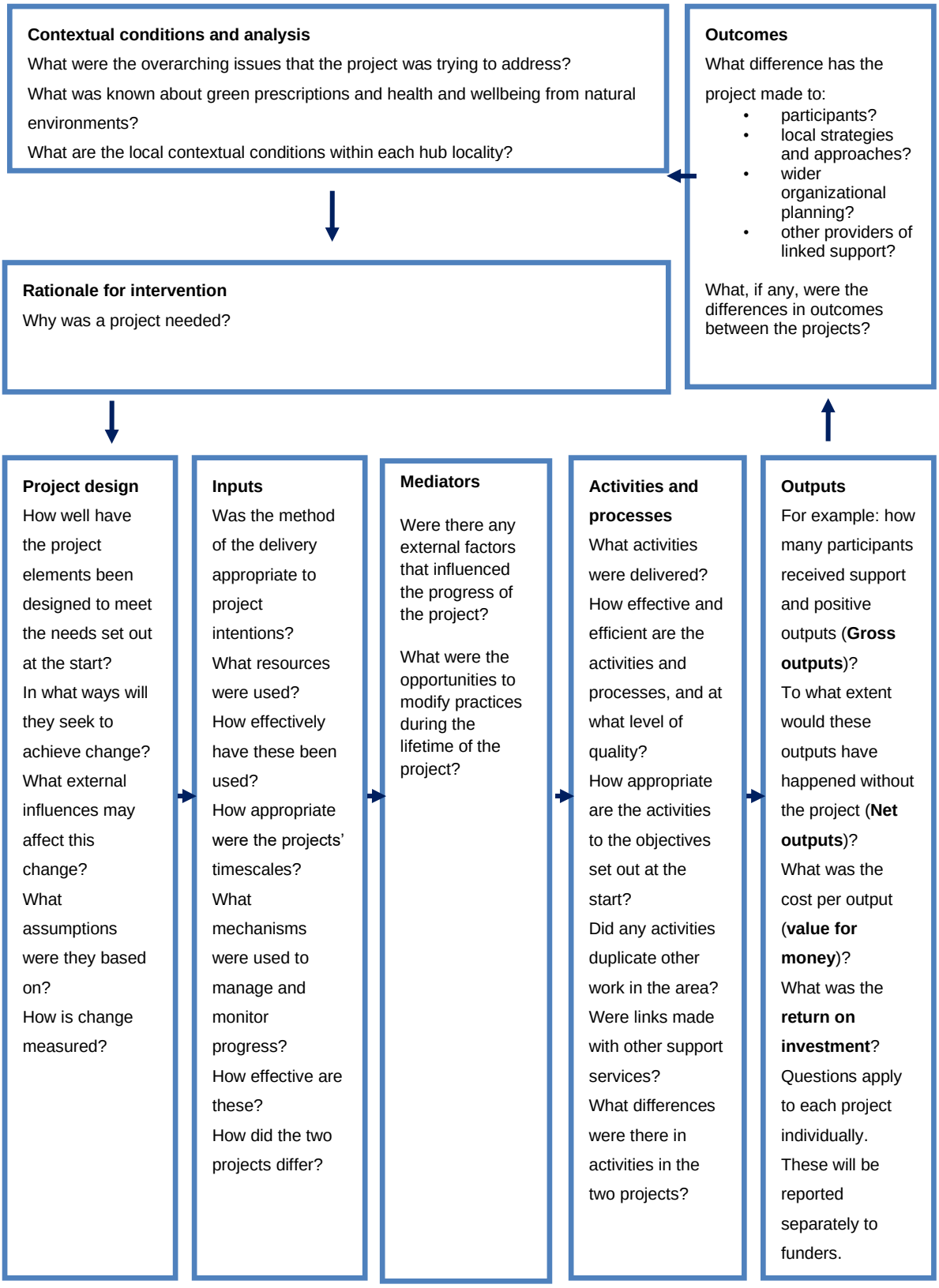


Figure 4: Logic model for evaluation of the two National Park projects

Arising from the data generated within the evaluation, we will set out a theory of change that accounts for the outcomes derived from participation in the project.

How we did the research

The evaluation was conducted in collaboration with staff and project officers of the Naturally Healthy Project (Dartmoor NPA) and the Moor to Enjoy Project (Exmoor NPA). The interdisciplinary research team at Plymouth University included Sarah Howes (Mental Health), Andy Edwards-Jones and Sue Waite (outdoor learning and physical health and wellbeing) with temporary assistance from Victoria Norris. Ethics protocol documents were approved by the Education Research Ethics Committee at Plymouth University and all participants were asked to indicate in writing if they consented. In line with previous guidance (Jepson et al., 2000), our design was action research with formative assessment. To this end, an interim report with feedback from stakeholders, including funders, GPs, participants and project officers was provided for consideration by the project officers and their managers in December 2016.The research instruments (See Appendices) we used to gather data included:

1. A questionnaire issued to activity participants. This was designed in collaboration between the research team at the university and the project officers and was issued to each participant at the time of registration with the National Park. The same questionnaire was later re-issued to some participants, usually a minimum of two to three months after completing the first questionnaire. It was not possible to ask all participants to do a post-test for a variety of reasons. On Dartmoor, these included:
    a. Some participants' reluctance to answer questionnaires that they felt were 'intrusive'
    b. Those who returned the second questionnaire were regular attenders of the group. Questionnaires were not returned by infrequent/one-off participants
    c. Some people joined the first cohort, completing questionnaires, but did not stay with the project; newer recruits could not complete the first iteration of questionnaires.

    For the Moor to Enjoy Exmoor model of one interaction with a group on a day visit, the questionnaire was sometimes inappropriate as the project officer's relationship with the group was not considered sufficiently developed to ask personal questions.

The self-completed questionnaire examined themes of physical activity levels, social connectedness, environmental connectedness, emotional wellbeing and connectedness to nature. Demographic information was also collected, consisting of age, gender, and ethnicity. There was an opportunity for self-declaration of having ‘a medical issue’ (such that it would impact on the activity). Open questions were included to allow free text comments.

2. The tool selected to measure emotional wellbeing was the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), a scale of 14 positively worded items with five response categories, for assessing a population’s mental wellbeing (Tennant et al., 2007). An assessment of nature connectedness, rather than environmental attitudes, was measured by the Naturally Healthy Project using the shortened Nature Relatedness (NR)-6 scale devised by Nisbet & Zelenski (2013).

3. An event evaluation form was issued to activity participants following the completion of each activity. This brief set of questions/statements aimed to evaluate the immediate impact of the activity on the participants’ perceptions of their physical and emotional wellbeing. The questionnaires for each project slightly differed to respond to particular NPA interests, but had a common core of questions that have been used for comparison. These seven similarly worded questions were asked of both Naturally Healthy and Moor to Enjoy event participants. Five of the questions required responses on a 5-point Likert scale indicating level of agreement with the question/statement, while two questions were open ended. Naturally Healthy (Dartmoor NPA) added four additional items to their questionnaire. It should be noted that the first 16 Naturally Healthy project event evaluations included fewer questions due to a design amendment in the early stages of the project.

4. Interviews with individual stakeholders associated with the project; for example, General Practitioners (GPs), project officers, volunteers, representatives of funding organisations were conducted by the University

research team. These explored expectations of the project, thoughts about progress and particularly addressed perceptions and experience of the green prescription element of the project. The interview schedules can be viewed in the appendices.

5. Focus group meetings with programme participants were facilitated by a member of the University research team. These explored the same areas as the individual interviews, with the addition of practical feedback on referral processes, challenges to, and benefits from participation.

The University team and project staff held regular meetings and an interim report in December 2016 summed up initial feedback from stakeholders. This was discussed with the two National Park project teams to help inform the future direction of the project for its remaining duration.

What evidence was collected?

Questionnaire responses

We collected 534 sets of questionnaire data.

Table 1: Frequency data for questionnaires and event evaluation forms

	Naturally Healthy Project	**Moor to Enjoy Project**	**Total**
Questionnaire completions	83	96	179
Event evaluations	89	266	355
Total no. of instruments completed	172	362	534

The questionnaire incorporates sections seeking different types of information and table 2 below shows the number of questionnaires where the different sections have been completed.

Table 2: Frequency data for questionnaire sections

	Naturally Healthy Project	Moor to Enjoy Project	Total
Total no. questionnaire completions	83	96	179
Age	72	48	120
Gender	78	85	163
Ethnicity/Nationality	75	77	152
Health issue	80	46	126
Visit frequency	83	72	155
Physical activity	82	82	164
Social/community connection	78	84	162
Environmental connection	41	84	125
Emotional wellbeing			
WEMWBS 1[3]	78	95	173
WEMWBS 2	12	28	40
Nature connectedness			
NR6[4] 1	36	0	36
NR6 2	10	0	10

Interview data

Two university staff members carried out seven interviews and four focus groups between them.

Table 3 indicates the people that shared their thinking and the dates of interview.

[3] The **Warwick-Edinburgh Mental Well-being** Scale (WEMWBS) is a widely used scale of 14 positively worded items, with five response categories, for assessing a population´s mental wellbeing.
[4] **NR6** is a short-form version of the nature relatedness scale, which captures individual differences in the way people view their relationship with the natural world (Nisbet et al., 2009).

Table 3: Profile of completed interviews and focus groups

	Naturally Healthy	Moor to Enjoy
Project Officer	05/12/2016	04/10/2016
General Practitioner	16/08/16	28/09/2016
Funder representative	16/08/16	30/09/2016
Volunteer	14/09/16	
Participants	14/09/16 (participants) 16/08/16 (group facilitators)	30/09/2016 (school parents) 20/10/2016 (NHS nurses)

What did key stakeholders think about the projects?

One important element of the evaluation was to find out what key stakeholders thought of the two initiatives to improve processes within the projects' lifetime. Accordingly, the first phase of the research involved gathering stakeholder views to shape the provision of services. Focus groups and interviews were undertaken with the stakeholders listed in Table 3 between Autumn 2016 and Spring 2017. The stakeholders' expectations of the NP programmes were examined, as well as their understanding of the main benefits and challenges associated with project delivery. Accounts of green prescription referral processes were obtained and key barriers to engagement were identified by participants and delivery partners. The resultant data yielded formative feedback which were analysed through content analysis. Key messages were shared with the project team members in December 2016, and are summarised below.

1. A 'softer', more informal and personalised referral process is more successful than a formal green prescription service.

   "I'm not sure about the referral process whether it is actually the right way of doing it…what has happened is that it has been up to me to refer the patient on to the group and then the group look at the patient details and say 'Yes, yes we can have that'. I think that…patients should be able to refer themselves." GP

"It needs to be really personalised I think and there is that gap if you are targeting vulnerable people it's that gap isn't it between that person hearing about what you're doing and getting them to come in through the door."
Project Officer

A process that accommodates self-referral and fosters changes to people's self-perception and self-confidence is likely to result in higher activity participation rates. In fact, one GP felt that a reliance on a formal process restricted to referrals from the surgery rather than allowing people to self-refer at a much earlier stage of their presenting issue, meant that a lot of potential beneficiaries were being missed. The referral process might benefit from being located within a health service practice, and being opened up to other healthcare professionals. This conflicts in part with the literature which suggest formal GP prescription can be helpful if there is a lack of motivation in the individual due to low mood state (Swinburn et al., 1998). This could suggest that a tiered and tailored approach with different modes of referral would enable a broader participation.

Organisational buy-in to the process is crucial so as not to thwart individual commitment. Organisations, such as schools or charitable bodies, also need to be given accurate information (about activities and responsibilities) to allay health and safety fears. Issues such as legal responsibilities, health and safety knowledge, insurance restrictions etc. need to be reported on authoritatively. Information sheets with clear roles and responsibilities might aid understanding. Previous research suggests that great clarity and excellent communication networks are needed to support this.

2. Referrers need to be well-informed about available programmes and maintain an understanding of their suitability criteria in relation to individual patients' needs. Referrers would gain from having a personal experiential understanding of the benefits of some activities to appreciate the multiple facets of the activities, so that they are aware that it is not "just a bit of exercise". From the referrer perspective, activities on offer need to be broad-ranging enough to accommodate patients with varying levels of mobility. As in the earlier point, tailoring of the programme so it meets a number of different individual and group needs is essential.

3. Transport issues were identified by funders, project officers and activity participants as a major barrier to engagement. Car sharing has proven to be effective and was promoted. However, mobilisation of alternatives such as community vehicles would benefit from further investigation to meet the needs of participants who may be anxious about car sharing:

> *"[Coordinating transport] is fraught with insurance issues…as I was kind of making my way round Exmoor and getting to know people there were mini buses owned by schools, colleges, organisations that were just sat and not doing stuff and I was thinking can't we somehow coordinate this but it's a minefield of legal issues to get those mini buses used for different purposes for different people no one would touch it so that again would be a project in itself."* Project Officer

   This issue appears particularly acute for more remote natural environments such as the National Parks (Merchant et al., 2013) and therefore transport solutions need to be built into the design of programmes. However, this and the following point also suggest that NPs could work productively in partnership with organisations that work with potential participants in their local neighbourhood in order to build stepping stones to engagement with the particularly inspiring landscapes of the NPs.

4. Regarding engagement in activities, one GP reported that younger females tend to be more receptive to green prescriptions. A gradual approach to stretching comfort zones is recommended, matching needs to activity and level of challenge.

> *"…my strategy was to entice people by partly what they already know and what they already do and then add a bit on that's a bit out of their comfort zone."* Project Officer

   The projects have been most effectively promoted via word-of-mouth, rather than advertising. Benefits may have been gained by more visible signposting materials displayed in health/medical centres, and by utilising outreach services i.e. health visitors, social workers etc. There may be cumulative effects from multiple methods and time for successful engagement reports to filter through to referrers and potential beneficiaries. Since March 2017, Moor to Enjoy has made most

group contacts through directly contacting groups – phoning and meeting in person and networking at events.

5. Further robust data is required to provide evidence of the impact of green prescriptions:

> *"I think there is evidence there but if you had to put it up against CBT (cognitive behaviour therapy) …there is stronger more robust [evidence] so you know…we live in a world a lot of the time where there's a medical model of health and so people feel more familiar with going down a more medical approach…"* Funder

However, it is felt that increasingly the value of qualitative information is being recognised. It was suggested that there may be green prescription-related issues that require further research to determine appropriate treatments:

> *"…we are used to drug prescriptions and there are text books of side effects and so on but there isn't the same for green prescriptions, so I think that we need more evidence…for what would be useful levels and types of exercise and making sure there are the people to support those types and levels of exercise."* Volunteer

The need for clinical trials that use comparative data to determine commissioning choices is desirable (Bragg and Atkins, 2016) but the distributed small-scale funding of schemes makes such a joined-up approach challenging.

6. The broader benefits and foundational nature of the project should be recognised, and success measured by the increases in activity overall, and the greater variety of activity environments reported, rather than focusing purely on access to the National Parks. The funder representatives were equally clear on this point:

> *"From a Public Health perspective, as much as we are keen for them to be making use of the national parks, from our perspective we want them all physically active, we want them engaging with the natural environment, we are not quite so precious about what that environment is, whether it is a national park or what."*

"…you know from our point of view…in terms of physical activity targets in a way we don't care where they're more physically active as long as they are more physically active but it's quite interesting considering whether the quality of the green space how significantly or otherwise does it impact on the outcomes."

The latter comment raises the fascinating question of whether different types of green space provide different levels of quality in respect to physical and mental wellbeing, an issue that is outside the scope of this evaluation, which is worthy of further investigation. Some of the benefits of participation found in this evaluation arose from activities that took place outside of the national parks, for example the school parents group also visited the grounds of Knightshayes Court, a National Trust estate near Tiverton, and the beach at Dawlish Warren, but the link with NP officers allowed them to do more activities, as they were easier to access because of the coordination and organisation of the programmes, and crucially it helped with travel arrangements. Furthermore, the literature suggests that the quality of the green space in terms of its aesthetics and biodiversity is important (Seresinhe et al., 2015; White et al., 2013) and therefore it is worthwhile working towards engagement with areas of outstanding natural beauty in similar schemes.

Connections have been made to other initiatives such as the West Somerset Living Better project, and also inspired new programmes including Naturally Healthy Month, Somerset's Nature and Wellbeing project[5] in the Quantocks, Mendips and Blackdown Hills Areas of Outstanding Natural Beauty (also funded by Somerset Public Health), and the formation of the Buckfastleigh Walking for Health Group, which indicate that partnerships are effective in development.

7. The projects need to be reaching the 'inactive' to be regarded as most effective by the funders. This can be achieved by utilising front line services such as carers, health visitors, social services etc. The impact of prescribing green activities at the right level needs further consideration, i.e. what constitutes too much exercise or the wrong activity and at what stage is intervention with this form of treatment most likely to avert more serious later health issues relative to

[5] http://www.quantockhills.com/news/article/somersets_nature_and_wellbeing_project/

prescribing medication. The diversity of participation and the diversity in scale of experienced benefits reported by individuals (see later sections of this report) suggest that a tiered system of referrals may be most effective. Self-referral may be most appropriate for those with mild to moderate mental health issues while specific written prescriptions might support engagement by those with severe and enduring health problems (Swinburn et al., 1998).

8. Many benefits of participating in the project activities have, however, been evidenced. These include reported improvements to mental health (depression, stress, anxiety), improved social integration, aiding recovery from illness, increased use of national parks by local children, increased confidence in group leadership, increased parenting confidence, engagement with activities previously avoided, team building, and overcoming phobias. These benefits have been noted by both participants and others.

> *"Certainly, mental health, psychologically there are great improvements…one of our great problems is obviously obesity and you have to do an awful lot of hill-walking to actually lose weight so yes, I mean it has been used as a sort of kick start to a diet…but I think it is mostly patients' mental aspects…"* GP

Clarity about which particular aspect of health and wellbeing is being targeted would enable greater tailoring of services to address the needs.

Project responses to interim findings

These recommendations, arising from the first phase of the data collection, informed the interim report, and resulted in the following actions by the two projects:

Dartmoor's Naturally Healthy Project used this formative feedback to increase the use of different recruitment strategies, including:

- Word of mouth – personal recommendation, including health professionals
- Social media;
- Local advertising in shops and community facilities and local newsletters
- Additional promotion by volunteer walk leader and activity providers through local media (town newsletter)

- Leaflets and activity programmes made available through the local medical centre.

Greater success in recruiting was achieved in comparatively short timescales as compared to the GP 'green prescription' route.

Exmoor's Moor to Enjoy project

At the time of receipt of the interim report, there was a change of Project Officer at Exmoor National Park. The opportunity enabled a parallel mid-project review with funders to consider progress to date and any adjustments that may be required. It was concluded that the Exmoor Green Prescription Scheme (GPS) was not working; there were very low numbers of referrals despite encouragement to potential participants/beneficiaries by the GP practice involved. The Exmoor project team suspended further activity with the GPS. It was agreed to concentrate on the core aim of the Moor to Enjoy Project, focussing on engagement with groups and group leaders; and supporting experiential visits and 'taster' days to develop confidence, skills and understanding of how to access and enjoy the National Park and appreciate its value as a health and wellbeing resource.

Both projects found the green prescription route less effective in the timescale available.

Who completed evaluation forms for the project?

Quantitative data was collected from participants through event evaluations, surveys and standard tests from March 2016 to January 2017 in the Dartmoor Naturally Healthy project and between March 2015 and March 2017 in the Exmoor Moor to Enjoy project. Open ended comments have also been coded and analysed. We firstly describe the demographic profile of participants.

The mean age for the participants of the two projects is the same (50), although the shape of the age profile is very different with the largest proportions of Naturally Healthy participants aged between 41-70, whereas for Moor to Enjoy, there were very few participants actually in their 50's (3%) but higher proportions in both younger (14% aged 31-50) and older (27% at 61-81+) participants (Figure 5). A 50% missing response rate from the Moor to Enjoy data perhaps disguises the true age profile for this population.

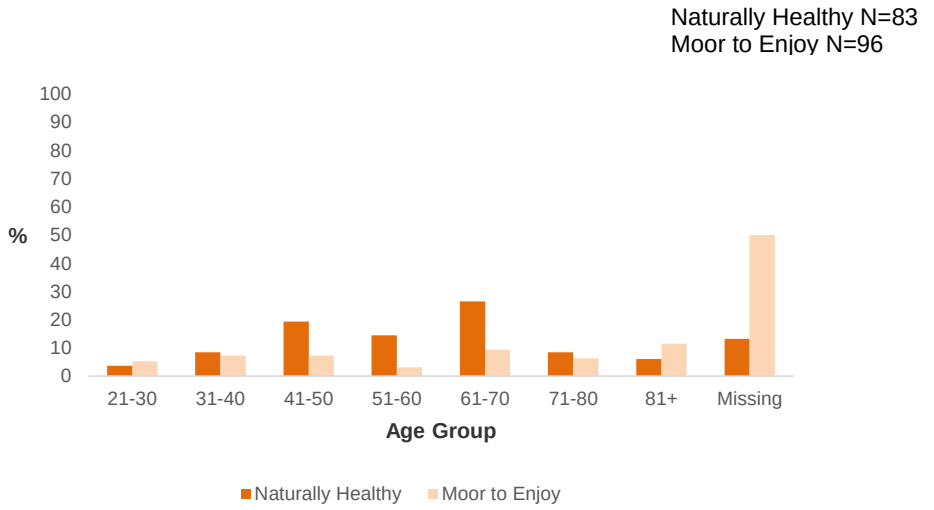


Figure 5: Age profile of participants

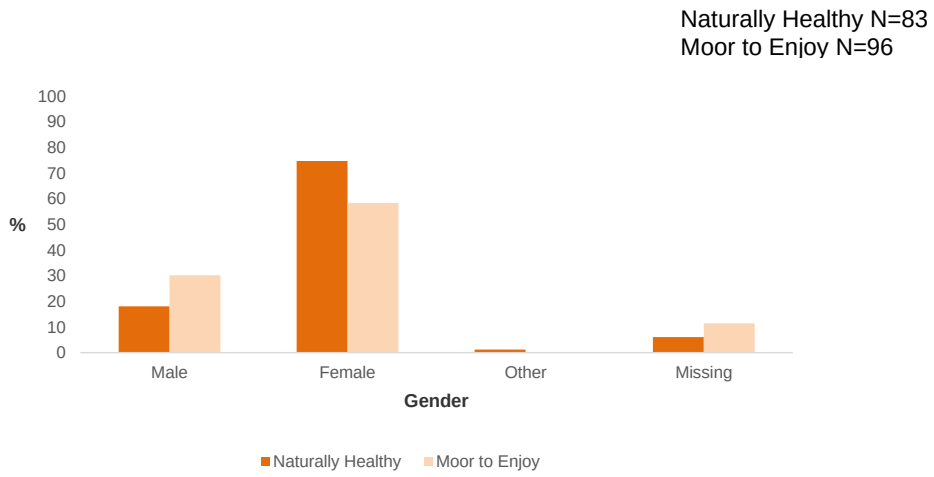


Figure 6: Gender profile of participants

Figure 6 suggests that most people registering in both programmes were female, especially in the Naturally Healthy group. In the Moor to Enjoy project, out of 21 in the Hard of Hearing Group, only 3 were men. There are slightly higher proportions of women than men in the Devon population over 35 years of age, but participation appears less by men. However, as not all groups filled in the questionnaire, this figure could be skewed. Differential uptake by gender could be due to several factors, such as employment or lower reported health issues, but it would be beneficial to explore whether the nature of activities was equally appealing to both sexes.

The ethnicity profile for both project respondents is mostly white British participants, in line with the population profile for Devon. In Somerset too, the BAME population is only 5%, while nationally it is closer to 13%. However, through making connection with Hikmat Devon, Dartmoor's Naturally Healthy project involved some Chinese and mixed white British/Chinese members of the community. Not one questionnaire was completed by an individual identifying as black. However, given the very low representation of people identifying as Black and Minority Ethnic across Devon, this is unsurprising.

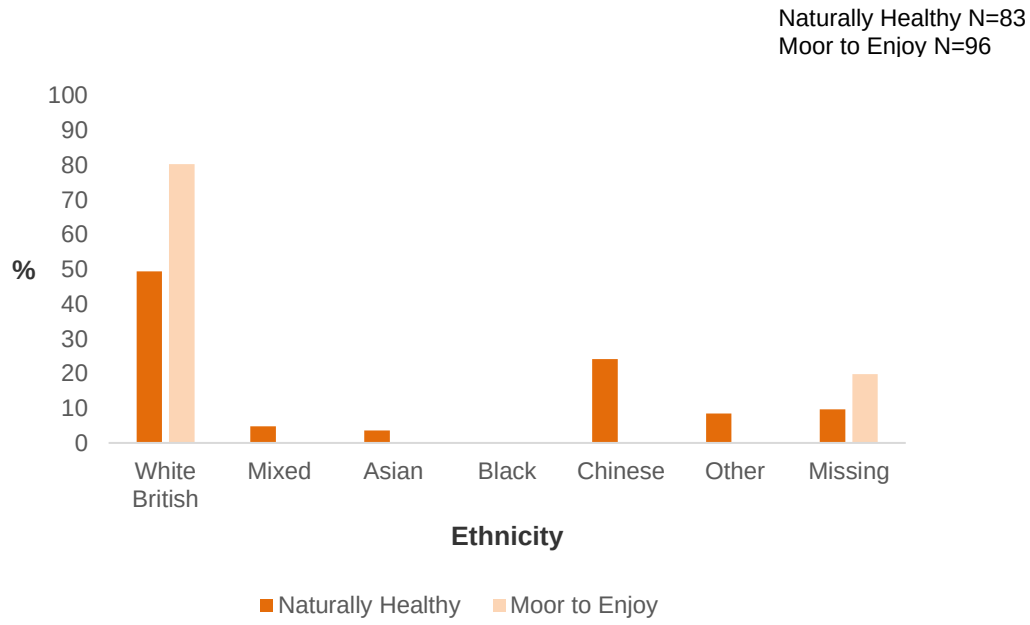


Figure 7: Ethnicity profile of participants

Age does not seem to be a barrier to participation, but more research and consideration is needed to explain the gender difference in uptake.

Previous studies such as Natural England's Monitor of Engagement in the Natural Environment have found the Black and Minority Ethnic population is underrepresented in participation in natural environment engagement. 'Those who were less likely to have taken a visit to the natural environment in the last seven days were those of Black or Minority Ethnic (BAME) origin, those aged 65 and over, those with a long-term illness or disability and those in the DE social grades' (MENE, 2015 p.33). They are also more likely to visit green spaces in towns and cities. It would therefore be

particularly valuable to explore ethnicity in future projects that seek to improve diverse uptake of opportunities to improve health and wellbeing through national parks.

These demographic details indicate the importance of tailored design to meet the needs in terms of gender, age and profile to provide stepping stones from existing experience towards accessing the potential benefits of high quality natural environments. Participants' initial health and wellbeing profile may also shape the appropriate form of activity as the following section demonstrates.

What were participants' starting points in terms of health and wellbeing?

Physical activity

Each programme registrant was asked to indicate how many hours per week they typically spent on six types of physical activity based on the standard GP Physical Activity Questionnaire[6]. These were:

- Walking to work, the shops, picking the kids up from school on foot
- Gardening
- Rigorous housework or DIY
- Washing the car
- Sport i.e. swimming, running, football, badminton, working out at the gym
- Other outdoor physical activity.

Participants were given three exclusive options to choose to indicate the number of hours spent on each activity per week – 1 hour or less, 2 hours and 3 or more hours.

[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192450/GPPAQ_-_pdf_version.pdf This is widely used by health professionals to establish a baseline / progress monitoring for individuals wanting to get more active.

Naturally Healthy N=83
Moor to Enjoy N=96

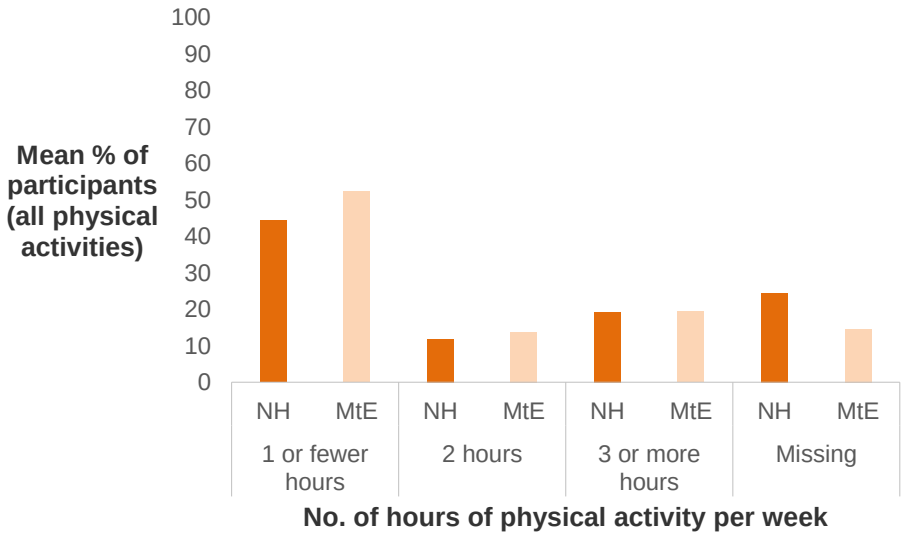


Figure 8: Proportion of respondents undertaking different levels of physical activity in a typical week

Analysis of this particular dataset needs to be treated with some caution because it was not clear whether a blank response meant the respondent did not do that activity at all during the week (so could be recorded as 1 hour or less), or that the response was not applicable (i.e. the participant did not have a car) or whether it was just a missed response. The latter interpretation has been taken in this case, hence the proportion of missing answers is relatively high.

Figure 8 shows the proportion of respondents undertaking different levels of physical activity per week (given the banded options mentioned above). The profiles do not vary greatly between the projects. For both groups, approximately half of the participants indicated that they spent one hour or less on all physical activity, and in both cases 19% stated that they did 3 or more hours of activity in a typical week.

Figure 9 attempts to show the impact of age on this level of activity by considering the cumulative number of hours participants in different age groups spent on all the combined physical activities. There are some interesting variations between the two project groups. Naturally Healthy participants in their 50's, and even more so in their 70's, typically experienced greater levels of overall physical activity than their Moor

to Enjoy counterparts. Conversely, Moor to Enjoy thirtysomethings tended to do approximately two more hours physical activity a week than Naturally Healthy participants.

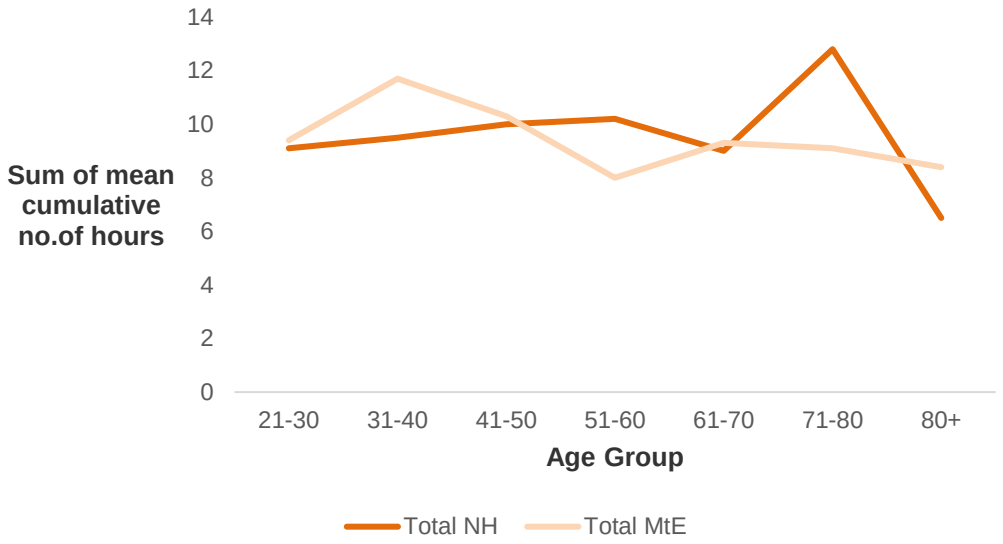


Figure 9: Level of overall physical activity by age group

Table 4 breaks this information down into more detail by showing the variation in hours spent on the different types of physical activity. Figures highlighted green indicate a difference of 1 or more hours per week spent on a particular type of activity, while figures highlighted yellow indicate a difference of 0.5-0.9 hours per week.

Because the options for number of hours in the questionnaire were categorised as: 1 or fewer hours, 2 hours, 3 or more hours, this table should not be read that these figures reflect the total absolute number of hours people spend on physical activity each week i.e. someone selecting the option ‘3 or more hours’ for an activity may actually spend 9 hours a week on that activity.

Table 4 shows more explicitly the higher activity levels of the Naturally Healthy participants aged 71-80, who were part of the regular Buckfastleigh Walking Group targeted at those with limited access to National Park opportunities due to transport or social anxiety. It also suggests that Moor to Enjoy participants tended to engage with non-specified outdoor activities more than Naturally Healthy participants. The

Moor to Enjoy project worked with a wide variety of groups and each group's activities were tailored to their specific needs and interests.

Table 4: Mean number of hours spent on physical activities by age

Age	Walking to work etc		Gardening		Housework or DIY		Washing the car		Sport		Other outdoor activity	
	NH	MtE	NH	MtE	NH	MtE	NH	MtE	NH	MtE	NH	MtE
21-30	2	2.2	1.3	1.4	2.3	1.8	1	1	1.5	1.4	1	1.6
31-40	2.4	2.3	1.1	2	2.3	2.6	1	1	1.4	1.7	1.3	2.1
41-50	1.7	2	1.6	2	2.3	1.6	1	1	1.6	1.3	1.8	2.4
51-60	2.3	1	1.8	1.7	2.3	1.7	1	1	1.5	1.3	1.3	1.3
61-70	2	1.6	1.6	1.7	1.6	1.7	1	1	1.3	1.1	1.5	2.2
71-80	2.7	2.2	2.5	1.7	2.3	1.2	1.3	1	1.8	1.3	2.2	1.7
80+	1	1.9	1	1.5	1.5	1.5	1	1	1	1.1	1	1.4

Note: NH=Naturally Healthy (N=72), MtE=Moor to Enjoy (N=48)

NB. It should be remembered that each of the age groups may comprise between 3-20 people.

With respect to the impact of gender on levels of physical activity (Figure 10), male Naturally Healthy participants spent nearly 2 hours more per week on all combined physical activities than females in the same group, and compared to males from the Moor to Enjoy group. Moor to Enjoy males spent very similar periods of cumulative time on activities to females from the same population. This may reflect the different activities provided in the two schemes, but also underlines the importance of clearly targeting behaviours and groups if specific outcomes are required.

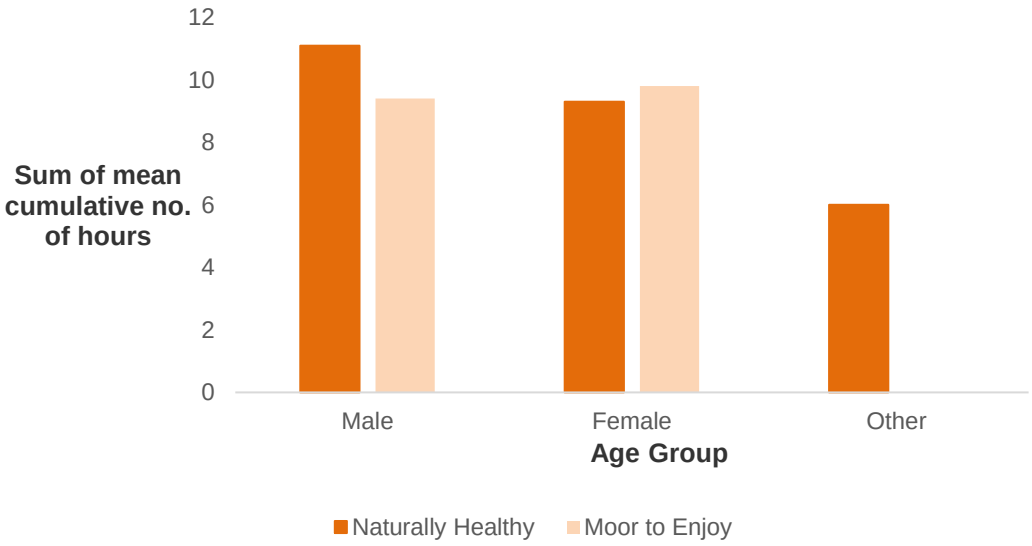


Figure 10: Level of overall physical activity by gender

Table 5 shows this information in greater detail, highlighting the only significant variation between the two groups, where Naturally Healthy male participants do somewhat more local walking than those in Moor to Enjoy (as do Moor to Enjoy female participants to a lesser degree). The other notable contrast is that males from the Naturally Healthy group do nearly 1 hour per week more of other outdoor activities than females in the same project. Information about what these other forms of outdoor activity are would be useful for future programming, as Pringle (2008) suggests that personal factors influence the uptake of suggested activities.

Table 5: Mean number of hours spent on physical activities by gender

Gender	**Walking to work etc**		**Gardening**		**Housework or DIY**		**Washing the car**		**Sport**		**Other outdoor activity**	
	NH	MtE	NH	MtE	NH	MtE	NH	MtE	NH	MtE	NH	MtE
Male	2.5	1.5	1.5	1.9	1.9	1.6	1	1.1	1.9	1.3	2.3	2
Female	2	1.9	1.6	1.8	2	1.9	1	1.1	1.3	1.3	1.4	1.8
Other	1		1		1		1		1		1	

Guidance from the UK's Chief Medical Office (CMO) is that adults should carry out a minimum of 2.5 hours per week on moderate to vigorous physical activity (MVPA) (Department of Health, 2011). The 2012 Health Survey for England reveals that 61%

of adults aged 19 and over claimed to have met this guideline (Scholes and Mindell, 2013). For this project, 55% (Naturally Healthy) and 65% (Moor to Enjoy) of all participants self-indicated undertaking 3 or more hours per week on at least one of the physical activity categories. A direct comparison to the HSE statistics is not possible because of the options given in the questionnaires for this project, but if a slightly more generous analysis is performed to include all activities undertaken for 2 hours or more, then 77% (Naturally Healthy) and 75% (Moor to Enjoy) of participants would not be far off meeting the MVPA guidelines.

The relatively favourable results of the two project groups compared to the national community norm might be explained by exaggerated self-reported levels of activity, although the HSE results are also based on self-reporting. Alternatively, the project programmes of activities may have drawn particular interest from people who were already physically active. It is also likely that interpretation of what counts as moderate and vigorous physical activity is age and health related, so even relatively low levels of physical activity may be perceived as challenging.

Emotional wellbeing

Population means are used to interpret WEMWBS and make comparisons between groups, and between pre-and post-intervention scores. Scores can range from a minimum of 14 to a maximum of 70, reflecting the ability of each individual to rate each of the 14 WEMWBS statements from 1-5 on a Likert scale. Health Scotland's WEMWBS user guide (Taggart, Stewart-Brown & Parkinson, 2015) provides population norms across various socio-demographic groups allowing comparative measures to be made of mental wellbeing of study populations. The scores for the Naturally Healthy and Moor to Enjoy projects were both normally distributed, hence favouring comparison with population norms and allowing interpretation of results for different groups (Figure 11 (a) and (b)). However, a cautionary approach to comparisons between the national park projects and large population studies is advised due to the small sample size.

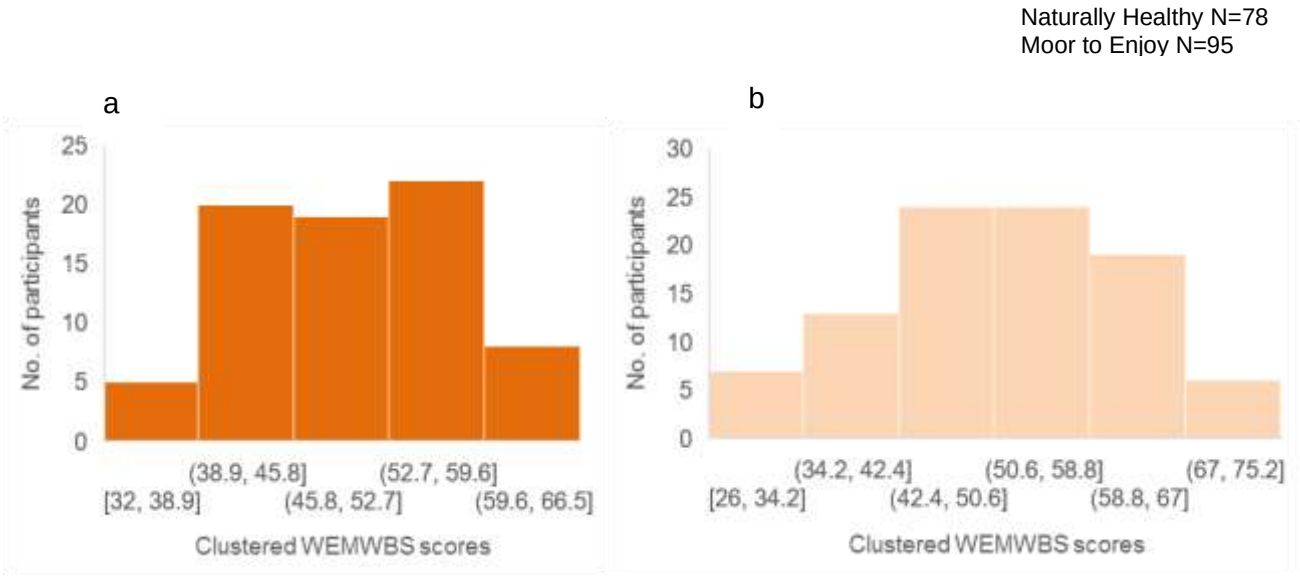


Figure 11: WEMWBS score distributions for (a) Naturally Healthy project and (b) Moor to Enjoy project

The mean scores for registrants of the two projects are shown in Table 6. Mental wellbeing was lower in both groups than the population norm (52.3), although the confidence interval for the Moor to Enjoy score does overlap the population norm score. The lower scores compared to norms possibly reflect the projects' intention to reach people experiencing challenges to their mental health and wellbeing and/or physical activity levels. The scores indicate that mental wellbeing of the Moor to Enjoy participants was slightly higher than those of the Naturally Healthy project prior to engagement in the programme of activities.

Table 6: Mean WEMWBS scores for project registrants completing baseline questionnaire

	Naturally Healthy	Moor to Enjoy	England Pop. Norm*
Mean	49.8	51.3	52.3
Standard Deviation	8.2	10.2	
95% Confidence Interval	48.0-51.6	49.2-53.4	

*standard error of the mean = 0.16; survey date - 2012

Table 6 shows that 173 people completed the pre-intervention WEMWBS statements across the two projects (Naturally Healthy – 78; Moor to Enjoy – 95). The scores from these statements were plotted against other data collected elsewhere in the questionnaire – gender, age, ethnicity, and self-perceived health status.

There was a very minor difference in the mean scores between men and women in relation to WEMWBS across both projects (Figure 12) and all gender scores fall

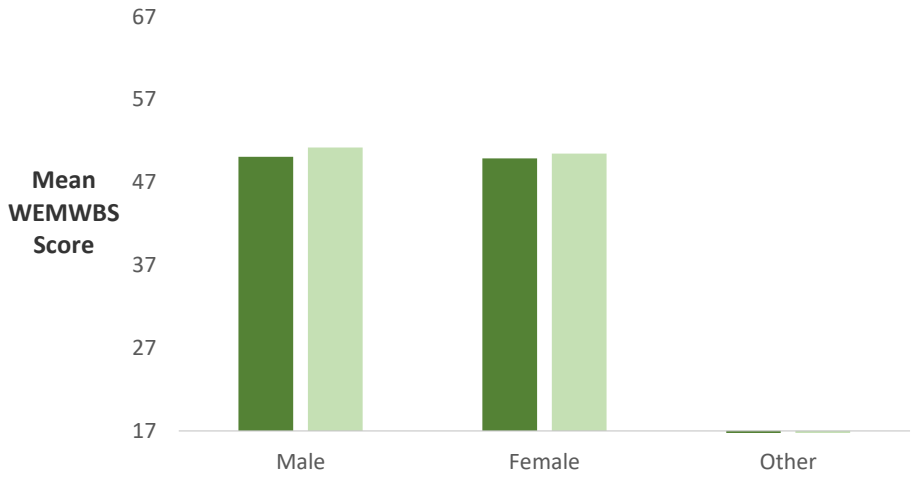


Figure 12: Mean WEMWBS scores by gender

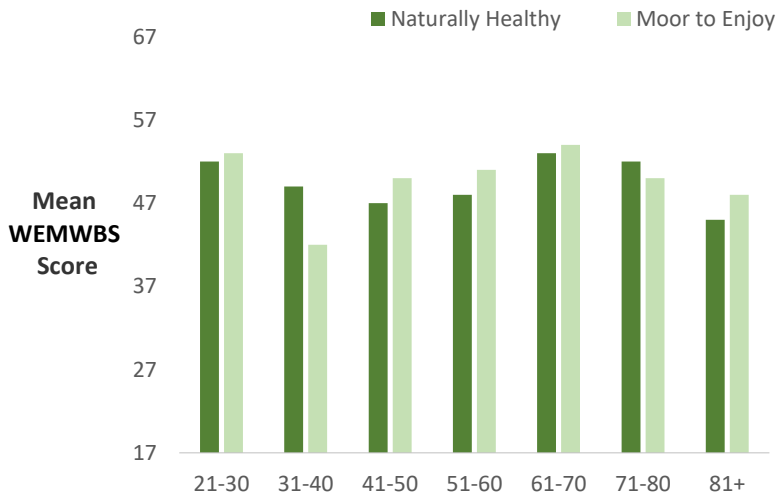


Figure 13: Mean WEMWBS scores by age

below average England population scores, for example the national mean for adult males is 52.5 and females 52.2 (2012 Health Survey for England). The pattern of WEMWBS scores for age approximately matches that of other studies, such as the Scottish Health Survey 2015, with high mean scores in the youngest adult age group represented (scores of 52 and 53 for ages 21-30), then falling for adults aged in their 40's and 50's, before rising to a peak amongst adults in their 60's and early 70's, and finally dropping off again for the oldest age group (Figure 13). Figure 14 shows the mean WEMWBS scores for those participants indicating that they either have a medical issue of relevance or not. A reasonable expectation is that participants reporting a medical issue would show lower mental wellbeing than people declaring themselves as having no medical concern. This was the case for the Moor to Enjoy participants (49:52 respectively) but this was reversed for Naturally Healthy participants (51:49). The options for this question were limited to just yes/no responses, whereas the average population scores for self-perceived health status were based on a wider scale option of 'very poor' to 'very good'.

It may be that the Naturally Healthy programme focused more on physical activity as an identified need and through its alignment with the Buckfastleigh Walking for Health initiative. It also possibly links with research that those experiencing low mood may struggle to find personal motivation to engage (Swinburne et al., 1998) and therefore other modes of referral such as written prescriptions may be more appropriate for such individuals. However, this raises the question of how to encourage GPs to do this in the case of such individuals that may not otherwise 'volunteer' to participate.

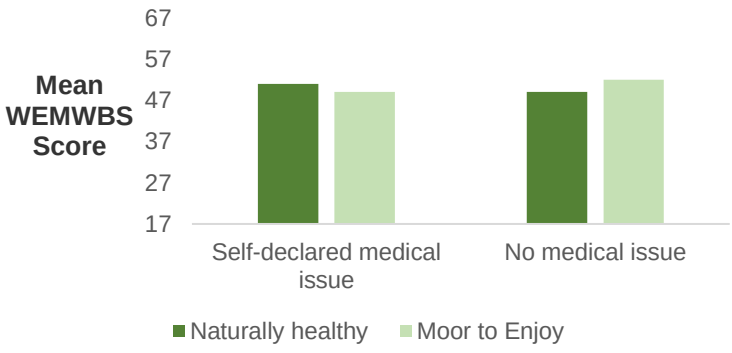


Figure 14: Mean WEMWBS scores by medical status

The scores for the national park projects, where registrants acknowledged having a medical issue, most closely match the population norm scores for the rating of 'good' perceived health status. Those with 'poor' perceived health status in WEMWBS norms had a mean score of 41.3-45.6, significantly below the scores found in this study. This may be explained by methods of self-referral to the National Park schemes via community interest groups rather than through a classic prescription model which might present lower levels of health and wellbeing. There is no explanation of the scale and therefore it may be that some issues were underreported. Furthermore, the standard deviation was wide, so it appears that the schemes were being accessed by participants with a range of wellbeing status. The range may also indicate that the self-referral/community engagement model tends to operate with individuals at very different points in their emotional and mental wellbeing and physical activity levels, while GP referrals might tend to address those with more serious issues. It should be remembered that these questionnaires were completed *prior* to commencing the activity programmes.

Participants of both projects were invited to complete a second post-activity/programme questionnaire with the purpose of identifying any change in mental wellbeing resulting from engagement. Unfortunately, the number of post-tests completed were small, limiting the likelihood that significant change would be statistically demonstrable. The pre- and post- intervention mean WEMWBS scores for the whole project samples are shown in table 7.

Table 7: Impact of project participation on emotional well-being

	Mean pre-intervention WEMWBS score	**Mean post-intervention WEMWBS score**	**Net change**
Naturally Healthy	50 (SD=8.75)	52 (SD=9.06)	+2
Moor to Enjoy	51 (SD=10.68)	51 (SD=9.10)	0

N=12 (Naturally Healthy) 28 (Moor to Enjoy)

On a group scale, changes of half a standard deviation or more can be considered important. Some of the individual net changes were considerable i.e. +/- 20 points. Some individuals reported a transformational change in emotional/physical wellbeing

as a result of participation in the Naturally Healthy project. The WEMWBS user guide suggests that changes of 3 or more points are likely to be recognisable to the individual.

Because the repeated WEMWBS datasets both showed non-normal distributions, a non-parametric test was required to determine how significant the activity programmes were in relation to the net changes in scores from the baseline questionnaire to the respective follow-up. A Wilcoxon Signed Rank test was performed on both the Naturally Healthy and Moor to Enjoy paired data.

The Null hypothesis (H_0) for this test would be that there was no difference between WEMWBS 1 and 2 mean scores (i.e. to the level of mental wellbeing) because of the intervention. A rejection of the null hypothesis (H_1) would mean that there *was* a difference (the median change was non-zero). The results of this test are shown in table 8.

Table 8: Resulting test statistics from a Wilcoxon Signed Rank Test

	Naturally Healthy	Moor to Enjoy
Test statistic	23	193
Critical value*	17	151

*Obtained from www.stat.ufl.edu

Because the test statistic is greater than the critical value in both cases, we accept the null hypothesis and conclude that there is insufficient evidence to suggest there is a difference between the mental wellbeing of project participants pre- and post-programme activity that can directly be attributed to the programmes themselves.

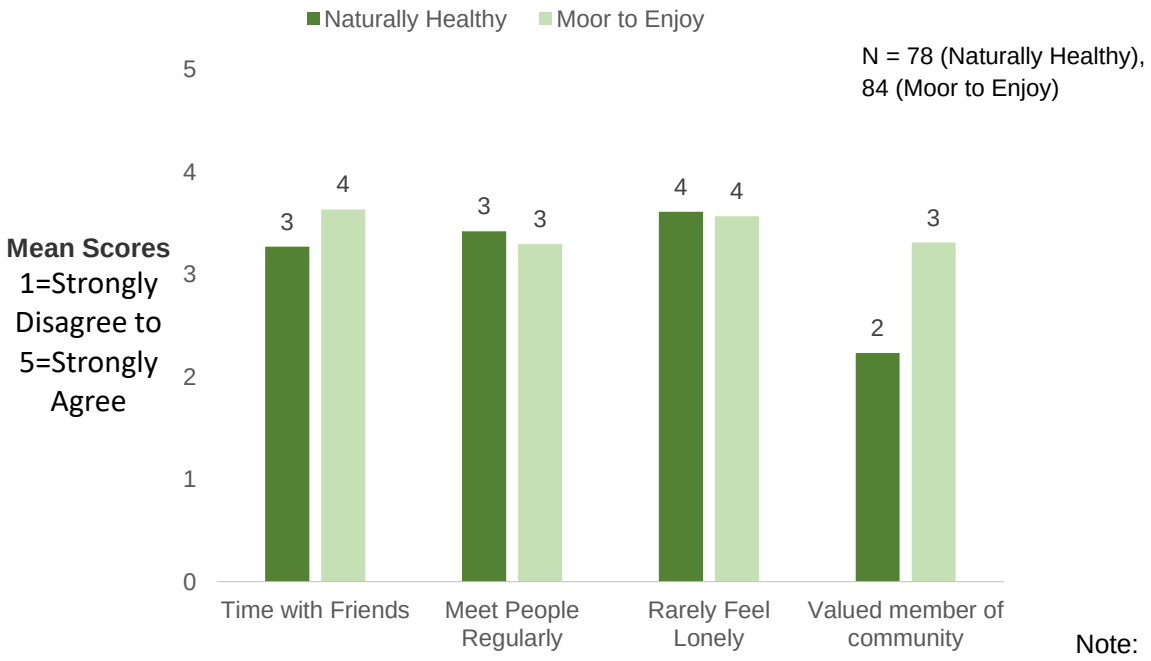
However, the standard deviations shown in table 6 highlight an interesting aspect of this data; *individual* WEMWBS scores were highly variable for both projects. This suggests that further research is needed to explore the association of factors that make this form of intervention particularly effective for some and less so for others.

What did those taking part in the projects value in their experiences in the National Parks?

Two quantitative measures were used to find out how participants were feeling about themselves and nature.

Belonging and social connectedness

Participants were given four statements to rate as part of the questionnaire to indicate the level of connection they felt they had with their community. The results of this are shown in figure 15. Naturally Healthy participants neither agreed or disagreed that they spent enough time with friends, while Moor to Enjoy participants were more positive, agreeing that this was the case. Both groups felt unable to agree or disagree with the statement that they met other people regularly, and both groups agreed that they did not feel lonely often. However, Naturally Healthy participants felt slightly less valued by their community than those in the Moor to Enjoy project, with



Note: Statement on feeling lonely was reverse scored to allow consistent comparison

Figure 15: Likert scale mean scores for social connectedness statements

neither group feeling positive about this aspect of connectedness.

Low scores for feeling part of their community perhaps suggest that community engagement work would benefit developing this aspect of social connectedness.

This could be explored in future work by including a follow up measure for changes in this perception. The qualitative comments from evaluation forms, however, suggest a marked contribution to a sense of belonging and social connectedness from the activities, as evidenced below.

Connection with the natural environment

All the Moor to Enjoy and approximately half the Naturally Healthy participants were asked to rate five statements intended to explore their connectedness to the environment. Table 9 shows that the mean scores for both groups were identical. The lower means for the first two statements ('I often spend time outside enjoying the natural environment' and 'I often go to the park or other green space where I feel close to nature') compared to the latter three statements suggests that the participants' behaviour does not match their wishes or aspirations for spending time in, and enjoying, the natural environment.

Part way through the project, this set of statements was replaced by the Naturally Healthy team with the NR-6 questionnaire, consisting of six statements. The NR-6 is a widely used instrument which would enable scores to be compared to other studies. Four of the statements ("I always think about how my actions affect the environment," "My connection to nature and the environment is a part of my spirituality," "My relationship to nature is an important part of who I am," and "I feel very connected to all living things and the earth") assess self-identification with nature, connectedness, awareness about the environment and feelings of oneness with nature (Nisbet & Zelenski, 2013).

The two remaining statements concentrate more on experience ("My ideal vacation spot would be a remote, wilderness area," and "I take notice of wildlife wherever I am") and aim to highlight specific differences in the need for nature and awareness of wildlife locally. Each of the statements measure different aspects of connection to nature through a scale of 1-5 1 being 'not very connected' and 5 being 'very connected to nature'. Therefore, scores of 1-2 will reflect the lowest connection to nature, scores of 3 will indicate neither low or high connection and scores of 4-5 will represent a higher level of connection. Figure 16 shows the mean scores for each of the statements, to one standard deviation.

Table 9: Likert scale mean scores for environmental connectedness statements

	Likert scale mean scores	
	Naturally Healthy	Moor to Enjoy
Often spend time outside enjoying natural environment	3	3
Often visit green spaces where feel close to nature	3	3
Wish could visit countryside more often	4	4
Nature is important part of me feeling good	4	4
Am environmentally friendly	4	4

Note: Likert scale: 1=Strongly disagree to 5=Strongly agree

First statement was reverse scored to allow consistent comparison

Overall there was a higher level of connection among the Naturally Healthy participants (mean = 4) than other studies which used NR-6 with adults (mean = 3.3) (Bragg et al., 2013). This may be helpful to the use of the natural environment as a resource for wellbeing as it builds on participants' interests and positive perceptions (Pringle, 2008).

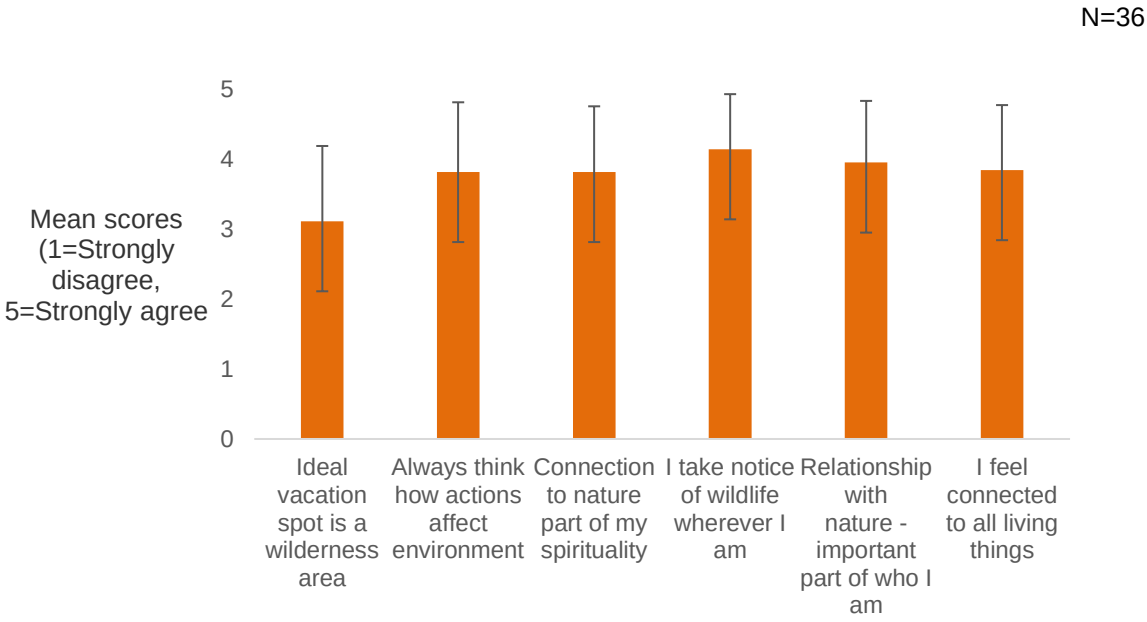


Figure 16: Likert scale mean scores for the NR-6 connection to nature measure for Naturally Healthy participants

These quantitative measures enable us to compare the responses of the project participants with norms for some of physical, emotional and environmental outcomes. They also show that there was potential for improved social and nature connectedness to contribute to participants' health and wellbeing, but that aspirations were sometimes not fulfilled because of access issues. The scope for improvement of well-being through getting closer to nature is endorsed by Pietila et al., (2014) amongst others' finding that proximity to nature can substantially improve physical and mental health. More detail of the lived experience of taking part in the projects can be gained from the qualitative comments that were gathered as part of the evaluation.

Event Evaluations

What sort of event activities were provided?

A small set of attributes were retrospectively allocated to each event by the National Park project officers, with a simple 1 or 0 value assigned to each attribute depending on whether they were applicable to the event or not. These values were then applied to each event participant (Figure 17). Only one event, involving 3% of participants, was considered a team event. Thirty per cent of Moor to Enjoy participants engaged with events that were focused around a specific visitor attraction (i.e. a National Trust property) compared to 19% of Naturally Healthy participants. Nearly all the physically oriented activities organised by the Moor to Enjoy team involved short walks, whereas the Naturally Healthy programme included a balance between walking and other forms of physical activity with cycling and Tai Chi alternating with 'mindful' activities such as creative writing, art therapy and craft work. The Moor to Enjoy programmes also involved more learning activities, and several events combined both a short walk *and* a non-physical learning activity. All Moor to Enjoy events were recorded as being accompanied by a person who acted as a group leader, as well as, or instead of, a National Park member of staff, whereas all Naturally Healthy events were always accompanied by a staff member and/or a walking for health leader – with or without specialist 'instructors', reflecting the different emphasis on recruiting individuals rather than existing community groups.

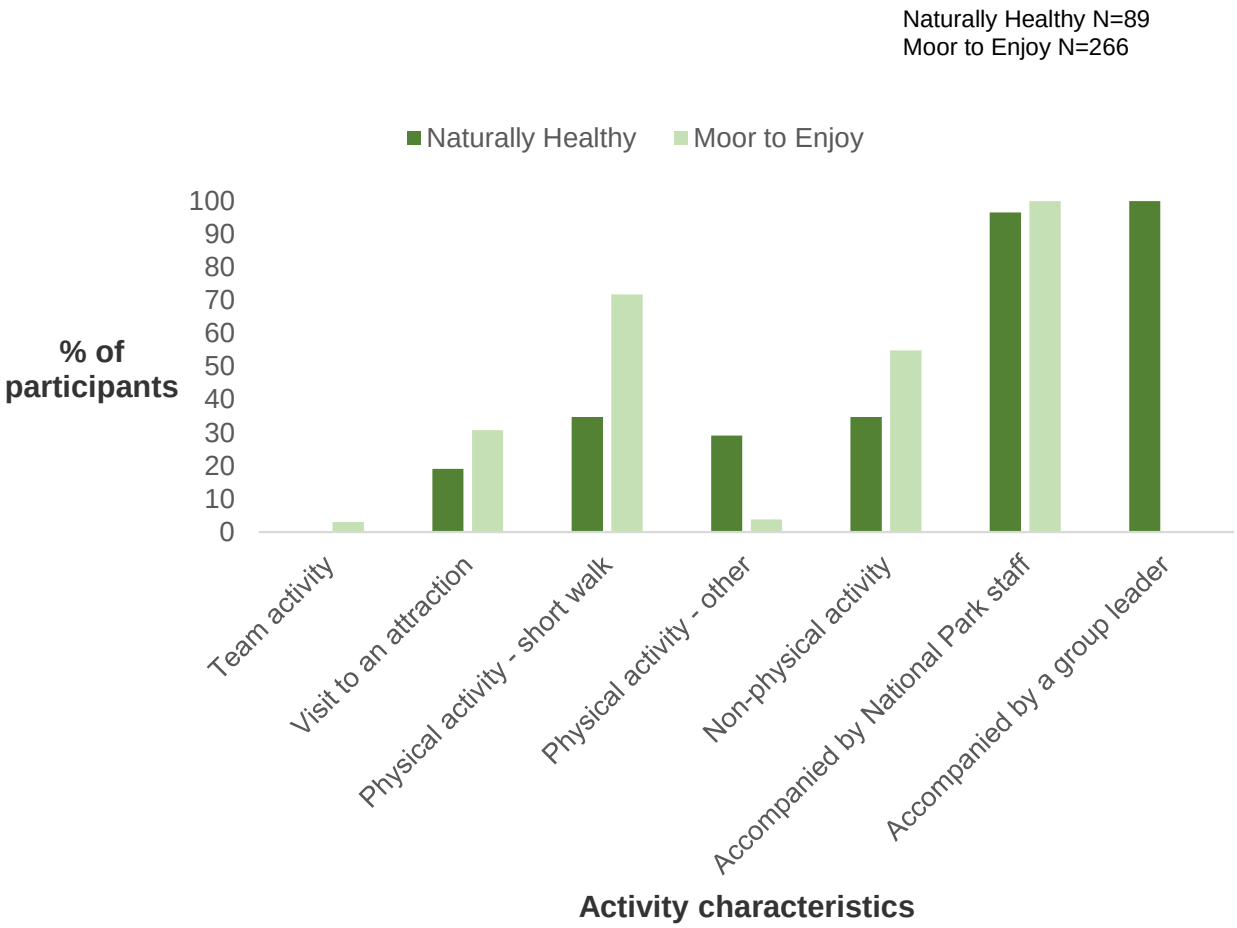


Figure 17: Types of activities making up the NP programmes

What outcomes were anticipated by the providers as a result of participation?

The questions/statements used to help evaluate outcomes for both projects are shown in table 10. They indicate the two projects' expectations for their programme of activities. Five of the closed scale questions were common to both projects enabling direct comparison of percentage responses. Others provided a stimulus for thinking about the experience and in this way, contributed to the comments left by participants. The cells in the table have been colour coded to show which questions and statements were common to both projects.

Table 10: Comparison of event evaluation questions

Naturally Healthy	**Moor to Enjoy**
I was looking forward to today's activity	
Today's activity was easy to take part in	
Today's activity was enjoyable	How much did you enjoy the event?
Today's activity has helped me be more physically active than I usually am	Were you more physically active than you would be on an average day?
Today's activity gave me the chance to be with people more than I usually am	Was today more sociable for you than an average day?
Being with people has made me feel more cheerful	
Being in the natural environment has made me feel more cheerful	
Today's activity has made me feel more relaxed	Do you feel more relaxed than before the event?
Today's activity has lifted my spirits	Did coming to the event lift your spirits?
How could we have done today better?	How could we have done today better?
If today was special to you in any way, please tell us why.	If today was special to you in any way, please tell us why.

Level of enjoyment

Over 95% of respondents from both projects confirmed that they enjoyed the events in which they participated (figure 18). Just two people from Moor to Enjoy events indicated that they did not enjoy their activities. However, at least one of these respondents appears to have reversed the scale in answering questions, as although all their closed responses were highly negative, their general comment at the end of

the questionnaire was contradictory in that the experience had been ‘wonderful’. The projects were both highly successful in providing activities that were appealing and appropriate for their groups.

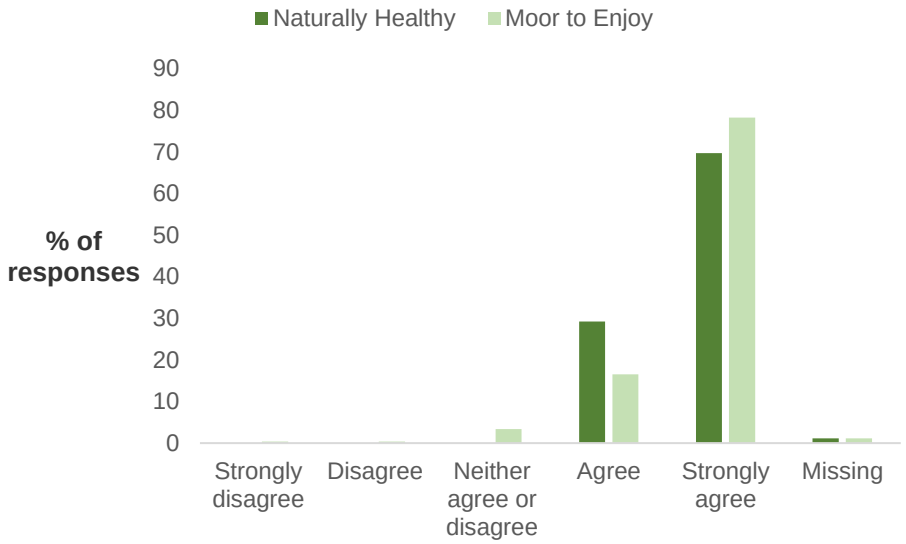


Figure 18: Did you enjoy the event?

Level of social connection

Participants of both projects overwhelmingly felt that the activities they had engaged with had increased their sociability compared to their normal daily routines (Figure 19). Although most of the events held by the two projects involved physical activity i.e. a short walk, it is apparent from the results of this dataset that the social impact of participation is potentially as significant as any impact on physical health. Given the relatively low scores for feeling valued in their community in the WEBWMS scores, this is an important outcome to achieve. The programmes offered by the projects present an opportunity for members of the communities that aren’t usually engaged with one another to become more socially active.

Figure 20 shows that the clear majority (92%) of the Naturally Healthy participants felt more relaxed as a result of participating in their activities, as did about three-quarters of the Moor to Enjoy participants. However, 23% of the latter group neither agreed or disagreed that the activity they had undertaken had made them feel more relaxed. Very few, if any, of the qualitative responses from these participants to the question of how the event could have been improved, reinforced the possibility that the event itself was not relaxing. Therefore, it is possible that these individuals were

in a relatively relaxed frame of mind prior to the event anyway. A few of the comments suggest that more time spent on the activities might have helped them feel more relaxed i.e. a longer walk or more time looking around a country house.

Naturally Healthy N=89
Moor to Enjoy N=266

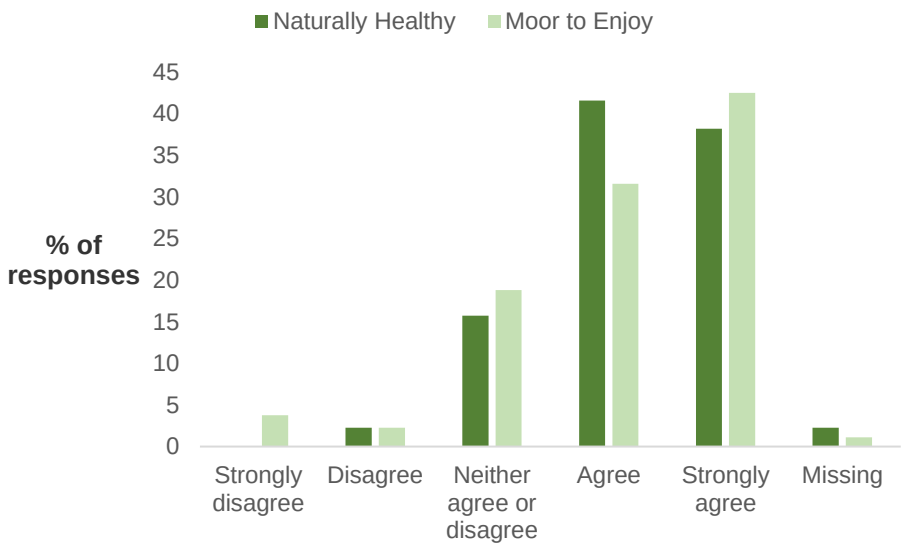


Figure 19: Was today more sociable for you than an average day?

Naturally Healthy N=89
Moor to Enjoy N=266

Level of relaxation

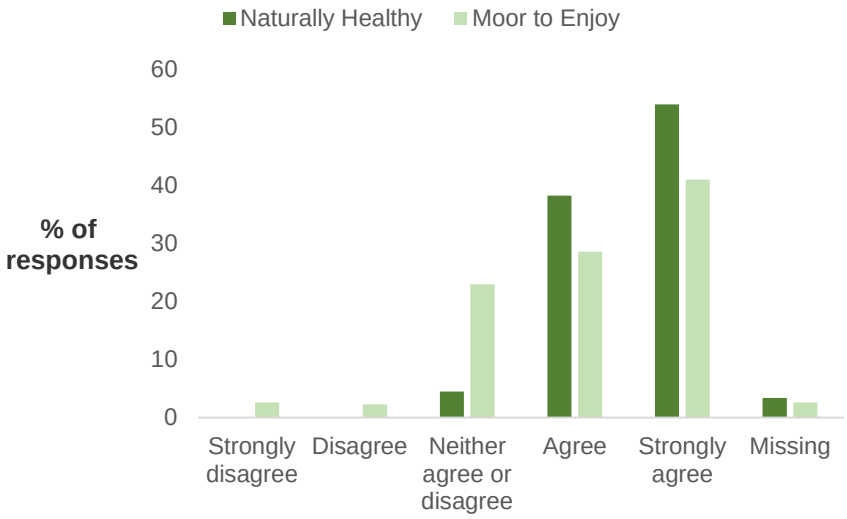


Figure 20: Has today's activity made you feel more relaxed?

Level of impact on spirits

Once again, as demonstrated by figure 21, a significant majority of participants benefited from participation in activities through the extent that their spirits were uplifted, strengthening the likelihood that engagement in these programmes contributes to improved emotional wellbeing. This result also needs to be considered in the light of the slightly higher levels of wellbeing compared to measures in other studies. To further uplift spirits is a valuable contribution to overall wellbeing in the population.

Naturally Healthy N=89
Moor to Enjoy N=266

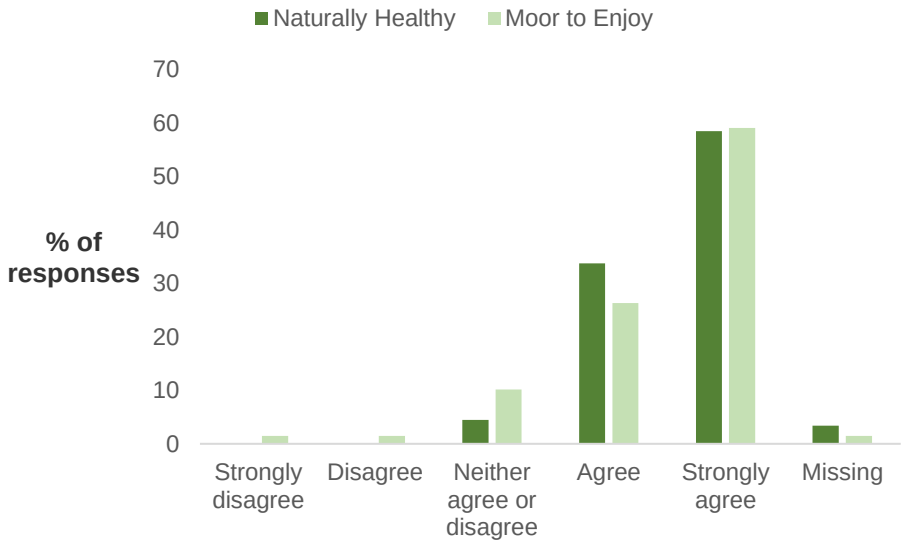


Figure 21: Did coming to the event lift your spirits?

Level of physical activity compared to an average day

Figure 22 shows a different pattern of responses between the two projects. In both groups 20-25% of respondents neither agreed or disagreed that they had been more physically active than usual because of the activity. However, a greater percentage of the Naturally Healthy participants agreed or strongly agreed that this was the case (65% compared to 38%), while 33% of the Moor to Enjoy participants disagreed or strongly disagreed that they had been more active. Although these figures will inevitably be influenced by the type of activities that comprise the programmes offered by both projects, the proportion of events that involved some form of physical activity were not hugely dissimilar (64% of Naturally Healthy events and 71% of the Moor to Enjoy events). It may be that initial levels of physical activity impacted on assessment of gains.

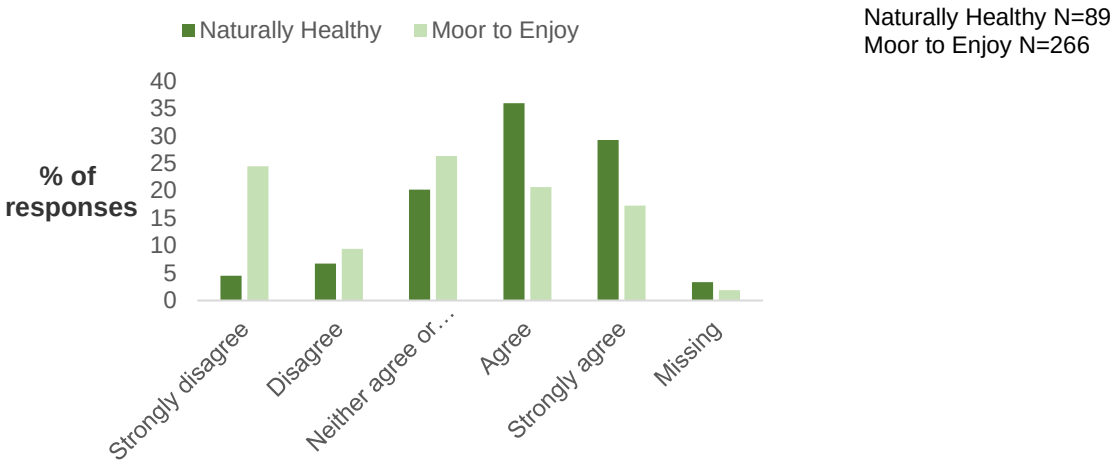


Figure 22: Were you more physically active than you would be on an average day?

These questions illustrate the two projects' theories of change that engagement would impact on the following aspects of participants' lives:

- Enjoyment
- Social connectedness
- Relaxation
- Energise mind
- Energise body

We can see that the first four linked to social and emotional wellbeing were clearly achieved, but evidence for raising levels of physical activity were slightly more equivocal for the Moor to Enjoy project. It also suggests that exercise *per se* was not a central part of the process for participants in line with previous research by MIND (2007).

More insight into these statistics may be gleaned by listening to the participants' own voices as detailed in the next section.

What did participants say about their experiences?

Outcomes of taking part

The sorts of activities that the two projects delivered affected the relative prevalence of different outcomes in the evaluation comments, for example, Moor to Enjoy activities often had an information and learning element while some Naturally Healthy activities used art as a mediating factor.

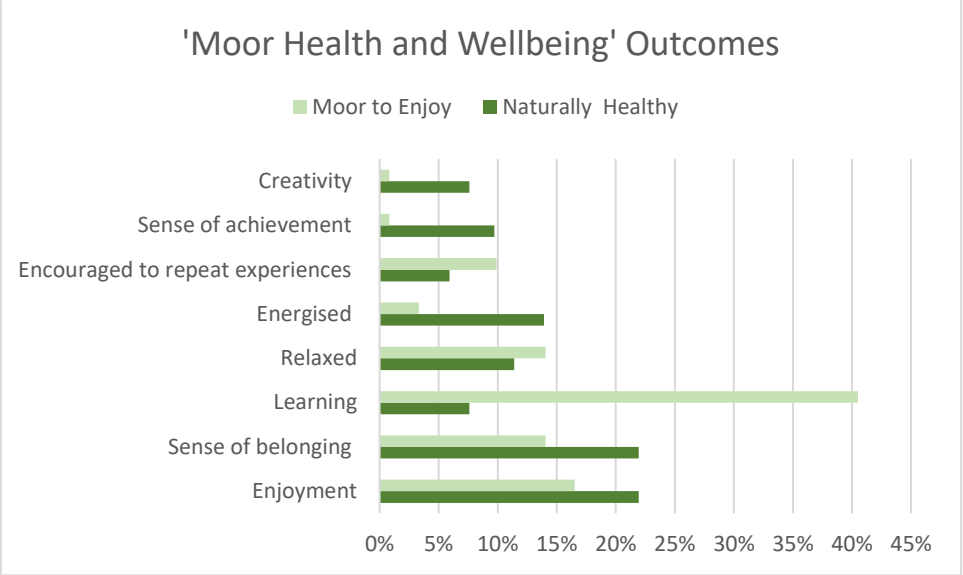


Figure 23: Relative prevalence in participant comments in the two projects

As can be seen in figure 23, relaxation and enjoyment were mentioned fairly equally across both projects in open comments as outcomes of participation. It would appear that more of the Naturally Healthy participants felt energised, experienced a sense of achievement and creativity as outcomes of their involvement, while more Moor to Enjoy participants recognised learning opportunities in their activity. As noted above, this mirrors the sorts of activities offered. Encouragingly, both projects seemed to stimulate a wish for continuation with similar opportunities and experiences.

The **top four** outcomes from participants' experiences of activities across both projects were:


Enjoyment
(52 NH; 20 MTE)


Sense of belonging
(52 NH; 17 MTE)

Participants' comments (N= 359 coded) indicated that they had been affected in the following positive ways:

- Enjoyment (72)
- Sense of belonging (69)
- Learning (67)
- Relaxation (44)
- Being energised physically or mentally (37)
- Encouragement to repeat experiences (26).
- Sense of achievement (24)
- Creativity (20)

All these are important foundations for feeling good about oneself as the literature review demonstrates, and the themes identified echo findings from similar UK based projects, for example the South West based Dose of Nature project (Bloomfield, 2017), walking for health (Grant et al, 2017), alongside findings of therapeutic horticulture studies (Harris, 2017) and The Green Gym Evaluation Report (The Conservation Volunteers, 2016).

- **Enjoyment** –Enjoyment arising from participation is present in comparable studies (Bloomfield, 2017; Grant et al, 2017; The Conservation Volunteers, 2016). The Office for National Statistics (2015) highlight the improvement of wellbeing scores by one fifth following engagement with nature-based activity.
- **Belonging** – Other studies concur that shared therapeutic experiences in nature with opportunities for meaning making may help to create feelings of

connection to each other and to place itself (Bell et al, 2015: Bloomfield, 2017; Grant et al, 2017; The Conservation Volunteers, 2016).

- **Learning** – The opportunity to develop new skills and accomplish new tasks has been found in other research to boost self-esteem and confidence (Bloomfield, 2017; The Conservation Volunteers, 2016).
- **Relaxation** – Relaxation arising from time in nature is widely reported in the literature, specifically assisting a decrease in negative emotions and an increase in positive affect, including UK based projects (Bloomfield, 2017: The Conservation Volunteers, 2016).

These elements combine to support wellbeing and National Parks can provide such restorative environments and experiences as a series of projects with Exmoor National Park has shown (Waite et al., 2016; Waite et al., 2014), and they may also provide valued resources of informal learning (Merchant et al., 2013). Activities enable participants to be away from everyday pressures, in a natural setting with rich biodiversity and ecosystems providing a source of fascination (Bird, 2007; Kaplan & Kaplan, 1989). The 8-point plan for England's National Parks (Department for the Environment, Food & Rural Affairs, 2016) identifies health and wellbeing as one of its core objectives. The emphasis on health and wellbeing specifically aims to i) promote innovative schemes which serve national health and ii) realise the 'immense potential for outdoor recreation' offered by the parks.

The US National Park Service have similarly identified this latent potential, providing 'park prescriptions' via their 'Healthy Parks Healthy People' programme, aiming to prevent long term conditions such as diabetes, depression and high blood pressure (IUCN & WCPA, 2015). Such schemes provide an opportunity to participate in healthy and enjoyable activities, with further potential to help tackle the poor health effects associated with reduction in biodiversity and landscape wellbeing (IUCN & WCPA, 2015; United Nations, 2015). The potential of nature to play a part in the healing journey is gaining increased recognition in the UK with the development of schemes such as the NHS Forest.

The sustainable development goals proposed by the United Nations (2015) firmly include a commitment to protect the planet and provide good health and wellbeing to all global citizens by 2030. The 17 inter-related goals propose that all sectors are

involved in the sustainable development agenda, making clear links between resources available and the opportunities present.

The percentage of open comments within each project that were about each of these themes is shown in Figure 23. This helps to illustrate the relative prevalence of mentioned outcomes as a percentage of the comments made within each project.

Participants said:

"Laughed a lot! always good for the well-being of a person- and the group"

"I would not be mixing with so many nice people. My life has improved"

"I don't get many opportunities to really focus on my surroundings. I have anxiety & stress issues, and this has really helped me feel much calmer"

"I have learnt a lot of things I will be using in the future :-)"

What things helped make these outcomes happen?

Participants also contributed ideas about *how* the experience had made a difference to them and these fell into five main themes:

- Choice/ Self-management
- Inclusive/ accepting
- Social/ friendly
- Novelty/ different
- General and specific natural features

Across the two projects, these were distributed as shown in Figure 24. The percentages show the relative prevalence within each project of the different factors being mentioned.

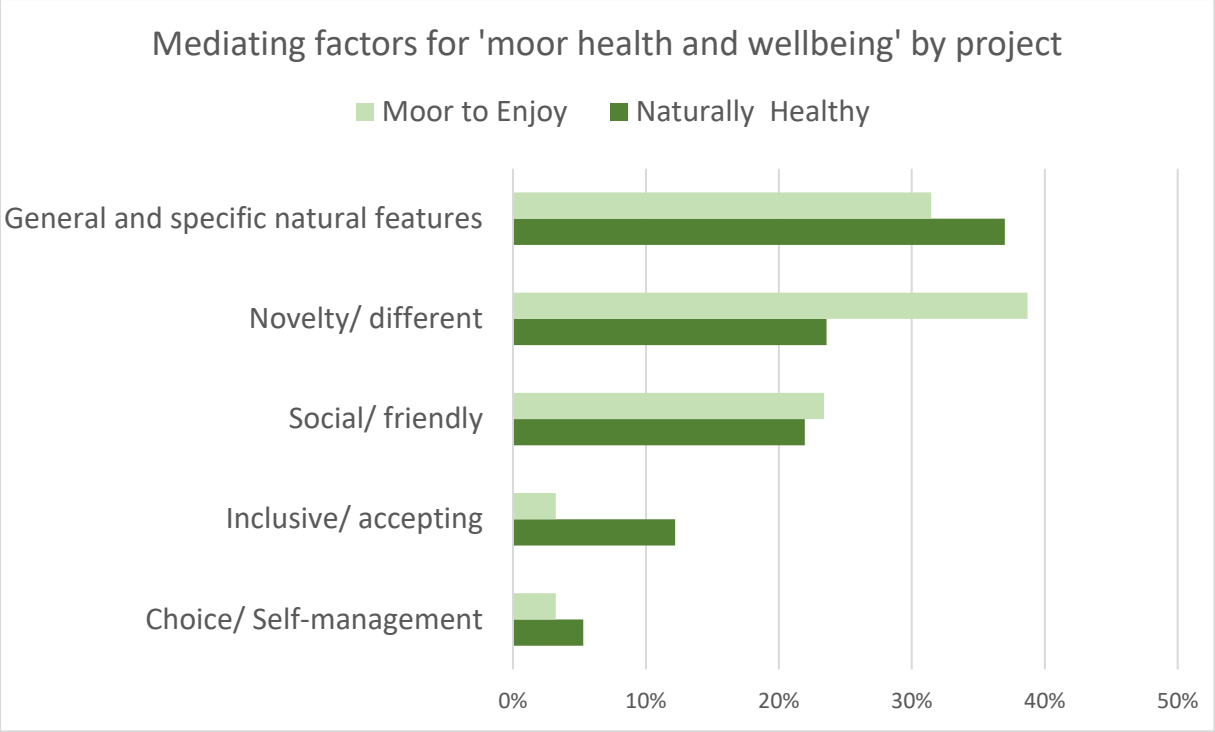


Figure 24: The relative contribution of different factors to 'Moor Health and Wellbeing' outcomes as percentage of comments made in each project.

From this we can see that being outdoors in nature, doing something different and a sociable friendly context were all important mediators in both projects, but the Moor to Enjoy participants mentioned difference to their everyday lives more frequently relative to other aspects. For some participants, being accepted and having choices were also valued.

Choice and the inclusive acceptance by facilitators and fellow group members appeared to be more frequently cited by participants in the Naturally Healthy programme. The novelty of trying new things as a mediator of positive effects was more commonly mentioned by participants in the Moor to Enjoy project, while the natural environment and a sociable and friendly atmosphere seemed to be consistently important facilitators for feeling good across both projects. To some extent, these themes reflects the types of activities that were provided by the two projects, but what can be gleaned from the comments of participants is that the *sine qua non* characteristics of this form of promotion of health and wellbeing is spending time in the natural environment, opportunities for social contacts and a sense of doing something out of the ordinary.

Participants commented:

The natural environment

Generally:

"I feel touched by the lovely location and creativity"

"Lovely dry day out of the wind so good to enjoy the views"

"The natural environment is so beautiful"

Specifically:

"There was a **beautiful river, lovely trees, the leaves** glistened in the sunlight"

"Able to enjoy all the beautiful countryside and **valley of the rocks** without driving. We are so lucky"

"Polly loved **butterfly** picture. Elmo was brave collecting **spider** on bug hunt"

These references to environmental features echo research that suggest biodiverse and aesthetically pleasing natural environments may increase the psychological impact of green spaces (Sereshinhe et al., 2015; Fuller et al., 2007; White et al., 2013).

Novelty and difference to everyday experience

"This was the first time I had been to a Hawk and Owl Centre. Handler was brilliant. Lovely day out in Somerset and I have lived here for 74 years!!"

"Fantastic opportunity to get out of our usual "box" and be able to socialise in such beautiful surroundings"

"Just doing something out of the ordinary"

"The group is great! I've enjoyed all the walks I've done. I've met neighbours who I did not know before. I've been to nearby places that I didn't know about"

Novelty has been associated with valuing natural experiences (Goodenough and Waite, accepted).

Social and friendly opportunities

"I love my weekly outings with this group and hope it continues as it is such a good way of socialising with lovely people"

"Really benefited me and my son to have some outdoor group activity. We are nearly always outdoors in nature but to enjoy the environment with others brings a whole other sense of wellbeing. Being a parent can be very isolating especially if you don't want to be confined to a church hall"

"Being with lovely people has made my week"

"I spoke to more people than I normally would. Very interesting, very nice. I don't have transport and can't usually get to such places"

Welcoming and inclusive atmosphere

"Lovely to see Tory interacting with others and staff, nice to see Susan supported well, very nice lovely day, lots of interesting things to see or do"

"I had time to do things in an unrushed way with no pressure"

"The tutors gave us a way to do the exercises with support"

"We all had a chance of joining in"

Having choice and autonomy

"I never take time out for myself - often feel guilty as I work full time and feel I need to be with my family at the weekend. This was an absolute pleasure and will now allow myself at least once a month to get out and get in touch with nature. Thank you :-)"

"There were no rules. I could just do as I liked and produce something that was all my own work"

"'Whereas 'NO! YOU CAN'T DO THAT!' given as an order, instructions or directive continually and repeated eventually becomes a statement of fact by the recipient. Buckfastleigh Naturally Healthy Group brings a positive new meaning to the phrase 'SECOND CHILDHOOD!'"

What did the participants think about the process?

Participants were overwhelmingly positive about the organisation and content of the activities provided in both projects. General comments made about the process fell into the following categories:

Good preparation/well resourced

"Everything was there, and I could use what I wanted"

"Because Val & Beckie had worked so hard to prepare for it"

"I had a lift there. The team leader brought everything we needed"

"Plenty of notice to help plan 'sitter' for my mum. Not too far from home"

"The catering arrangements were brilliant. The volunteers and staff were very pleasant and helpful"

"Lovely not to drive. Well organised so didn't have any worries"

"Awareness of nature in glorious sunshine. Thank you very much for a very good day. Thoughtfully planned"

Easy to understand

"It was all easy to understand"

"The instructions given by Philomena were simple, concise and precise"

"Linda very helpful and patient. Talked us through the whole activity"

"Good pace. Patient tutor"

"Well, and enjoyably, taught. Simple but satisfying!"

No right or wrong

"There was no right or wrong way and we were each praised for our work"

"Was shown what to do then left to interpret my way"

"There were no rules. I could just do as I liked and produce something that was all my own work"

"Constructive support and encouragement from an expert, but not pressure"

"The encouragement was great. I did not feel incompetent at any stage. Laughter was constant".

"My work was not judged, and I was made to feel confident"

These comments were distributed across the two projects as shown in Figure 25.

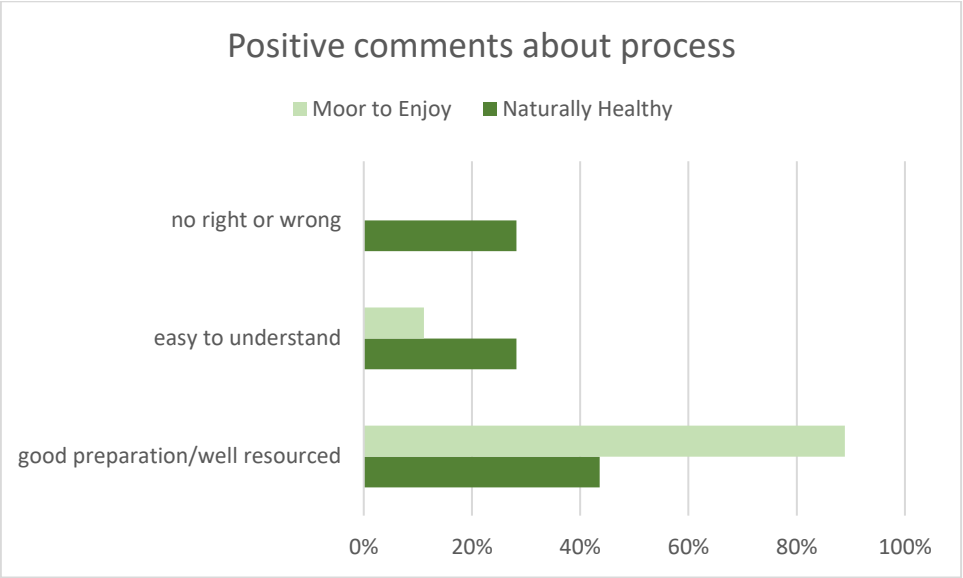


Figure 25: Percentage of positive comments addressing different aspects within projects

Suggestions for improvements have also been analysed and they are grouped into themes by projects to inform future practice.

More exercise (2 NH; 18 MTE)

"Longer walk - to raise heart rate and feel more physically active"

Less exercise (2 NH)

"Kid friendly walks with toddlers who don't walk far; Saturday club?"

More events/ more or different timing (7 NH; 12 MTE)

"A perfect community would have the events regularly throughout the year"

"Start earlier - finish later"

Food (2 NH; 10 MTE)

"Allowed for a coffee break - possibly but not essential"

Weather (3 NH; 13 MTE)

"I would have brought an extra layer of clothing but was able to borrow something"

"You could have organised better weather!"

Lifts/transport (2 NH)

"Not being a car driver, I am grateful for everyone who offers a lift. Just that I very much appreciate this project."

"I have anxiety issues. Mostly covered up. I am not generally happy to offer people lifts in my car. I would prefer to pay petrol costs and get a lift. Or just drive myself to a venue. So, it would be a support to me to not be expected to give people lifts. I would like to meet local people to walk from Buckfastleigh. I know that my health is at risk by not being active enough when I am not working. However, I find the motivation to walk on my own lacking"

More outside (1 NH; 1 MTE)

"Do the whole thing outside"

"More allocated time for outside enjoyment - walks, etc"

General organisational (2 NH; 36 MTE)

"I couldn't have a clear idea before I came as to what to expect. Better explanation beforehand would help to be prepared with ideas and thoughts"

"It would have been nice to have a commentary on the mini busses and learn a little more about the wild life on the moor "

"Reminders of when events are, per text"

"Only advertised this opportunity much better. It has taken me months/even years even though I've been looking for it and heard about the project but couldn't find the contact"

Conclusions

In concluding this report, we briefly summarise what difference similar projects can make to:

- participants
- local strategies and approaches
- wider organizational planning
- other providers of linked support

We consider commonalties and differences across the projects in order to help shape future practice in relation to the following aspects.

Models of engagement

The feedback from stakeholders indicated that multiple models of engagement might best serve the widest range of potential beneficiaries. Community engagement and partnership with existing groups seemed to be more effective than direct GP referral where there was no existing green prescriptions champion (Bragg and Atkins, 2016). However, certain individuals were less likely to self-refer and for those with low mood or depression, more formal written prescriptions might help to extend the opportunities to them. Clear communication between referrer, referee and providers of services would help match patient attributes and types of activity to gain most benefit. Agreed and transparent delineation of roles and responsibilities, especially regarding health and safety issues might also help to build increased confidence in programmes.

Mediating factors

It was vital that programmes offered a range of activities suitable for different needs (SWPLF, 2007) that were clearly described and well-advertised, utilising existing networks and building strong sustainable relationships and partnerships. The key elements to include in activities were novelty, social opportunities and natural environment aspects. Although it seems that the schemes appealed especially to those with an already established feeling of nature relatedness, a progression from the more familiar to more novel experiences might scaffold access for a broader range of potential beneficiaries.

Outcomes

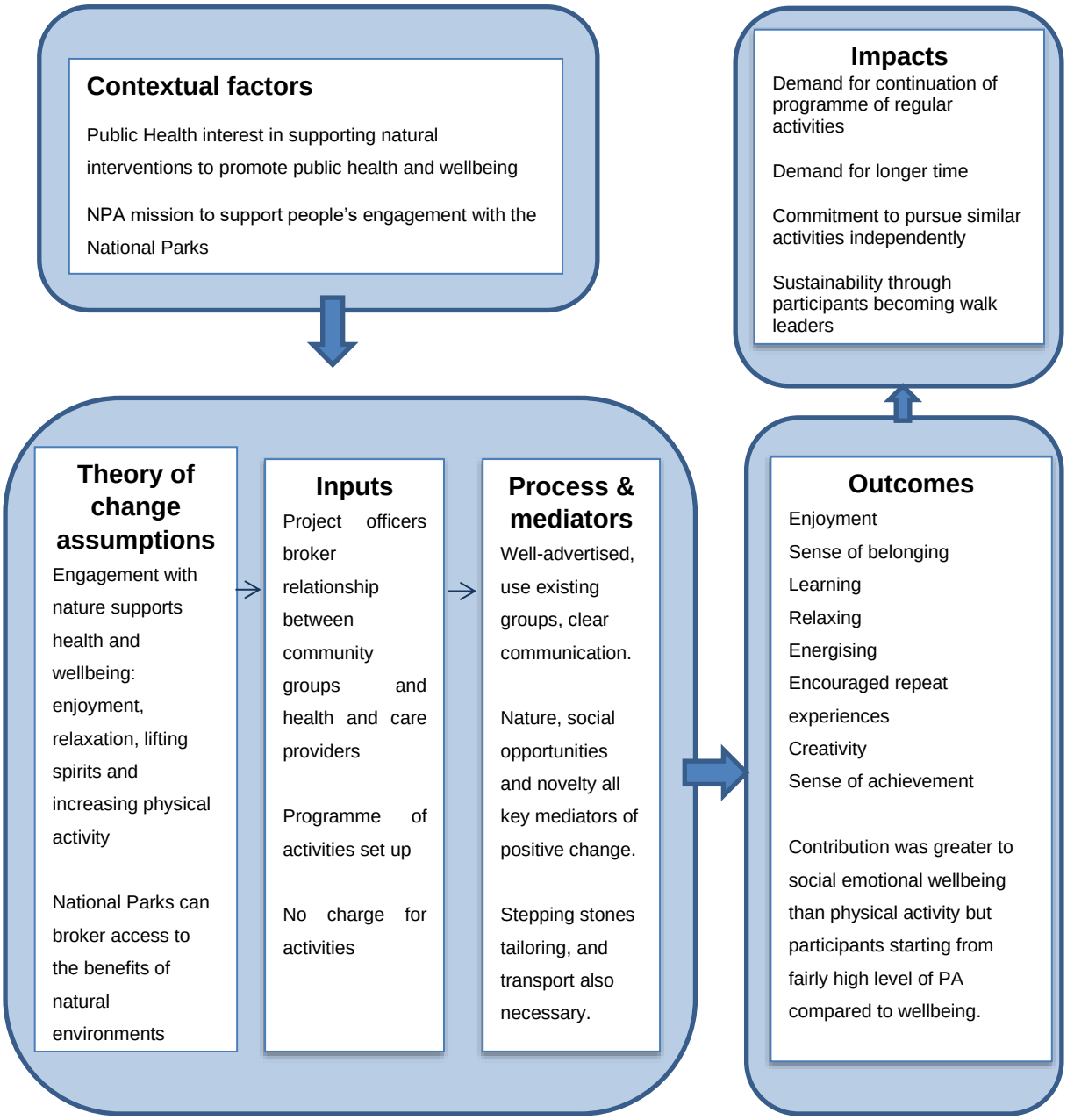
Participants were positive about the projects' effects on their wellbeing. Intended outcomes from the two projects were achieved, including enjoying, socialising, relaxing and feeling uplifted, but physical activity increases were less evident. This suggests that if evidence is required for certain outcomes, a closer targeting of groups and matching of activities would be needed. A mixture of generic and specific targeted activities might be appropriate to demonstrate the most appropriate pathway to particular desired outcomes.

Challenges

There were a number of challenges that the projects had to overcome. The initial start-up and establishment of trusted relationships takes time and investment of resources at all points in the chain of referral. Due to the short time frame, decisions were made to focus on the modes of referral that seemed to be yielding more successful engagement. To access other groups and individuals, a longer timeframe and establishment of green prescription champions would be productive to help build trust in the programme's sustainability. An embedded and tiered approach that would draw on GP written prescription through to partnerships with existing groups and community engagement might be the most effective format. While many participants were positive about deriving benefits from nature, access issues were a barrier and extension of schemes so that they included local green space use as well as the exceptional quality of National Parks seems useful. Community transport solutions, such as a minibus, might also allow National Parks to open up their resources more widely, as lift sharing was not universally welcomed.

In conclusion, the two projects, by comparing their different methods and outcomes, have demonstrated that benefits can accrue from different approaches but have also enabled us to draw out key facilitators for a toolkit for future engagement with National Parks for physical and mental wellbeing.

Theory of change derived from findings



Recommendations

Policy

- Support by Public Health and health care providers for designed programmes would increase confidence in using natural environments to support wellbeing.
- The toolkit may help scale up the pathways to these impacts, but schemes will need to be championed and disseminated through policy channels to influence practice.

- Funding also needs to underpin the policy moves so that the services are sustainable and therefore more attractive as a credible alternative amongst other prescribed health services.

Practice

- At a regional and local level, development of strong partnerships is an important foundation for the success of any schemes. Organisations with an interest in nature and/or wellbeing should work together to establish these as sustained resources so that programmes can build upon good mutual understanding.
- Green prescription champions could provide the catalyst to support this and increase trust and uptake.
- The toolkit will provide guidance about how different stakeholders can support provision of quality services.

Research

- More research is needed to determine if there is added value through the quality of National Park contexts for nature-based social prescribing.
- Further trials would help to determine the effectiveness of different referral methods, particularly to test previous findings that written prescriptions may help to access different groups.
- Health care professionals may prefer that these use a clinical research model of control groups to increase their confidence in prescribing.

In summary, the two National Park projects; Naturally Healthy (DNP) and Moor to Enjoy (ENP) have combined some key facilitators to contribute to “Moor Health and Wellbeing”. In the simple words of one happy participant:

“Lovely environment, friends and body well-being.”

References

Bell, S., Hamilton, V., Montarzino, A., Rothnie, H., Travlou, P. & Alves, S. (2008). *Greenspace and Quality of Life: A Critical Literature Review.* Stirling: Openspace & Greenspace Scotland.

Bell, S.L., Phoenix, C., Lovell, R. & Wheeler, B.W. (2015). Seeking everyday wellbeing: The coast as a therapeutic landscape. *Social Science & Medicine.* 142, 56-67.

Bickerdike, L., Booth, A., Wilson, P.M., Farley, K. & Wright, K. (2017). Social prescribing: less rhetoric and more reality. A systematic review of the evidence. *BMJ Open*; **7:** e013384. doi: 10.1136/bmjopen-2016-013384

Bird, W. (2007). *Natural Thinking: Investigating the links between the natural environment, biodiversity and mental health*. London: RSPB.

Bloomfield, D. (2017). What makes nature based interventions for mental health successful? *BJ Psych International*. 14(4): 82-85.

Bowler, D.E., Buyung-Ali, L.M., Knight, T.M. & Pullin, A.S. (2010). A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC public health* 10, 456.

Bragg, R., Atkins, G. (2016). *A review of nature-based interventions for mental health care*. Natural England Commissioned Reports, Number 204.

Bratman, G.N., Hamilton, J.P., Daily, G.C. (2012). The impacts of nature experience on human cognitive function and mental health. *Annals of the New York Academy of Sciences* 1249, 118-136.

Burls, A. (2007). People and green spaces: promoting public health and mental well-being through ecotherapy. *Journal of Public Mental Health,* 6, 24-39.

Burt, J., Stewart, D., Preston, S. & Costley, T. (2013). *Monitor of Engagement with the Natural Environment Survey (2009 - 2012): Difference in access to the natural environment between social groups within the adult English population*. Natural England Data Reports, Number 003.

Chang, C.-Y.; Chen, P.-K. (2005). Human responses to window views and indoor plants in the workplace. *Horticultural Science*, 40, 1354-1359.

Department for the Environment, Food and Rural Affairs (2016). *National Parks: 8-Point Plan for England 2016-2020*. Bristol: Department for the Environment, Food and Rural Affairs.

Department of Health (2010). *Healthy Lives, Healthy People: Our strategy for public health in England.* London: The Stationary Office.

Drayson, K. & Newey, G (Ed.) (2014). *Green Society: Policies to improve the UK's urban green spaces*. Policy Exchange. Accessed 10/12/12. Available from: https://policyexchange.org.uk/publication/green-society-policies-to-improve-the-uks-green-spaces/

Ecominds (2013). *Feel Better Outside, Feel Better Inside: Ecotherapy for Mental Wellbeing, Resilience and Recovery*. Accessed 09/12/12. Available from: https://www.mind.org.uk/media/336359/Feel-better-outside-feel-better-inside-report.pdf

Elley, C., Dean, S. & Kerse, N. (2007). Physical activity promotion in general practice: patient attitudes. *Australian Family Physician, 36*(12), 1061-1064.

Fuller, R.A., Irvine, K.N., Devine-Wright, P., Warren, P.H., Gaston, K.J. (2007). Psychological benefits of greenspace increase with biodiversity. *Biology letters* 3, 390-394.

Goodenough, A. & Waite, S. (accepted). What is different about Forest School? For special issue of *Journal of Outdoor and Environmental Education*.

Grant, G., Machaczek, K., Pollard, N., Allmark, P. (2017). Walking, sustainability and health: findings from a study of a walking for health group. *Health and Social Care in the Community*. 25(3): 1218-1226.

Grinde, B. & Patil, G.G. (2009). Biophilia: does visual contact with nature impact on health and well-being? *International Journal of Environmental Research and Public Health,* 6, 2332-2343.

Hartig, T.M., Evans, G.W., Jamner, L.D., Davis, D.S. & Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology*, 23, 109-123.

Husk, K. (2017). Social prescribing offers huge potential, but requires a nuanced evidence base. *BMJ*. http://blogs.bmj.com/bmj/2017/07/18/social-prescribing-offers-huge-potential-but-requires-a-nuanced-evidence-base/

IUCN & WCPA. (2015). Natural Solutions. Protected areas are vital for human health and wellbeing. *IUCN*. Accessed 1/12/17 Available from: https://www.iucn.org/downloads/natural_solutions_pas__health_and_well_being.pdf

Jepson, R., Robertson, R., & Cameron, H. (2010). *Green prescription schemes: mapping and current practice.* Edinburgh: NHS Health Scotland.

Jordan, M. & Hinds, J. (2016). *Ecotherapy. Theory, Research & Practice*. London: Palgrave MacMillan.

Kaplan, R. & Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press.

Kings Fund (2017). *What is Social Prescribing*. Accessed on 10/12/17. Available from: https://www.kingsfund.org.uk/publications/social-prescribing

Korpela, K. & Ylén, M. (2007). Perceived health is associated with visiting natural favorite places in the vicinity. *Health Place*, 13, 138-151.

Korpela, K.M., Ylén, M., Tyrväinen, L. & Silvennoinen, H. (2010). Favorite green, waterside and urban environments, restorative experiences and perceived health in Finland. *Health Promotion International*. 25(2):200-9. doi: 10.1093/heapro/daq007.

Krekel, C., Kolbe, J. & Wüstemann, H. (2016). The greener, the happier? The effect of urban land use on residential well-being. *Ecological Economics*, 121, 117-127.

Lee, A.C.K. & Maheswaran, R. (2011). The Health Benefits of Urban Green Spaces: A Review of the Evidence. *Journal of Public Health*, 33 (2), 212–22.

Merchant, S., Quinn, J. and Waite, S. (2013). Final report for Exmoor National Park Authority and Institute of Health and Community. *Social and Economic Aspirations of Young People on and around Exmoor National Park.* Plymouth: Plymouth University.

Marmot, M. (2010). *Fair Society, healthy lives: The Marmot Review: Strategic review of health inequalities in England post 2010*. London. University College London.

Mind (2007). *Ecotherapy: The green agenda for mental health* (online) Available: https://www.mind.org.uk/media/273470/ecotherapy.pdf

Mitchell R. & Popham F. (2008). Effect of Exposure to Natural Environment on Health Inequalities: An Observational Population Study. *The Lancet*, 372 (9650), 1655 – 1660.

Natural England (2017). *Good practice in social prescribing in mental health: The role of nature based interventions*. Available from: file:///C:/Users/sehowes/Downloads/NECR228%20Edition%201%20-%20Good%20Practice%20in%20Social%20Prescribing%20for%20mental%20health,%20the%20role%20of%20%20nature-based%20interventions.pdf

Natural England (2013). *Monitor of Engagement with the Natural Environment: The national survey on people and the natural environment: Annual Report from the 2012-2013 survey*. Natural England. Available from: http://publications.naturalengland.org.uk/publication/5331309618528256

Office for National Statistics (2015). *Measuring National Well-being – International Comparisons.* Accessed on 08.12.17. Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/articles/measuringnationalwellbeing/2015-07-01

Parsons, R., Tassinary, L.G., Ulrich, R.S., Hebl, M.R. & Grossman-Alexander, M. (1998). The view from the road. Implications for stress recovery and immunization. *Journal of Environmental Psychology*. 18, 113-140.

Physical Activity Task Force (2002). *Let's Make Scotland Active: A Strategy for Physical Activity – A Consultation.* PATF. Accessed on 08/11/17. Available from: http://www.scotland.gov/consultations/health/patf2.pdf

Pietilä, M., Neuvonen, M., Borodulin, K., Korpela, K., Sievänen, T. & Tyrväinen, L. (2015). Relationships between exposure to urban green spaces, physical activity and self-rated health. *Journal of Outdoor Recreation and Tourism*, 10, 44-54.

Pinder, R., Kessel, A., Green, J. & Grundy, C. (2009). Exploring perceptions of health and the environment: a qualitative study of Thames Chase Community Forest. *Health & Place*, 15, 349–356.

Pretty, J. Peacock, R. Hine, M. Sellens, N. South & Griffin, M. (2007). Green exercise in the UK countryside: Effects on health and psychological well-being, and implications for policy and planning, *Journal of Environmental Planning and Management*, 50:2, 211-231, DOI: 10.1080/09640560601156466

Pringle, R. (2008). *Health and physical activity promotion: A qualitative examination of the effect of receiving a green prescription (GRx)* University of Waikato, Hamilton: Wilf Malcolm Institute of Educational Research.

Richardson, J. Goss, Z., Pratt, A., Sharman, J. and Tighe, M. (2012). Building HIA approaches into strategies for green space use: an example from Plymouth's (UK) Stepping Stones to Nature project. *Health Promotion International*. 28(4): 502-511.

Seresinhe, C.I., Preis, T. & Moat, H.S. (2015). Quantifying the impact of scenic environments on health. *Scientific reports* 5. doi:10.1038/srep16899

Swinburn, B., Walter, L., Arroll, B., Tilyard, M. & Russel, D. (1998). The Green Prescription Study: A randomized controlled trial of written exercise advice provided by general practitioners. *American Journal of Public Health* 88(2), 288-291.

SWPLF (South West Protected Landscapes) (2007). *Use of countryside assets by underrepresented groups in the South West*: Final Report for the South West Protected Landscapes Forum, March 2007.

Takano, T., Nakamura, K. & Watanabe, M. (2002). "Urban Residential Environments and Senior Citizens' Longevity in Megacity Areas: The Importance of Walkable Green Spaces" *Journal of Epidemiology and Community Health,* 56: 913-918.

The Conservation Volunteers (2016). *Green Gym - Exercise to make a difference* (online) Available: http://www.tcv.org.uk/greengym

Travlou, P. & Ward-Thompson, C. (2007). Policy issues: what are the current challenges in planning for inclusive access? *Open Space: People Space*. London: Taylor & Francis.

Turner, J.L & Stevinson, C. (2017). Affective outcomes during and after high intensity exercise in outdoor green and indoor gym settings. *International Journal of Environmental Health Research*. 106-116. https://doi-org.plymouth.idm.oclc.org/10.1080/09603123.2017.1282605

Ulrich, R.S. (1999). Effects of gardens on health outcomes: Theory and research. In: Cooper, M.C., Barnes, M., (Eds.) *Healing Gardens. Therapeutic Benefits and Design Recommendations*. New York: John Wiley & Sons.

Ulrich, R.S., Simons, R.F., Losito, B.D., Fiorito, E., Miles, M.A. & Zelson, M. (1991). Stress recovery during exposure to natural and urban environments. *Journal of Environmental Psychology*. 11, 201-230.

United Nations. (2015). Sustainable Development Goals: 17 Goals to Transform our World. Accessed on 09/12/11. Available from: http://www.un.org/sustainabledevelopment/sustainable-development-goals/

Urban Green Spaces Task Force (2002). *Green spaces, better places: final report of the Urban Green Spaces Taskforce.* London: DTLR.

van den Berg, A.E., Hartig, T. & Staats, H. (2007). Preference for nature in urbanized societies: stress, restoration, and the pursuit of sustainability. *Journal of Social Issues* 63, 79-96.

Wheeler, B., White, M., Stahl-Timmins, W. & Depledge, M. (2012). Does living by the coast improve health and wellbeing?, *Health Place*, 18, 1198-1201.

White, M.P., Pahl, S., Ashbulby, K. & Herbert, S. (2013). Feelings of restoration from recent nature visits*. J. Environ. Psychol*. 35, 40-51

APPENDICES

Appendix 1

Moor to Enjoy Questionnaire

Thank you for agreeing to complete our questionnaire. This will help us to evaluate our project well. Please be assured that any information you give will be stored and controlled in accordance with the Data Protection Act 1998. To help protect your privacy your name will **not** appear on any reports published containing the information we collect.

Participant number:

Age:_____ Postcode:_____ Gender:_____ Ethnicity:_____

Do you have any long standing health issues?_____

Please circle the statement that is true:

I have never visited Exmoor National Park

I have visited Exmoor, but not often

I visit Exmoor regularly

During the last week, how many hours did you spend on the following:

	Less than 1 hour	2 hours	3 hours or more
Walking to work, the shops, picking the kids up from school on foot			
Gardening			
Rigorous housework or DIY			
Washing the car			
Sport such as swimming, running, football, badminton, work out at the gym/at home			
Other outdoor physical activity, please specify (eg. walking, canoeing, archery, sailing)			

Please circle from 1 to 5, how you feel about the following statements. 1 meaning that you strongly disagree, 2 disagree, 3 neither agree nor disagree, 4 agree and 5 that you strongly agree:

I spend enough time each week with friends **1 2 3 4 5**

I meet new people regularly	**1**	**2**	**3**	**4**	**5**
I feel lonely often	**1**	**2**	**3**	**4**	**5**
I feel appreciated in my community	**1**	**2**	**3**	**4**	**5**
I very rarely spend time outside enjoying the natural environment	**1**	**2**	**3**	**4**	**5**
I often go to the park, or other 'green space' where I feel close to nature	**1**	**2**	**3**	**4**	**5**
I wish I could visit beautiful landscapes and countryside more often	**1**	**2**	**3**	**4**	**5**
I think being in touch with nature is an Important part of me feeling good about life	**1**	**2**	**3**	**4**	**5**
I've been feeling optimistic about the future	**1**	**2**	**3**	**4**	**5**
I've been feeling useful	**1**	**2**	**3**	**4**	**5**
I've been feeling relaxed	**1**	**2**	**3**	**4**	**5**
I've been interested in other people	**1**	**2**	**3**	**4**	**5**
I've had energy to spare	**1**	**2**	**3**	**4**	**5**
I've been dealing with my problems well	**1**	**2**	**3**	**4**	**5**
I've been thinking clearly	**1**	**2**	**3**	**4**	**5**
I've been feeling good about myself	**1**	**2**	**3**	**4**	**5**
I've been feeling close to other people	**1**	**2**	**3**	**4**	**5**
I've been feeling confident	**1**	**2**	**3**	**4**	**5**
I've been able to make my own mind up about things	**1**	**2**	**3**	**4**	**5**
I've been feeling loved	**1**	**2**	**3**	**4**	**5**
I've been interested in new things	**1**	**2**	**3**	**4**	**5**
I've been feeling cheerful	**1**	**2**	**3**	**4**	**5**
I consider myself to be environmentally friendly	**1**	**2**	**3**	**4**	**5**

Naturally Healthy Questionnaire - Dartmoor (1).pdf

Appendix 2

WEMWBS

https://warwick.ac.uk/fac/med/research/platform/wemwbs/

Short form version of the nature relatedness scale (NR-6)

Instructions: For each of the following, please rate the extent to which you agree with each statement, using the scale from 1 to 5 as shown below. Please respond as you really feel, rather than how you think "most people" feel.

1	2	3	4	5
Disagree strongly	**Disagree a little**	**Neither agree or disagree**	**Agree a little**	**Agree strongly**

1. My ideal vacation spot would be a remote, wilderness area.
2. I always think about how my actions affect the environment.
3. My connection to nature and the environment is a part of my spirituality.
4. I take notice of wildlife wherever I am.
5. My relationship to nature is an important part of who I am.
6. I feel very connected to all living things and the earth.

Scoring Information: NR-6 score is calculated by averaging all 6 items

Appendix 3

Moor to Enjoy

Event Evaluation Form

Event:

Please score out of 5 the following questions.

1=Strongly disagree, 2= disagree, 3= neither agree nor disagree,

4= agree, 5= Strongly agree

1) I enjoyed the event 1 2 3 4 5
2) I was more physically active than on an average day 1 2 3 4 5
3) I socialised more than on an average day 1 2 3 4 5
4) I felt more relaxed than before the event 1 2 3 4 5
5) Coming to the event improved My mood 1 2 3 4 5

How could we have done today better?

_____
_____
_____

If today was special to you in any way, please tell us why…

_____
_____
_____
_____

Thank you for attending our event

and completing an evaluation, this helps us to deliver events that you enjoy and benefit from

Naturally Healthy dartmoor evaluation (1).pdf