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Can a woodland activity programme benefit participant wellbeing and change the way they use woods?

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CAN A WOODLAND ACTIVITY PROGRAMME BENEFIT PARTICIPANT WELLBEING AND CHANGE THE WAY THEY USE WOODS?

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Submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

DECLARATION

I hereby declare that this thesis is the results of my own investigations, except where otherwise stated. All other sources are acknowledged by bibliographic references. The work is submitted with agreement of my supervisory team (Prof Val Morrison, School of Psychology, Dr Norman Dandy and Dr Sophie Wynne-Jones, School of Natural Sciences). This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree unless, as agreed by the University, for approved dual awards.

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ABSTRACT

Lifestyle-related illnesses are a major cause of mortality and the health and wellbeing benefits of engagement with the natural environment are well documented. However, certain groups are under-represented in visitor figures, therefore this pathway to wellbeing is being received disproportionately. Nature-based interventions (NBIs) seek to extend benefits to wider, often otherwise marginalised social groups, but there is a lack of long term research meaning that the sustainability of effects is unknown. The primary aim of this study was to develop an improved understanding of one such initiative on personal wellbeing and woodland use over time.

The research involved adults with a range of health and social care needs recruited from Actif Woods Wales, a pan-Wales woodland activity programme. A quantitative study assessed participants at baseline (n = 120), end of course (n= 74) and a three month follow up stage (n = 57). A parallel qualitative study enabled an in-depth appreciation of processes of change with five end of course and four follow up focus groups.

End of course quantitative results demonstrated significant positive increase across all psychosocial measures, (mental wellbeing, social trust, self-reported health, self-efficacy, self-esteem and physical activity) with particularly marked gains for those who had reported mental health conditions. The study showed that these gains had held at the three month follow up stage providing critical evidence of maintained change. With regard to independent woodland visits, the frequency of visits had increased at course end and the indication at follow up was that this trend continued to rise.

Qualitative data showed positive shifts in self-perspective that had followed through to wider lifestyle changes which for some meant breaking out of a 'rut' of sedentariness and social isolation. These results were particularly important to understanding the importance of social processes and how confidence gained on the programme had led to increased interaction beyond it. Participant narratives showed how nature was experienced as a kind of 'balm' (the sensory experience, the positive impact on mood, feelings of escape) and played an important role in supporting the wellbeing benefits experienced. This altered perception of nature was maintained which had led to more and different use of woodlands (like spending longer there and 'making more of it'). Breaking down deeply entrenched psychological, emotional and socio-cultural barriers, it was evident that the programme could act as an adult greenspace turning or *re*-turning point.

The study has helped to meet identified gaps for research that furthers understanding of how NBIs can support health, wellbeing and increased woodland use beyond the life of programmes. Findings thus hold implications regarding a need for sustainable funding and support for such projects to embed the role that they can play in delivering both therapeutic and preventative social care. They also point to a role for land managers looking to increase engagement for under-represented groups to consider the role that NBIs can play in broadening access to the benefits of the natural environment.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

The purpose of this introductory chapter is to broadly outline the context of the research and introduce nature-based interventions. The Actif Woods Wales (AW) intervention is then outlined, followed by the research aims and objectives and a map of the thesis. The wellbeing benefits of enhanced engagement with the natural environment have received increasing attention in recent years, supported by an extensive body of research connecting to questions of physical and mental health (Hartig, 2014). Public health concerns connected to sedentary lifestyles such as obesity and heart disease are highlighted as key issues that increased time spent in nature can usefully address but, equally, potential to enhance mental health and performance are noted (Department of Health, 2014). Evidence that green and blue spaces can support better longevity, wellbeing and health particularly for disadvantaged populations has been described (WHO, 2016[a]). Conservation organisations have compiled reports on the health benefits of being in nature (Natural England, 2016) and health organisations have sought to champion increased access to, and engagement with, the natural environment (MIND, 2013[a], 2015).

This growing scientific consensus is now acknowledged by UK Government and informs the approach of their 25 Year Environment Plan (Department of Environment, Food and Rural Affairs (DEFRA, 2018) to better connect people with the environment as a means to improve their health and wellbeing. As part of a mosaic of habitats, woodlands are a vital natural resource for mitigating climate change and providing essential ecosystem services, including health and wellbeing (UK National Ecosystem Assessment, 2011). In recognition of this, Natural Resources Wales intend to increase the size of their woodland estate over the next 25 years and providing public access for recreation is very much part of their vision (Natural Resources Wales, 2018). This reflects a global trend whereby the value of woodlands and forests has shifted from their role as a timber resource to a growing recognition of the wider economic, social and environmental role they play (Food and Agricultural Organisation of the United Nations, 2018). However, not everyone is gaining *access* to greenspace and so they are missing out on this pathway to wellbeing.

In many circles, citizens' wellbeing has come to be seen as a more sophisticated and meaningful measure of success than GDP (Forgeard *et al.,* 2011). Indeed, these aspirations have been permeating into governance, and in 2015, the promotion of health and wellbeing was agreed as one of 17 Sustainable Development Goals globally (United Nations, 2015). Since 2011, the UK have been measuring subjective wellbeing annually and in 2015, the Welsh Government passed the Wellbeing of Future Generations Act, necessitating public bodies to work towards wellbeing goals. In the latter, the measure is of the wellbeing of communities or nations, and whilst inevitably there is overlap, the focus of this study is the personal wellbeing of the individual. Whilst

recognising it as a concept closely aligned with both physical and mental health, and acknowledging the many different definitions and measures (Linton, Dieppe and Medina-Lara, 2016), personal wellbeing is defined here as a subjective assessment of how people feel about their own lives. Chapter Two looks in more detail at definitions and influences.

Collaborations between environment and health services are not common and Arndt (2014) suggests a knowledge gap exists, necessitating more research to ascertain the extent to which health and forest sectors are aware of health benefits of forests and their willingness to co-operate. In practice, working across two quite separate sectors is a challenge and there is a need for the environment sector to focus on 'what health wants' and to talk in the language of health care providers (BFW, 2017). This might be for example, a concept of what a 'dose' of nature might constitute and for whom it might have what benefits. There is a role for research to address this gulf between the sectors, by providing evidence-based studies to underpin claims of health and wellbeing outcomes.

1.2 Introduction to nature-based interventions

The growing awareness of the health and wellbeing benefits of time in nature has led to a marked increase in advocacy to promote greater connection with nature and formalised interventions to enhance opportunities to do so (Natural England, 2016). Nature-based interventions as a route to improving individual health and wellbeing operate throughout the UK (Bloomfield 2017; Bragg and Leck 2016). An important feature of these interventions is that they are often delivered in partnerships between a variety of organisations (e.g. health and social care and environmental) which can help facilitate the effective targeting of particular groups (O'Brien and Morris, 2014). A nature-based intervention can be defined as structured or led activities in nature where there is a direct aim to use nature to improve health and wellbeing. Such schemes occur across a range of natural environments and activities include care farming, conservation work and gardening.

As stated, health and environment sectors have tended to operate in somewhat separate silos and making the transition to offering health and wellbeing activities is not always an easy one for conservation organisations (Morris *et al.,* 2011). In fact, Morris *et al.,* (2011:1) highlighted a "*need for carefully designed interventions that may lie outside the conventional remit of woodland management",* acknowledging the fact that countryside site managers are not trained or experienced in working with groups with support needs. Such approaches have sought to make innovative connections between services within the 'environmental' sector (including public sector, community and voluntary actors) and those traditionally positioned within health. Nature-based interventions can help to bridge this gap between sectors, maximising the wellbeing benefits of the natural environment.

This joining up of services is aligned with a growing Social Prescribing movement, aimed at facilitating effective partnerships between health and environmental statutory, voluntary or community projects (Bickerdike *et al.,* 2017). This includes projects run within the voluntary and community sector, but is increasingly linked to formalised health care provision through social prescribing networks where General Practitioners (GPs) and frontline Health Care Partnerships are enabled to make links with other services appropriate to the achievement of health and wellbeing goals (Bickerdike *et al.,* 2017). These initiatives have sought to extend the apparent benefits of nature experience to a wider, often marginalised demographic and to harness the potential of local environmental resources for wellbeing. Despite marked evidence supporting the connection between nature and wellbeing, less is known about how this translates in the messy real-world context of such nature-based interventions (NBIs).

1.3 Actif Woods Wales

One such project, the focus of this study, is Actif Woods Wales (AW). AW have been running woodland health and wellbeing programmes for adults across Wales since 2010 (fig.1.1). They have a head office in Machynlleth, mid-Wales, and local programmes are organised and delivered by regional (county level) mentors. Staff and activities are funded by Small Woods and their subsidiary Coed Lleol (Small Woods Wales), who organise and administrate the project at national level. AW is one of a range of projects run by Small Woods, a national charity and company limited by guarantee with woodland projects in England, Wales and Scotland. The Small Woods Association have been in operation since 1988 and were formed to support small woodlands. Currently, AW are funded by the Welsh Government Healthy and Active Fund (Sport Wales and Public Health Wales) and Natural Resources Wales and previous funders have included Forestry Commission Wales, the Big Lottery and others.

Fig 1.1 Map of AW activity areas

Actif Woods' intention, with a strapline of 'Getting Healthy the Woodland Way' is to connect people and nature and by doing so seek to improve their health and well-being. They operate a constantly evolving programme of activities ranging from bushcraft to woodland walks, conservation and campfire cooking to foraging, outdoor mindfulness and more. Sessions tend to last between 2 and 4 hours per session and Appendix 1.1 shows two samples of typical programmes. With relevance to the growth in social prescribing, AW partner health and social care organisations with woodland leaders, providing training and support to develop cross-sector skills and services for people with a wide range of health conditions and support needs. Their criteria is that attending adults must be in need of intervention, i.e. be suffering from a physical, mental or social issue that would benefit from the intervention, whether self-identified or otherwise. Whilst the AW health and wellbeing groups for adults are broader and open to people from any postcode, they tend to operate in lower income areas as part of The Welsh European Funding Office 'Convergence Funding'. A recent AW sub-project, included in this study, was an 'Active Inclusion' project, which targeted long term unemployed and economically inactive adults aged over 25 years. In addition, a newer strand of their work is working with families whereby they specifically target families and adults from areas high on the index of multiple deprivation in Wales. In these ways the project aims to widen access to marginalised groups. Currently, they work with approximately 700 people a year, having grown steadily since their pilot period in 2010 when they reached approximately 50 – 100 people annually.

Programmes run on a rolling programme in woodlands in eleven areas of Wales. The type of woods used is very varied and an aim of AW is to promote sustainable management of small woodlands for social, environmental and economic benefit. Appendix 1.2 summarises the woodland location, type and facilities of each of the 20 groups included in the study and Appendix 1.3 provides some illustrative photos of a range of sites. As the appendices show, woodlands varied widely from mature oak woodland as part of an RSPB reserve to the semi-natural wooded flanks of a former railway line and cycle track. Sites include those owned and managed privately, by local councils or by NRW. One course may take place in several locations whilst others are more site based. Facilities vary widely with some based at country parks or sites with car parking and a café at the start point. Others have no facilities and involve developing a site by building a fire site and basic log seating. More usually, provision is 'pop up' involving a portable fire bowl and a tarpaulin. Camping chairs are usually carried to site for those who find it difficult to sit down low. In one programme, a trestle table for tea making was carried to the site and a makeshift toilet provided in a tarpaulined area over a hole.

A key objective for AW from the outset has been to build capacity locally, both in environment and health sectors, and to build bridges between them. As such, they work towards specified training pathways and qualifications to improve and support provision of services with qualified leaders. Echoing the broader UK-wide picture, despite increasing recognition of the benefits of NBIs, AW have struggled to secure stable long

term funding and currently lack more embedded institutional support through the public health service. Their vision is to embed nature-based health care within the health system with well-developed social prescribing arrangements and improved access and green infrastructure for woodland sites.

In-house evaluations of the project have shown promising results with quantitative data collected by AW staff showing an increase in mental wellbeing and physical activity (Sultana, 2016), whilst a small-scale qualitative study with one group identified social interaction as a key element. Nonetheless, more large-scale independent research is needed to further explore and substantiate these findings. Responding to this, and the broader gaps identified in the subsequent literature review, this study explores both the immediate and longer term impacts on wellbeing of the Actif Woods programme and the extent to which the programme affects woodland access. The independently conducted research was sponsored by the Woodland Trust, reflecting their aspiration to understand more about the role that their woodland estate could play in improving well-being and how to break down barriers to woodland access beyond the Trust's usual audience.

1.4 Aims and objectives

The primary aim of this study was to develop an improved understanding of the impact of woodland based initiatives for adults on personal wellbeing. Secondly the psychosocial and geographic dimensions of woodland use and the personal and perceived barriers and enablers of sustainable outdoor activity will be examined. The study addressed the following over-arching research questions. Following participation in an AW programme:

- What personal wellbeing impacts are experienced and what were the key influencers?
- What role do social processes play?
- Do different sub-groups of participants derive different impacts?
- How do engagement with and attitudes towards woodlands change over time?
- Are any benefits to personal wellbeing or changes in woodland use sustained over time?

1.5 Map of thesis

Both quantitative and qualitative methods were used and an interdisciplinary approach, combining methodological and theoretical insights from the fields of health psychology and social geography. This provided the necessary combination of tools and frameworks with which to understand and appropriately evidence any wellbeing and woodland use changes experienced through the programme and the role that the natural environment played therein. A valuable aspect of quantitative methods is that standardised and validated questions can be applied to a large number of individuals that can then be statistically investigated

to address associations between and within different groups over time. Complementing this, qualitative methods can help to understand change in more detail from an individual perspective which enables the exploration of narratives and meanings.

Using both methods draws on both their potential strengths*, "allowing researchers to explore diverse perspectives and uncover relationships that exist between the intricate layers of our multifaceted research questions*" (Shorten and Smith, 2017: 74). In a recent report by the Mixed Methods International Research Association (MMIRA), the added value provided by both can give "*access to insights and understanding beyond those that might have been provided by use of quantitative or qualitative methods alone*" (Mertens *et al.,* 2016: 3) providing what Creswell (2016:217) refers to as "*multiple ways of knowing*". A parallel approach was taken to the collection and analysis of the quantitative and qualitative data sets, whereby processes occurred concurrently and were equally weighted. Data was later synthesised during the interpretation phase in the discussion.

Chapter Two examines the meaning of the term wellbeing given that it is used in many fields perhaps with different meanings. It also explores what influences wellbeing and considers how different approaches to measuring personal wellbeing can complement each other. A narrative review of literature on greenspace, woodland and wellbeing follows. Subsequently, the current state of play with regard to greenspace access, and what personal, social and environmental factors influence this is presented before finally reviewing literature on nature-based interventions. **Chapter Three** presents the baseline findings of a longitudinal quantitative study to afford some insight into who is using the AW programme and describes who took part in the study and their woodland use attitudes, practices and current wellbeing. **Chapter Four** presents the longitudinal quantitative findings regarding changes from baseline (T1, start of NBI) to end of programme (T2), and from end of programme to follow up (T3, three months post-NBI) in wellbeing and key psychosocial and behavioural factors.

This is followed by the two stages of a qualitative study. Firstly, **Chapter Five** presents findings from the end of course (T2) focus groups, which give an understanding of how participants' wellbeing and woodland use were impacted by the programme, enabling a deeper appreciation of the quantitative study outcomes. Secondly, **Chapter Six** gives the follow up (T3) focus group findings which explore the maintenance of any impacts and how changes endured or otherwise. Finally, **Chapter Seven** integrates findings and summarises and critically discusses the whole study in its wider context. It is then critiqued in order to obtain a fuller understanding of the current thesis' implications and makes suggestions accordingly.

In summary, the thesis makes a novel input to the literature on nature-based interventions in woodlands and their contribution to participants' wellbeing by being one of very few studies to gather follow up data. The

combination of mixed methods highlighted what people gain from these types of interventions and the extent to which they have carried on engaging with and benefitting from woodland visits since their programme participation ended. Drawing together different disciplines enabled the benefits of applying a multi-disciplinary approach to researching the topic, for example the study highlights the importance of the social angle for participants which is less written about in the literature at present.

CHAPTER 2 LITERATURE REVIEW

As this thesis explores the impact on wellbeing of a woodland activity programme for adults and investigates to what extent such a programme can affect woodland use, this chapter starts with a discussion of the term wellbeing and influences on it. Literature on greenspace, woodlands and wellbeing is subsequently reviewed, followed by a consideration of who is and is not accessing greenspace, and what personal, social and environmental factors influence this. Finally, nature-based interventions for health and wellbeing are discussed.

2.1 Defining wellbeing

Personal or subjective wellbeing as measured in this study, has been defined as a subjective assessment of how people feel about their own lives. Subjective wellbeing has been associated with longer survival, and a bi-directional relationship has been shown to exist with physical health (Steptoe *et al*., 2015). Rapidly growing interest in wellbeing has resulted in slightly different meanings of the term according to who is using it or where it is being applied. Indeed, the debate about what constitutes a good and meaningful life is one that has been live for centuries. How the term is understood has far-reaching implications not just on how individuals seek to live their lives, but also on the development and implementation of both policy and the myriad of interventions designed to improve wellbeing. Therefore, in order to improve it or measure it, it is essential to understand the wider context.

The frequently cited World Health Organisation (WHO) definition describes health as *"…a state of physical, mental and social wellbeing and not merely the absence of disease or infirmity"* from which people can realise their own potential, cope with day to day stress, work productively and contribute to their communities (WHO, 2020:7). This approach reflects a shift from historical perceptions of health as merely being free from illness towards a more holistic approach where human beings thrive or flourish. Traditionally, in a medicalised model of health, where the focus has been on disease detection and treatment, there was little or no emphasis on personal or subjective wellbeing at all. The quote below from surgeon Atul Gawande (2014:259) reflects the desire for a shift to a remit that is broader than that of keeping people alive and physically healthy, "*We've been wrong about what our job is in medicine. We think our job is to ensure health and survival. But really it is larger than that. It is to enable wellbeing. And wellbeing is about the reasons we want to be alive*."

For some, personal wellbeing is a purely psychological construct that is self-reported, where the terms personal, mental or subjective wellbeing would be used. A view based in the hedonic tradition uses the term subjective wellbeing (SWB) which relates to people's feelings of pleasure and displeasure, satisfaction and dissatisfaction and can be colloquially referred to as happiness (Diener, 2008, 2002, 2000). The quote "*people*

experience abundant SWB when they feel many pleasant and few unpleasant emotions, when they are engaged in interesting activities, when they experience many pleasures and few pains, and when they are satisfied with their lives" encapsulates this view (Diener, 2000:34). Essentially, this definition purports to a person's own cognitive and affective judgement of how their life is going or the extent to which they like their life.

A broader approach, a eudemonic one, describes wellbeing as a construct concerning not just optimal psychological experience, but also optimal functioning. Psychologist Ryff's work in the eudemonic tradition, highlighted human development and positive psychological functioning as core to psychological wellbeing. She identified a sense of purpose, realisation of potential, self-acceptance, positive relationships, personal growth, autonomy and environmental mastery as core dimensions (Ryff, 1989, Ryff and Singer, 2008). The two key approaches were summarised into two camps by psychologists Ryan and Deci (2001) (box 2.1).

Hedonic approach	**Eudemonic approach**
• Focus on happiness • Defines wellbeing as attainment of pleasure and avoidance of pain	• Focus on meaning and self-realisation • Defines wellbeing as the degree to which a person is fully functioning

Box 2.1: Hedonic and Eudemonic approaches to wellbeing (adapted from Ryan and Deci, 2001)

These authors present the literature on each as sometimes complimentary and sometimes divergent and point out that as far back as Aristotle, the hedonic perspective of seeking one's desires (or outcomes deemed to be of personal value) has been criticised as a questionable route to wellbeing. Indeed, one person's attempts to improve their personal wellbeing may be to the detriment or compromise of *"the collective wellness of humanity and the wellness of the planet"* (Deci and Ryan, 2001:161), and in fact, a hedonic approach could be described as being somewhat self-indulgent.

The eudemonic approach to improving wellbeing is a much more value led approach, encouraging people to live in alignment with what they believe to be their authentic selves. It could be described as an *'ethical theory'*, which shifts emphasis from the attainment of personal pleasure and avoidance of pain to a broader view, where happiness is *"…a pleasant result, but is no longer the core"* (McDowell, 2010:70). This highlights where the two theories merge, as a life rich in meaning could well give rise to hedonistic feelings. McDowell (2010) suggests there has been an emergence of a broadening approach incorporating the two perspectives over time. Of course, the values a person seeks to align themselves with are highly subjective and evaluative.

This uniting of the eudemonic and hedonic perspectives has been has been somewhat solidified in the last decade by the UK Office of National Statistics' (ONS) annual assessment of personal wellbeing, asking citizens to self-report on overall life satisfaction, sense of meaning and purpose, and positive and negative emotions over a short period of time (box 2.2). Although other countries, most notably Bhutan who use the Gross

National Happiness index have been measuring wellbeing for many years, nine years of UK data allows some inferences to be made on how external factors (e.g. job, age) influence wellbeing, and of course, where efforts to make improvements might best be targeted. The question of measurement will be further considered at the end of this section on wellbeing.

Overall, how satisfied are you with your life nowadays? (eudemonic)
Overall, to what extent do you feel the things you do in your life are worthwhile? (eudemonic)
Overall, how happy did you feel yesterday? (hedonic)
Overall, how anxious did you feel yesterday? (hedonic)

Box 2.2: Questions used to measure personal wellbeing (ONS, 2017)

The New Economics Foundation (NEF) have a broader definition still, which describes wellbeing in layperson's terms as having two key components, feeling good and functioning well. This includes both fixed and shifting external conditions and personal resources (Marks *et al*., 2008) as the model below depicts (fig. 2.1). In recognition of the dynamic nature of wellbeing and how it can be influenced, their work, as part of a UK government Foresight Project on improving mental capital and mental wellbeing culminated in the development of the 'Five Ways of Wellbeing' (connect, be active, take notice, keep learning and give). These are evidence based and widely used as a framework for wellbeing initiatives, e.g. by MIND and local government (Cooper *et al*., 2008).

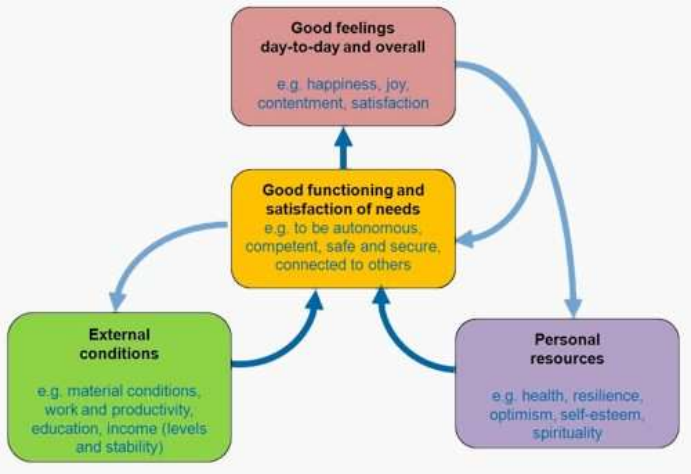


Fig.2.1: The New Economics Foundation's (NEF) Dynamic Model of Wellbeing (NEF, 2012)

Dodge *et al*., (2012), who wrote a paper on the challenges of defining wellbeing, pose a definition whereby it represents a 'setpoint' between fluctuating states of life events or challenges and resources. Like the NEF model, whereby resources can mitigate challenges, the see-saw in the diagram below (fig 2.2) represents the potential for equilibrium.

Fig 2.2: Definition of wellbeing (Dodge *et al*., 2012:230)

As the above discussion shows, the term wellbeing is a multifaceted concept, conceptualisations differ and the terms personal, psychological, mental or subjective wellbeing are frequently used interchangeably. The wide range of definitions has an even wider range of measures to pair with it, and indeed the heterogeneity of methods and outcome measures used is a challenge that is often noted (Linton *et al*., 2016; Kamoika *et al*., 2012). A review on measures for assessing wellbeing in adults found 99 self-report measures (Linton *et al*., 2016) making it difficult to compare findings across studies. A commonly used measure, with over 100 registrations to use it every month, is that of the Warwick and Edinburgh Mental Wellbeing Scale (Warwick Medical School, 2020).

For this thesis, the term personal wellbeing (PWB) will be used with both a hedonic view on wellbeing accepted, (originating in in Diener's emotional and cognitive construct, 2008, 2002, 2000) and a eudemonic view (Ryan and Deci, 2001). Crucially, it is self-reported, that is, the individual decides and prioritises what matters to them. This perspective is neatly summarised by Tessier *et al.,* (box 2.3).

"Subjective wellbeing refers to various measures of a person's affective (relating to mood, feeling, attitude) feelings and cognitive judgements about her life as a whole. It corresponds to assessments of an individual's condition according to her/his own personal view of what makes a life good"

Box 2.3: Definition of Subjective or Personal wellbeing (Tessier *et al.,* 2017:1)

The following sections explore the intersectionality between PWB and both physical and mental health and how they influence each other.

Personal wellbeing and physical health

One challenge to understanding wellbeing is that the term is frequently used interchangeably with health, and often, for example in the United Nations (UN) sustainability goals, taken to mean physical health. The goal 'to ensure healthy lives and promote wellbeing for all at all ages' (United Nations, 2015:16) uses the term 'wellbeing' to describe freedom from illness, making no reference to how people think and feel about their lives, or even the state of their mental health (box 2.4).

Goal 3. Ensure healthy lives and promote wellbeing for all at all ages

Ensuring healthy lives and promoting the wellbeing for all at all ages is essential to sustainable development. Significant strides have been made in increasing life expectancy and reducing some of the common killers associated with child and maternal mortality. Major progress has been made on increasing access to clean water and sanitation, reducing malaria, tuberculosis, polio and the spread of HIV/AIDS. However, many more efforts are needed to fully eradicate a wide range of diseases and address many different persistent and emerging health issues.

Box 2.4: Sustainable Development Goal for Health and Wellbeing (United Nations, 2015: 16-17)

This muddling with physical health occurs at the expense of personal/subjective wellbeing, meaning that what Gawande refers to as the reasons we want to be alive can get ignored when it comes to prioritisation or resource allocation, both at a personal or at a strategic level, such as in the UN goals. A valuable question is to inquire as to what extent physical health and personal wellbeing are actually aligned. Certainly, regression analysis of Annual Population Survey data for Great Britain on personal wellbeing revealed that of all the emergent influential factors, self-assessed ratings of health (good) had the strongest impact, followed by employment (being employed) and thirdly, relationship status (being in a relationship) (Merad *et al*., 2013). However, this of course could work both ways, with good personal wellbeing also influencing health outcomes. In fact, increased levels of wellbeing have been linked to increased survival in an analysis of the English Longitudinal Study of Ageing (Steptoe *et al*., 2015).

It is worth noting here that whilst different definitions of 'health' also exist, it is now accepted that health encompasses more than just the physical/biomedical. Personal wellbeing is also considered as an integral part of the more generic Quality of Life (QoL) measure. Although PWB and QoL are often used interchangeably by researchers, policy makers and practitioners (Skevington and Bohnke, 2018) PWB is just one indicator of this measure. QoL is a more general concept that can address how satisfied a person is with life quality, taking into account social, economic, emotional, spiritual and physical factors. McDowell (2010) suggests that wellbeing can be seen broadly through a health-related quality of life lens and assessed under physical, emotional or spiritual domains. Health Related QoL (HRQoL) in particular relates to a person's life satisfaction given certain health conditions (McDowell ,2010). A key point of commonality in relation to physical health is that someone could be ill and still self-rate either their PWB or QoL as good as shown by the Tessier study below (Tessier *et al*.,2017). Likewise, someone could rate their personal wellbeing as poor but rate their QoL better (e.g. they have a good job, their faith is strong) as QoL compares a person's actual perceived state with what that person thinks is 'normal' and this extends to judgements of the more specific Health-related QoL.

Tessier *et al*., (2017) challenge the weight given to physical health in health-related quality of life assessments and suggest that it has little or no impact on subjective wellbeing. Here, people's ability to adapt to their chronic or recurring conditions (e.g. pain or disability) is given prominence whereby they postulate that a

phenomena they describe as 'hedonic adaption' happens over time, reflected in a 'response shift' to individuals' subjective evaluations of how their lives are going. The study examined the impact of health-related quality of life on subjective wellbeing scores of 215 women newly diagnosed with breast cancer over a two year period. They found that despite unchanging HRQoL scores, the subjective wellbeing scores of some women increased. The findings were significant for the social and mental health dimensions of the HRQoL questionnaire at two years, but not for physical health, suggesting hedonic adaption to the condition. Their findings add to the body of evidence which suggests that the impact of poor physical health on individuals' self-reported/ subjective wellbeing over time can change as they shift where the weight is placed on the various dimensions of their lives and their changing priorities. Hence, from a personal wellbeing perspective, as McDowell also points out, a person can be physically well and have poor wellbeing or vice-versa. For example, *"…a woman with a disability can report feelings of emotional wellbeing; within the constraints of her incapacity, she may feel perfectly well"* (McDowell, 2010:70). In summary, whilst external measurements, such as biomarkers are one vital aspect, a person's *perception* of their health will affect its consequential influence on PWB.

Personal wellbeing and mental health

Having established that the terms health and wellbeing are sometimes used synonymously, how mental health relates to personal wellbeing is equally relevant, raising the question of whether a person can be depressed or anxious for example, yet still report good wellbeing. Whilst closely aligned, as already described, PWB goes beyond an absence of mental illness or mental disorders, to an internal and subjective evaluation of how life is going (Keyes, 2012). Poor mental wellbeing over time can result in a mental health problem or mental illness and if you have a mental health problem, then a person is more likely to have periods of low mental wellbeing (Mind, 2013[b]). Indeed, mental health has far more impact on a person's general welfare than it is given credit for, much more so than physical health according to Fujiwara and Dolan (2014). The Tessier study of breast cancer patients (2017) mentioned above supports these claims, reporting a strong association between mental health and personal wellbeing. Demonstrating the close alignment of measures, a Danish general population study of 9,542 respondents psychometrically compared the WHO-Five measure of wellbeing with the mental health subscale of the self-reported health status SF-36 questionnaire. It was found that, whilst the WHO-Five had a lower ceiling effect, they were uni-dimensional (Bech *et al*., 2003).

Suffice to say, whilst physical and mental health are not the same as PWB, they are bi-directional and closely related. Alongside this, many other factors outside our control impact on personal wellbeing, like demographic variables, and life circumstances (e.g. adverse childhood experiences, trauma). More malleable psychosocial factors that also influence PWB include self-esteem, self-efficacy and social interaction, and these will now be considered.

Self-esteem

Self-esteem can be defined as perceived self-worth and refers to positive versus negative feelings about the self (Robins *et al*., 2001). Neff (2011:1) describes it as *"an evaluation of our worthiness as individuals, a judgment that we are good, valuable people*". Like PWB, it is a subjective self-evaluation, and Rosenberg (1965), who developed the widely used self-esteem scale to measure this self-attitude, described how it can affect our emotions, such as pride, anxiety or mortification. In an evidence review of self-esteem it was predominantly found to be positively associated with adaptive outcomes and a buffer against problems with psychological functioning such as the potential for anxiety (Pyszczynski *et al.*, 2004). Whilst very high self-esteem could be equated to narcissism and eventual social alienation, in a review of 15,059 empirical studies, Baumeister *et al.,* (2003) found it to be strongly related to happiness, and that low self-esteem by comparison could result in depression.

Thus, it appears that self-esteem can greatly influence how humans think and feel about their lives and as such is likely to be an integral part of positive self-reported wellbeing. This relationship has been confirmed, for example in a study of 123 students that compared the measures, Paradise and Kernis (2002) found high self-esteem to be associated with greater well-being. This self-evaluation may in turn affect behaviour in terms of how inclined a person may or may not be to manage their own wellbeing, with positive self-esteem acting as a protective factor. This is both a personal and a societal issue, as Mann *et al*., (2004) report, poor self-esteem can lead to a range of social problems and mental disorders whilst better self-esteem can result in improved health and social behaviour.

Self-efficacy

Both hedonic and eudemonic approaches to wellbeing neglect to mention human ability to cope with the natural fluxes of life, with neither perspective comprehensively taking into account the ability to manage and adapt to life events that could be perceived as unpleasant or difficult. A more rounded view of psychological wellbeing is put forward by Huppert (2008), as lives 'going well' with reserves for effective functioning in times of difficulty. Self-efficacy is a central mechanism to this, defined as a person's belief in their capabilities and the extent to which they can control events in their lives, affecting motivation, affect and action (Bandura, 1989). In a review of studies on the theme (Strecher *et al*., 1986), a strong relationship was found between self-efficacy and health behaviour change (cigarette smoking, weight control, contraception, alcohol abuse and exercise behaviours and maintenance). Whilst recognising the centrality of self-efficacy ('can do') to health behaviour theories, a later review highlights the importance of motivation ('if one wanted to') in addition to perceived ability (Williams and Rhodes, 2016). According to Bandura, the belief that change can be achieved is crucial to whether thought patterns are self-aiding or otherwise, and therefore, a central influence on whether intentions become actual behaviour changes (Bandura, 1989). He asserts that positive

well-being indeed requires an optimistic sense of personal efficacy (Bandura, 1986), as such, it is an important factor to consider when evaluating personal wellbeing. In considering the difference between self-esteem and self-efficacy, Stajkovic and Luthans (2002) describe the former as being based on an introspective and reflective evaluation of the self, rather than the latter, the perceived ability to carry out tasks, both crucial to incentivising action.

Theories of behaviour and behaviour change have shown the critical role played by these cognitive constructs and both belief states can positively or negatively affect the decisions people make and the actions they take (for example, how likely a person is to take exercise, eat well, and socialise). Self-efficacy plays a pivotal role in Social Cognitive Theory, which essentially emerged from Social Learning Theory, related to learning by observing others who are modelling behaviours (Stajkovic and Luthens, 2002) and to developing beliefs and expectancies (cognitions) on the basis of past experiences. They see self-efficacy as the main psychological mechanism for behaviour motivation, based on the importance of belief about desired effects. One of the assumptions of the theory is that there is increasing self-regulation as new behaviours become established, and that self-efficacy can play a crucial role in how we manage our wellbeing related behaviour. It is also highly related to theoretical models such as the Theory of Planned Behaviour (TPB) (Azjen, 1991) to which Perceived Behavioural Control is key. TPB recognises the integral role of social influence, that is, how our thoughts, feelings and behaviour change in the presence of others and are influenced by perceived social norms, that is, what others who are important to us do themselves (Stroebe, 2011). It is social interaction as a factor that influences PWB, of the individual in the world, that will now be considered.

Social interaction and personal wellbeing

Interpretations of good wellbeing frequently place emphasis on social interaction, recognising that inter-connections and social exchanges between individuals are a vital part of positive health and wellbeing. In an early account Rosenberg (1965) described the important influence of the responses of others towards us in governing our attitudes towards ourselves, and the extent to which our own self-appraisal is frequently derived from the reflected appraisals and reactions of others. The story of the Italian immigrant community of Roseto in America in 1963 observed the effect of strong social ties between family and community on health, where the rate of mortality due to heart attack was around half that of surrounding communities, despite their leading unhealthy lifestyles. This was further demonstrated when the community was re-visited in 1992, having become more integrated into American society, leading more individualistic lives, their rates for deaths by heart attacks equated those of surrounding towns (Egolf *et al*., 1992). This study and subsequent studies show us that interactions based on a social network which involves communication and supportive relationships is associated with good health and positive wellbeing (Jenkins *et al*., 2008) and good social support has been shown to facilitate longer, healthier lives (Morrison and Bennett, 2016). As aforementioned,

measuring wellbeing in the UK census revealed that being in a relationship is the third biggest influential factor on personal wellbeing in the UK (Merad *et al*., 2013), and indeed, 'connect' is one of the five evidence based ways to wellbeing put forward by the New Economics Foundation (Marks *et al*., 2008).

Diener and Seligman (2002) asked 222 undergraduate students to self-rate their relationships with close friends, family and romantic relationships as very unhappy, middle or happy and to quantify the amount of time they spent with them. They found that the very happy people were highly social with stronger social relationships than less happy groups. In this study, a strong social relationship is one that is described as rich and satisfying, whereby participants spend little time alone compared to people with average levels of happiness, which the researchers infer is important for human mood. Both the actual and perceived support a person receives from those around them play an important role in keeping us well. Of course, a large social network does not mean that a person automatically has support in times of difficulty or that their social interactions make them feel valued or build their sense of self-worth or competence. In fact, from a PWB perspective, social wellbeing is not judged by the number of friends a person has, but the satisfactoriness of their social network to them (McDowell, 2010), which can be defined as social support. That is, the *quality* of social support relevant to the needs of an individual is more important than network size. For example, as evidenced in a study of 496 adults, those with closer, more positive friendships had better emotional outcomes than those with larger social networks, and the quality of relationships not quantity of friends related to reporting better wellbeing (Bruine de Bruin *et al*., 2019).

The opposite end of this spectrum is social isolation, which the WHO list as being associated with poor mental health (WHO, 2016[a]). The Mental Health Network cite that mental health disorders are more common in people living alone (Mcmanus *et al*., 2016), having previously established a causal link between loneliness and anxiety and depression (Griffin, 2010). Recognising that the terms social isolation and loneliness are often used interchangeably in studies (Gray, 2019), loneliness is defined as a gap between quantity *or* quality of actual and desired social relationships (Victor *et al.,* 2018). In a review of 144 qualitative studies on the effectiveness of interventions to address loneliness, Victor *et al*., (2018) highlighted the need to think about approaches to improve trust as well as simply connection. Social trust, that is, the extent to which individuals trust one another, has been cited as a lever with the potential to reduce inequalities in wellbeing, mitigating against challenges such as unemployment and health problems (Helliwell *et al*., 2016). The study comprised of assessing links between trust and wellbeing by analysing data from the Gallup World Poll, the World Values Survey and the European Social Survey.

2.2 A combined approach to measuring personal wellbeing - from health psychology and social geography

As outlined in the introduction, this study took an interdisciplinary approach to measuring personal wellbeing, bringing together insights from health psychology and social geography, and employed both quantitative and qualitative methods of data collection and analysis. In this section the benefits of combining approaches to measuring personal wellbeing are outlined. For many within the field of social and cultural geography qualitative methods are favoured, perhaps arising from historical scepticism towards quantitative methods, stemming from deeper critiques of positivist spatial-science approaches dating back to the 1970s (Dixon and Jones 1998; Kitchen 2006). A particular concern with quantitative assessment is how the individual interprets the statements on fixed points scales or measures that they tick or rank scores for, which are not seen to capture or fully associate with what people '*really*' experience and how they construct meaning. This raises the question of the validity of measuring personal wellbeing in this way. By comparison to more objective measures like cortisol, GP records or partner corroboration, subjective self-reported measures and their evaluative and retrospective nature means that ratings of for example, 'how happy did you feel yesterday' will be affected by how happy someone feels today. This is why commonly used measures such as the Warwick and Edinburgh Mental Wellbeing Scale ask participants to reflect back over the past two weeks. Despite the limitations of time frame and reflecting back, scores reflect a person's own evaluation of and perspective on *their* PWB, which affects how they cope, and therefore they have validity. It also points to why mixed methods are crucial, allowing for study participants to raise what is pertinent to them that may lie outside the scope of a particular scale.

Within the discipline of health psychology, whilst large bodies of evidence around human behaviour and behaviour change are commonly associated with large quantitative surveys, it has been increasingly recognised that methods that capture individual experience and enable individual expression of meaning offer much to the development of psychosocial interventions, which are themselves often offered at an individual level. Hence, there is an emerging and strengthening crossover between such disciplines, and indeed, in the 21st Century, most approaches to researching health and wellbeing recognise its multi-faceted nature.

Social geography's emphasis on qualitative methods is particularly useful in understanding the role that nature plays and how connectedness to nature works as part of individuals' sense of self and identity (Atkinson, Fuller and Painter, 2012). Particular attention has been given to the 'relational assemblages' of human-nature interactions and the way that wellbeing is intrinsically connected to the place in which it is generated (Bell *et al*., 2014). Whilst psychometric 'nature connection' scales can be helpful, qualitative approaches can help to illuminate diverse perspectives on how elements of the natural landscape may or may

not benefit personal wellbeing. This aspect will be further explored in the literature review of natural environment, health and wellbeing.

A wider critique from a geographical perspective has been the focus on the individual within psychology. This relates to a wariness that responsibility for health and wellbeing has shifted too far in the direction of personal choice, detracting attention from structural challenges and social constraints, like ensuring that everyone has the resources and ability to meet even their basic welfare needs (Foo, 2015). However, whilst the focus in health psychology is about understanding and improving the life of the individual and their resources to cope with what is in their control on a more 'micro' level, it is widely recognised that health behaviour is influenced by context and many of the aforementioned 'resources' will be socially determined (Morrison and Bennett, 2016).

Consequently, instead of seeing the two disciplines at odds, geographers such as Atkinson argue for a more productive 'both/and' approach, which uses the integrative nature of geography to catalyse dialogues with other disciplines. This, she suggests will play an important role in *"advancing socially inclusive and progressive understandings of wellbeing"* (Schwanen and Atkinson, 2015: 101). Hence, as stated earlier, whilst this thesis draws on traditionally psychological approaches to measuring personal and self-reported wellbeing, the influence and importance of interconnections with others and the environment are also explored by the mixed methods approach. Thus, an integrated approach to how wellbeing is constructed is taken that encompasses the macro environment in which the individual and how they are in the world is situated. To this end, the focus groups give room to explore the relational experiences that participants might have with others, taking into account spaces of wellbeing, that is the woodland environment in which the programmes take place.

2.3 Natural environment, health and wellbeing

Having discussed a range of psychosocial factors that may influence PWB and inter-relate, studies of the natural environment and how it can benefit personal wellbeing will be reviewed here. This precedes the final section which will examine in more detail the characteristics of those who get to realise these benefits and the factors that might encourage or get in the way of this, looking at the role facilitated access can play in extending reach.

Some research purports to nature or the natural environment, others simply refer to 'outdoors'. A larger body of work focusses on greenspace, particularly urban, which encompasses parks and gardens. For this study**,** the term natural environment is used to encompass all of these i.e. nature, greenspace, outdoors and parks and gardens. The focus of this thesis is on woodlands, but of course, trees, woods and forests are a habitat

forming part of the wider natural environment and so a broader context is essential to an understanding of how woodlands impact wellbeing. This narrative review, completed in 2017, is not a complete review of the field as there are several comprehensive papers on this (for example Hartig *et al*., 2014, Coon *et al*., 2011, Bowler *et al*., 2010), but an introduction which scopes the literature and captures key trends in the research. Principal concepts are reported on and gaps which informed the direction of this thesis are highlighted. The following databases were searched – Proquest, Web of Science, Pubmed, PsychInfo and Google Scholar. Key words in relation to the research question were identified as Woodland/wood*, Forest, Well-being and "well being" which were used as search terms. Titles were read and those which were unrelated to the research question were excluded (e.g. those not including human subjects or those relating to animals or children). Abstracts of remaining articles were screened and full articles of relevant literature were read and their reference lists scoured for further studies pertinent to the topic of woodlands or forests and wellbeing. For many of the studies reviewed, the working definition of wellbeing is inextricably linked with health and so whilst wellbeing is the focus, there is a paucity of specific research on this, therefore health benefits are also referred to.

Firstly, population scale studies on the topic are discussed, followed by a consideration of what some of the reasons or causal mechanisms for the benefits might be. Next, the question of what an appropriate 'dose' of nature might be is posed, and what it is that woodlands in particular might offer.

Humans depend on the natural environment for survival. As part of a framework to understand this, the global Millennium Ecosystem Assessment (Millennium Ecosystem Assessment, 2005) made explicit links between the health of natural ecosystems and human health, which includes wellbeing, referred to as 'feeling well' (fig.2.3). There is a growing interest in the field of natural environment, health and wellbeing. For example, a Science Direct search on "nature AND wellbeing" or "e.g. greenspace AND health" for the past five years (2012 – 2017) retrieved 897,480 and 548 citations respectively (3.11.17). However, as aforementioned, too often 'environment' and 'health' are in different camps and neither policy nor practice are joined up. As Forest Research observed, when it comes to wellbeing, social policy makers do not often consider the part the environment can play, and environmental policy makers do not often consider what ecosystem services can provide. Furthermore, those that are researching both fields tend to have too narrow a focus (O'Brien, 2009). However, the tide is turning and in the UK government's 25 year Environment plan, policies to connect people with the environment to improve health and wellbeing are included (DEFRA, 2018). Here, the definition is of *'mental health and feelings of wellbeing'* (DEFRA, 2018:71) whereby both mental (stress, fatigue, anxiety and depression) and physical (boosting of immunity systems, encouragement of physical activity, reduction of chronic diseases) health are considered. Social wellbeing is also incorporated, as the impact that time spent in the nature can have on reducing loneliness and increasing community cohesion is recognised.

Fig. 2.3 Millennium Ecosystem Assessment, 2005

Population scale studies

Consensus has been building on the health benefits, both physical and mental, of simply having geographical or physical proximity to nature, and population scale studies have been an important part of the evidence for this. For example, in the US, the loss of 100 million trees due to the ash-borer disease was used by researchers Donovan *et al*., (2013) to establish a relationship between their loss and increased human mortality. Mortality data over a 17 year period for 15 US states showed an association between the borer and an additional 5113 deaths due to lower respiratory system illnesses and 6113 deaths related to cardiovascular illness. When UK census data from 2011 on self-reported health was mapped against environmental data such as land use and species richness, associations with health and environmental indicators such as density of greenspace and bird species richness were found (Wheeler *et al*., 2015). The study covered 96.4% of the English population, comparing small areas each containing approximately 1500 people.

There were stronger associations between different environmental indicators and health for lower income groups, suggesting that these groups benefitted more from greenspace in their local area, and that access to greenspace may be disproportionately beneficial for more deprived communities (Wheeler *et al*., 2015). A Dutch study of over 10,000 people mapped existing self-reported health with land–use and socio economic data concluded that people with more greenspace in their living environment reported better health e.g. fewer symptoms (on a scale that measured the number of symptoms experienced in the last 14 days) and better perceived general health. Lower educated subgroups appeared to be more sensitive to the amount of green in their living environments whereby a stronger relationship between this and all health measures was reported (De Vries *et al*., 2003).

Evidence also points to the potential for access to the natural environment to *moderate* socio-economic health inequalities. For example, in a cross-sectional study on mortality data for the population of England

below retirement age, the amount of greenspace in their immediate living area affected the size of the gap in health inequality. The influence of inequality (measured by income levels) on health was found to reduce with higher levels of exposure to greenspace (Mitchell and Popham, 2008). These are important findings, given stubborn differences in both reduced life expectancy and reduced healthy life expectancy for lower income groups (Public Health Wales, 2016). Health inequality is a persistent challenge in the UK, with major differences between least and most deprived areas (Marmot and Bell, 2012). In Wales, life expectancy is reduced by around 9 years for the worst areas (Public Health Wales, 2016). As an increasing body of spatial data shows, greenspace can play a vital role here.

Whilst these studies are not aimed at identifying causation, possible mechanisms suggested include an increased sensitivity for lower socio-economic groups due to a higher dependency on their immediate environment (De Vries *et al*., 2003), or that reduced air pollution exposure, temperature moderation, stress reduction or opportunities for physical activity play a part (Wheeler *et al*., 2015). Large scale studies such as these and others (Gascon *et al*., 2015), are clearly useful in that they demonstrate clear interrelationships that validate the value of nature to public health and wellbeing. However, they can only infer as to what the reasons might be.

Causal mechanisms

The causal mechanisms of how exposure to the natural environment might benefit our health and wellbeing have been the focus of thousands of studies, particularly in relation to urban greenspace. The next section describes the key theories and evidence regarding possible physical and psychological pathways and influences.

Physical pathways

A key pathway proposed is that the natural environment provides a space for physical activity. Physical activity impacts on physical health, for example, the production of natural endorphins or release of serotonin. It can play a vital role in preventing most common non-communicable diseases, such as cardiovascular diseases, cancers, chronic respiratory diseases and diabetes (WHO, 2013; Lee *et al*., 2012). In spite of this physical *in*activity is the 4th leading risk factor for global mortality (WHO, 2017[b]). Health promotion consultant Dr Nick Cavill stated that "*If exercise were a pill, it would be one of the most cost-effective drugs ever invented*" (NHS Choices, 2015). This relates in part to the fact that for example in Wales, physical health problems arising from sedentary lifestyles and rising obesity are estimated to cost £650 million each year (Quaeck, 2014). In fact, approximately 1 in 3 men and 1 in 2 women are not sufficiently active for good health (Public Health England, 2019).This is a major concern in the UK, where it is a much greater causal factor for mortality than in similar countries like the USA, the Netherlands or France (O'Brien, 2014). In 2013, the nation's physical inactivity was referred to as an 'epidemic' (ACPA, 2014), and Lord Sebastian Coe, famously referred to today's children as

"*the least active generation in history"*, during his time as chairman of the London Olympic games (UKActive, 2014:7).

Using data from the Monitor of Engagement with the Natural Environment (MENE, collected annually from a survey of over 45,000 adults in England since 2009) it has been estimated that natural environments supported recreational physical activity for approximately 8.23 million people in a snapshot week. Outdoor exercise provides approximately an annual £2.2bn of benefits to the health of adults in England. (White *et al*., 2016). As a venue, it has considerable advantages over indoor spaces, potentially being free of charge and often negating the need for specialist equipment. The added value to carrying out physical activity in natural environments was reported from a Bristol Quality of Life survey using data from 6,821 adult residents where findings demonstrated that those with increased proximity to greenspace were more likely to exercise more frequently and less likely to be obese (Jones *et al*., 2009). Some studies have suggested that natural features encourage use (Hartig *et al*., 2014) and that there is increased adherence to exercise programmes outdoors (Thompson-Coon *et al*., 2011; Hillsdon & Thorogood, 1995).

This is not necessarily about being an elite athlete, or even about exercise, but about moving away from the difficulties caused by our increasingly sedentary lifestyles. There is inequality evident here too, with people in the areas of the highest deprivation being nearly 10 per cent more physically inactive than those in areas of the lowest deprivation, resulting in almost a third of adults being inactive on average in these areas. These findings have a strong relationship to health in terms of premature mortality levels (UKActive, 2014). The pattern of inequity holds true for exercise outdoors too, with data from a cross-sectional analysis of six waves of the nationally representative MENE study exposing a socio-economic (SE) gradient whereby those from higher SE groups are more likely to be active in the environment than those from lower ones (White *et al*., 2016). Thus, a pattern is evident, whereby those in the greatest need are realising the least benefits.

Several systematic reviews have sought to isolate the 'outdoors' component of the exercise to ascertain the degree to which nature plays a part. In a systematic review of 25 studies, Bowler *et al*., (2010) found a positive effect for mental wellbeing, in particular mood, in comparison to exercise indoors. The finding came with the caveat that most studies were of short term interventions with little or no longitudinal follow up and was based on a small number of studies. A subsequent narrative synthesis of 11 comparative studies involving 833 adults (Thompson-Coon *et al*., 2011) also found promising results for mental wellbeing arising from physical activity in natural environments with participants reporting greater feelings of revitalisation, positive engagement and energy. A reported challenge was that it was difficult to directly compare indoor to outdoor exercise due to the heterogeneous nature of the studies and measures used. Both reviews suggested a need for long term trials with populations who stand to gain the most. With regard to woodlands in particular, an evidence review of forty two papers, found mixed evidence that trees and woods increase or improve physical

exercise. Whilst this was not the focus of the study, reflections were made about the quality of the spaces, that is if they were in poor quality, people would not feel incentivised to use them for physical activity (Stewart and O'Brien, 2010).

Certainly, physical health benefits are part of the process. Based on the number of studies and concerns about lifestyle related conditions, a DEFRA evidence statement declared that an extensive and robust body of work exists demonstrating links between natural environments and human health, highlighting the impact on reduced mortality with proximity to greenspace. Heart rate, blood pressure, vitamin D levels and possible reduction of the prevalence of type 2 diabetes were also cited as having exposure related favourable outcomes (DEFRA, 2017). Immuno-regulation has been found to be optimised by people's exposure to organisms (Rook, 2013). Indeed, physiological mechanisms have been a focus of much Japanese research, where Shinrin-Yoku (or forest bathing) is well established as a recreational and therapeutic practice. This will be focussed on further as woodland related benefits are explored in the section below.

Psychological pathways

The concept that even the memory of nature can provide recovery from stress goes right back to the romantic poets, for example in, Wordsworth's 'Daffodils' he reports how when lying on his couch "*in vacant or in pensive mood"* how images from a walk "*flash upon that inward eye"* and fill his heart with pleasure (Wordsworth, 2000:303). In the poem 'Tintern Abbey', even the memories of time spent in woods offer his mind "*tranquil restoration"*, sustaining him in times of "*fretful stir"*. Thus, whilst art and humanities have been making these points for some time, science has only just started to measure them.

The interaction between time spent in the natural environment and better mental health is receiving increased attention and again, population level studies have demonstrated promising results regarding higher levels of greenspace and a range of mental health benefits. For example, in a British study of 1680 adults in a deprived urban population, dose-response relationships were found between access to and quality of greenspace and reduced psychological distress (Pope *et al*., 2015). An American study at a similar scale found that lower levels of depression, anxiety and stress symptoms were associated with higher levels of neighbourhood greenspace using state-wide health data for a total sample of 2,479 adult residents of Wisconsin (Beyer *et al*., 2014). In a larger study of over 10,000 people taking part in the British Household Panel Survey, it was shown that those living in urban areas with more greenspace had lower levels of mental distress and higher well-being (White *et al*., 2013). Overall therefore, this underpins DEFRA's view (2017) that this is an area for which there is particularly strong evidence.

It is helpful to establish what mechanisms may underlie such findings. In part, the beneficial effect of the natural environment on mental health may be due to increased physical activity levels as described earlier.

Exercise is widely reported to have a positive impact on good mental health (Biddle *et al*., 2013; Halliwell, 2005; Fox, 2007). It can support for example, emotion and mood, quality of life, self-esteem, sleep and cognitive functioning, perhaps due to physical self-worth, often accompanied by improvements in self-perception and self-esteem (Bingham, 2009). A large cross-sectional study of 1.2 million individuals in the US, found a reduction of 1.49 fewer days of poor mental health in the previous month for those who exercised compared to those who did not (Chekroud *et al*., 2018). In fact, according to the Royal College of Psychiatrists (RCPsych), physical activity can be as good as pharmacological solutions for mild depression (RCPsych, 2017), with further benefits arising from the reduced likelihood of drug side effects and issues linked to long term use (Taylor and Faulkner, 2008). Paluska and Schwenk (2012) warn against being too broad brush – in their review of evidence on physical activity and mental health, whilst acknowledging physical activity's important role, particularly for depression and anxiety, they also highlight the complexities, for example, regular physical activity has not been shown to prevent depression onset. This is of course in the light that those living with depression tend to be less physically active more generally. Whilst warning that excessive physical activity can produce symptoms not unlike depression, they stress the overarching benefits to mental health, for both clinical and non-clinical populations, but state that more research is needed to understand the processes underpinning benefits.

Beyond the exercise factor, a behavioural benefit with direct implications for health, there are well established theories on the psychological benefits of the natural environment. One is the stress recovery theory, which relates to how nature can aid recovery from short term stress and suggests that even viewing nature has mental health benefits. Moore (1982) and later West (1985) demonstrated that stress symptoms were reduced in prisoners with a view from their cell window. Stress was further explored by an experiment where stress recovery was faster and fuller for participants viewing natural rather than urban scenes after watching a short gory film (Ulrich *et al.*, 1991). A follow-up experiment on the stress recovery theory also discovered that students watching a forest simulation were found to have reduced stress when carrying out an attentionally demanding task compared to those watching an urban simulation. This was measured by cortisol and emotional changes (Hartig *et al*., 1996). This work was seminal in being able to isolate the nature component, but had considerable drawbacks in that it largely took place in highly controlled environments following pre and post highly managed and short interventions.

The natural environment is of course less ordered or controllable, with interventions inevitably having more heterogeneity. In a larger and more naturalistic study conducted in Sweden, self-reported stress-related illness amongst 953 randomly selected healthy individuals was related to lower stress levels found in those with increased frequency of greenspace use (Grahn and Stigsdotter, 2003). Reasons for why exposure to the natural environment reduces stress levels have included reduced exposure to threats and demands of their

typical life or work environments or by helping people to restore their adaptive resources (Hartig, 2014). Studies such as these have been important milestones in being able to identify stress recovery as a mechanism. Predominantly, they have been limited in that they focus on healthy populations, excluding those who might stand to gain the most. However, a small study of 25 adults in a very deprived area of Scotland used objective (salivary cortisol) as well as subjective measures of stress and found a link between increased greenspace and reduced stress (Ward Thompson *et al*., 2012).

A further psychological theory relates to attention restoration, a mechanism first identified by Kaplan and Kaplan in 1989. For example, in an experiment with 138 undergraduate students viewing street scenes with varying degrees of greenery, those with increased amounts of street trees were found to perform better in attentional tests (Lin *et al*., 2014). Opinion on this theory is mixed however, as when Hartig (1996) put Kaplan's Attention Restoration Theory to the test, he found that for 102 students viewing either urban streets or forest paths, whilst there was less decay in attentional focus with the nature scenes, results were not significant for attentional performance. Like the work on stress restoration theory, this work is helpful in seeking to isolate pathways, but only inferences can be made as to how this might work and for who in the more chaotic environs of actual nature. A study by Berman *et al*., (2008) sought to validate the theory by testing it outside the laboratory. Mental performance (in a backwards digit-span task) demonstrated significant improvements for the 38 student subjects when they walked in nature, but not in an urban setting, even when prior mood state and weather was taken into consideration. They attribute this result to the fact that less directed attention (e.g. to avoid traffic) is needed in natural environments which allows the cognitive function of attentional capacity to restore.

More recent work exploring the impact of exposure to nature on cognitive function demonstrated that a 90 minute walk in nature decreased self-reported ruminative thoughts (linked to depression) and reduced neural activity in the prefrontal cortex in comparison to a walk of equal length in an urban environment which showed no such effects (Bratman *et al*., 2015). Although this study was with a healthy population following a relatively short 'dose' of nature, the results were able to identify specific reasons for the wellbeing benefits of time spent in nature. As such, they provide important insights into causality, for example, cognitive gains like distraction from negative thoughts by shifting attentional focus. In summary, there are encouraging outcomes and some clear evidence on psychological pathways (which in turn may affect physiological pathways) for nature exposure and personal wellbeing. Systematic reviews have shown promising results for nature exposure and improved mental health (Gascon *et al*., 2015; Bowler *et al*., 2010), however both concluded that whilst mental health benefits are evident, evidence is limited and the quality of studies could be better. Studies tend to be about physical and mental *health*, rather than mental wellbeing. Whilst we know that they inter-relate, it would be useful to isolate personal wellbeing as a component to have a better

appreciation and insight into processes and how time spent in the natural environment can maximise benefits.

Biophilia approach

One explanatory framework sometimes given for why we benefit from being in the natural environment, particularly more popularly, is biophilia. This can be described as a fondness for or inclination towards (philia) living things (bio). It hinges on the concept that we have an innate or natural affiliation with nature, a desire to affiliate with other forms of life (Kellert and Wilson, 1993) as historically our lives were entwined with nature in a more immediate and direct way. This is based on evolutionary theories that take a long term look at human development, taking into account the passing of genetic characteristics from generation to generation in relation to survival and reproductive drivers (Seymour, 2016).

It has been used to explain 'nature deficit disorder', a term coined by writers such as Richard Louv (2010) to describe the increasing amount of time spent indoors and the psychological and physical costs of this. What is less well known is who this theory might apply to. For example, some people (like those who have not had much previous exposure) may feel stressed in the natural environment. Indeed, in her paper on rethinking nature deficit disorder, Dickinson (2012) argues that underlying 'nature deficit disorder' are culturally specific assumptions about our relationships with nature. That is, that children have been separated from the natural environment and need to return. This, she suggests is problematic as it negates cultural complexities around accessibility, such as how finance or resources for trips may be barriers for low income families. It also purports a sentimental 'when we were young' type discourse about children and the countryside that is culturally specific to the writers' idealised childhood experiences. As Munoz (2009) points out in her review of literature on children and the outdoors, perspectives on childhood and the countryside are often romanticised in popular culture, not reflecting the diverse range of relational and actual experiences. This critique resonates with romanticised notions of adults and the natural world and is further explored under the later discussion on what a 'dose' of nature might look like.

A sense of place

Valuable insights from the geographical 'sense of place' body of literature consider the role of affective components of place attachment, the cognitive component of identifying with a place and the way that 'place dependence' enables particular behaviours or activities to be carried out in certain spaces. The work of health geographers writing on therapeutic landscapes and the entwining of wellbeing and place is something which Atkinson and others have explored (Schwanen and Atkinson; 2016; Atkinson et *al.,* 2012). The coast, for instance, has often been considered as a therapeutic landscape, and spa towns such as Lourdes are possibly more about how people interpret and engage with the space than the healing properties of the waters (Bell *et al*., 2015). Taking ideas of place one step further are researchers such as Lea (2007) who position nature as

an 'active participant' or 'performative actor' in the healing process of a retreat. This is echoed by Bell *et al*., (2015) who suggests that our relationships with place are less one way, and more something that exist as '*relational assemblages'*. Feelings like this, such as one's sense of comfort and attachment are often not consciously recognised, dipping below cognitive processing. In relation to woodlands, these various layers of meaning have been described as "*the vehicle through which the value to society of trees woods and forests is realised"* (Tabbush, 2008:4). More generally in the UK public forestry sector, whilst there is an understanding of the role that woodlands can play in improving people's sense of belonging, feeling socially included and community cohesion (Stewart and O'Brien, 2010), the concept of 'place' is one that has not clear consensus (Stewart, 2010).

Social interaction, the natural environment and PWB

As outlined earlier in the literature review, social interaction plays a crucial role in supporting positive PWB. Here, the question of what role the natural environment can play in facilitating this is posed. At the very least, greenspace offers a place outside our individual homes for connection, and thus has potential to reduce isolation and loneliness. Indeed, neighbourhood social ties have been found to be supported by the presence of greenspace (as opposed to more *'barren, deserted no-man's lands'*) in the form of trees and grass in a Chicago housing project by providing a common space which promoted positive social interaction (Kuo *et al*., 1998). In this vein, a scoping review, aimed at getting a better understanding of how to improve social relations in communities, referred to greenspace as one of a range of shared spaces or '*bumping places'* where people can meet (Bagnall *et al.,* 2017). The value of woodlands and forests in particular as a space which allows social interaction and that can support social bonds to both form and strengthen was highlighted in a large qualitative study involving 123 members of the public from two different areas of England (O'Brien, 2004). However, despite the important role of woods for social benefits related to place-making mentioned above, concepts of community cohesion and social capital have not received much attention in forestry to date (Stewart and O'Brien, 2010).

In terms of physical activity, indoors or outdoors, and especially adherence to programmes, social support is recognised as a factor which supports positive behaviour changes (Bauman *et al*., 2012). In a review of qualitative papers on conservation-based activities, social contact was a frequently emerging and rich theme with homogenous results across the various participant groups with regard to improved social networks. This was particularly the case for those previously isolated by mental illness. Particularly beneficial aspects were reported as the relaxed atmosphere and undertaking of shared activities (Husk *et al*., 2016). The support and encouragement that company offers is seen to be important and can result in more frequent exercise (O'Brien, 2004). However, there is something of a recognised research gap for the role that social interaction plays in maintaining wellbeing and how the natural environment may or may not support this, including how

accessible people feel it is to them. This is picked up on by Dinnie *et al*., (2013) following their ethnographic study of two urban areas in Scotland, where they observed the social dimension of everyday encounters with greenspace to be paramount. In fact, they went so far as to say that "*experiences of greenspace – and thus any well-being benefits produced through engagement – are inescapably social and mediated through people's positioning in relation to particular social groups*." (2013:1). More usually, social support is mentioned as important in studies, but less often measured. Meyer and Arndt (2014) suggest that this gap is a large one and that we do not know to what extent the company matters as there are lack of comparative studies to tell us.

A framework of understanding

Undoubtedly, the aforementioned mechanisms interact and influence each other with reciprocal relationships between them. Benefits are neither purely physiological, nor psychological, and theories such as stress reduction and attention restoration bridge both. Hartig's diagram (fig. 2.4) seeks to draw together a framework of understanding of the multiple ways in which nature impacts on human health, highlighting those strands which have received the most attention in research. It also usefully reminds us of the multiple complex pathways through which these benefits are experienced. A helpful aspect is the inclusion of 'effect modifiers' at both the individual level, such as gender or age, and at environmental and societal level, such as accessibility. The model serves as a helpful overview of potential benefits and the fact that they can and do operate simultaneously, particularly given that much research is single strand, focussing on a specific aspect.

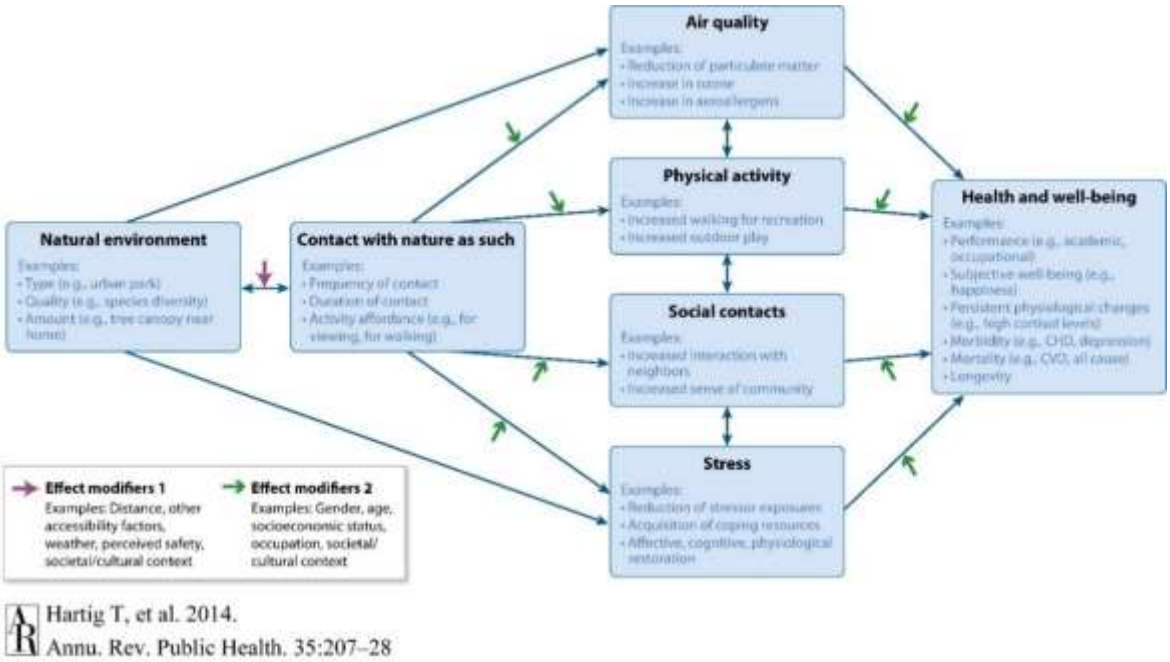


Fig. 2.4: Conceptual model outlining hypothesised pathways between the natural environment and health (Hartig *et al*., 2014)

Questions of dose - how much nature do you need?

More recently, in an attempt to strengthen links between health and wellbeing and the natural environment, the concept of what a 'dose' of nature might be has been a research focus. What constitutes an adequate dose could include factors such as the type of activity undertaken, the duration and frequency of exposure, or the type and quality of the natural environment. These literatures pertain to both independent access and exposure and the effects that might be expected from a course or an NBI. For some conservationists, the idea may seem somewhat peculiar, the value of nature being held as intrinsic. Others however, have embraced the approach, such as The Mersey Forest partnership who have begun providing 'product sheets' (see example in fig. 2.5) for their activities, detailing the expected benefits and for whom they are suitable, mimicking those for pharmaceutical interventions. The specifics of deliberate doses through NBIs are the focus of this study and will be examined more fully in the NBI section.

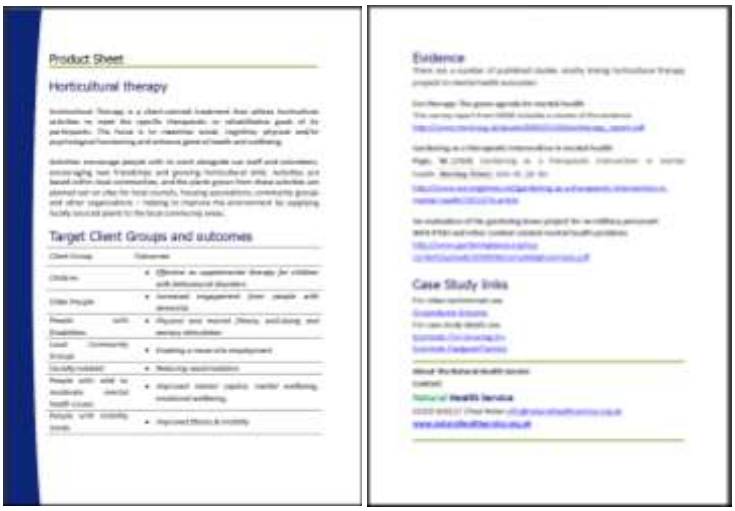


Fig 2.5: Product sheet for horticultural therapy (Natural Health Service, 2013)

Few studies have compared types of activities in terms of dose-benefit ratio. However, in a study on green exercise which systematically analysed the effects reported in 10 studies involving more than 263 participants, it was found that the mental health benefits generated were regardless of type, location, intensity or duration of activity. Activities from canal-boating to horse-riding were cross-compared (Pretty *et al*., 2007). All studies were found to have had statistically significant improvements in reported self-esteem and mood states. This suggests that any kind of exposure to nature for any duration is of benefit. Similarly, Morita *et al.,* (2007) found activity and length of a forest visit to have no correlation to positive mood effects and that just arriving at the forest had psychological benefits. Conversely, Hansmann, Hug and Seeland (2007) found sporting activities to have more positive results for restoration and stress relief than simply relaxing in or observing nature. Barton and Pretty (2010) delved further into questions of dose by later returning to the same 10 studies and found there to be large benefits from short engagements with green exercise (then diminishing, but still positive returns). These positive results were experienced quickly, with the greatest

changes occurring after five minutes of activity. It is difficult to draw conclusions from such a small number of studies, and the researchers highlighted the need for field-based controls to gain further clarity on the ideal duration and intensity of nature exposure required.

A later study of 1000 respondents in Southern England used a dose-response framework and found that quantity and quality mattered. Positive correlations between the dose (defined as frequency, duration and intensity) of nature exposure and health prevention outcomes, such as mental and social health and physical activity were found (Cox *et al*., 2017). The study was focussed on urban gardens in Southern England (as 'nearby nature') so may not be generalizable to a rural context, where the barriers between people and nature are perhaps more blurred, or a more urbanised area where people may not have access to their own or nearby nature. However, the approach is an illuminating one on which further development could lead to minimum and optimum recommendations on the use of nature in the way that such guidance exists for physical activity or eating a balanced diet for example. This way of thinking links to developments in practice such as 'nature on prescription' which will be discussed in the later facilitated access section.

We know from early work by Kaplan and his studies on viewing nature, that a dose does not have to be total immersion in the natural environment, having demonstrated that even a view is beneficial. Reflecting on what *type* of exposure is needed, Keniger *et al*., (2013) helpfully came up with three categories which furthered understanding. Whilst there are many benefits associated with what they termed 'intentional interactions' or deliberate visits, benefits are also realised by 'indirect interactions' such as having a view of nature, and 'incidental interactions' which occur whilst engaging in other activities e.g. commuting. Invariably, responses will be different for different populations and individuals, and researcher Sarah Bell suggests that we neglect the individual and their story (Bell *et al*., 2014). In a critique of restoration theory, she argues that a person's past experiences with nature or sociocultural influences (e.g. some ethnic groups feeling uncomfortable in the countryside) will affect whether being in nature evokes feelings of anxiety or restoration (Bell *et al*., 2014). It is fair to say that there is much work to be done on questions of dose. Whilst we know something about how nature works at population level, we know less about how it works for certain groups, such as those who are unwell, who arguably, stand to gain the most.

From the evidence reviewed thus far it is clear that there are benefits to 'just being' in nature, and these advantages are experienced whether exposure is incidental or intentional (Cox *et al*., 2017). The work of the Derby Nature Connections research team develops these ideas further. They postulate that it is about much more than just contact, and that we should be looking for a deeper connection with nature. This they define as a person's sense of their relationship with nature (Lumber *et al*., 2017), which they suggest matters as it will affect their receptivity to wellbeing benefits. In partnership with the National Trust and other countryside

stewards, they identified five pathways, involving senses, emotion, beauty, meaning and compassion to facilitate this (box 2.5).

- **Contact** – The act of engaging with nature through the senses for pleasure e.g. listening to birdsong, smelling wildflowers, watching the sunset.
- **Beauty** – Engagement with the aesthetic qualities of nature, e.g. appreciating natural scenery or engaging with nature through the arts.
- **Meaning** – Using nature or natural symbolism (e.g. language and metaphors) to represent an idea, thinking about the meaning of nature and signs of nature, e.g. the first swallow of summer.
- **Emotion** – An emotional bond with, and love for nature e.g. talking about, and reflecting on your feelings about nature.
- **Compassion** – Extending the self to include nature, leading to a moral and ethical concern for nature e.g. making ethical product choices, being concerned with animal welfare.

Box 2.5: Pathways to nature connection (Lumber *et al.,* 2017)

What is it about woods?

An interesting question closely related to dose is the extent to which the type or quality of nature matters to personal wellbeing outcomes. Forest Research have conducted numerous studies on woodland which explore them as a place for health and wellbeing (O'Brien, 2005; O'Brien and Claridge, 2002; Tabbush and O'Brien, 2003) some of which will be returned to in section 2.6 on nature-based interventions. Most research however has treated 'the natural environment' as a homogenous entity, of which woodlands may or may not be a part. A few more recent studies have sought to distinguish and found the coast (Wheeler *et al*., 2015) or the presence of water (Barton and Pretty, 2010) to have some health and wellbeing advantages compared to other habitats. As the focus of this study is on woodlands, the question of what, if anything, is special or unique about them is raised here. In an international research review which focussed on forests and human health, only a small number of studies (91) were identified, 72% of which were from Asia, mostly Japan (Meyer and Arndt, 2014). Molteno *et al*., (2012) acknowledged a gap in our state of understanding on the qualities of woods, trees and forests compared to other types of greenspace for access and wellbeing. They extracted several features unique to woodlands during a systematic review of forest access which are summarised below:

- Size of trees provides complexity at landscape scale
- Screening capacity of trees – ability to 'absorb' a number of people or activities
- Enhanced opportunities for physical contact e.g. den building, foraging
- Trees as markers of time due to the lifespan of certain species
- Flexible landscape due to accessibility to all kinds of groups
- Valued for natural beauty and delivering solitude

Box 2.6: What's special about trees, woodlands and forests? Adapted from Molteno *et al*., 2012

The aforementioned large qualitative study by O'Brien (2004) which explored the values placed on woodland and forest areas found mental and emotional benefits were more of a focus than physical benefits. These included reducing stress and providing a place to escape to from the pressures of everyday life. Findings showed that although woodlands and trees were predominantly discussed as part of the wider landscape, particular value was attached to trees for their longevity (connecting past, present and future) and historical significance, as well as being seen as symbolic of a healthy environment. A meta-analysis synthesising 31 studies on the personal wellbeing benefits of trees, woods and forests by Forest Research (O'Brien and Morris, 2014) found nature connectedness, mental well-being and sense of place to be the most important themes. The analysis usefully disaggregated the results of selected studies to give insight into how certain benefits are particularly pertinent to certain user groups. Examples included how some women identified and gained more social connection benefits than others, how for some deprived communities woods and forests could provide a sense of place and how for older people, time in woods was important for physical benefits such as fitness, weight loss or rehabilitation following illness. Crucially, they found benefits to be unequally distributed, with women and the 35+ age group making disproportionate positive gains compared to other groups like Black and Minority Ethnic Groups (BAME).

In order to increase our understanding of the use of woodlands in particular, it is useful to consider evidence from Asia, where their use as a space for health and wellbeing is well established and researched. This is particularly the case in Japan where the Japanese Ministry of Agriculture, Forestry and Fisheries adopted the term Shinrin-Yoku or Forest-bathing in 1982 (Jin *et al*., 2010) and took it on as a government based initiative aimed at promoting health and non-extractive use of forests. A session might typically involve mindful walking in the forest and can be described as *"making contact and taking in the atmosphere of the forest"* (Jin *et al*., 2010:18). According to a Japanese opinion poll, over a third (36.2%) of the respondents had taken part in forest walking in the previous year (Cabinet Office of Government of Japan, 2007, cited in Morita *et al*., 2011). Certification of 'Forest Therapy Sites' started in 2006 and there are now 65 designated locations across the country, chosen for factors like having open spaces, rest facilities and easy access for those with limited mobility (Forest Therapy Society, 2021). Of course, the Japanese landscape is very different - 71% of the country had tree cover in 2000 and 46% was natural forest cover (17.3 Mha natural forest and 0.11Mha plantations), (Global Forest Watch (2010)[a]. This compares starkly to the UK which had 15% tree cover for the same recording period, 9.8% of which was natural forest cover (Global Forest Watch, 2010)[b].

Benefits of Shinrin-Yoku are in part believed to be derived firstly from the sensory stimulation of the forest environment (e.g. the scenery, the smell of the wood, the sound of streams or the wind in leaves) and the subsequent effect on the brain and its regulation of emotion and physiological function. Secondly, benefits are thought to be attributable to phytoncides (or volatile or non-volatile organic compounds) breathed in

when in the forest which vary according to tree type (Tsunetsugu *et al*., 2010). Physiological studies have found for example, reduced blood pressure (Li *et al*., 2011), increased Natural Killer cell activity, responsible for fighting cancerous tumour growth (Li *et al*., 2007, 2008) and lower levels of cortisol, pulse rate and blood pressure (Jin B *et al*., 2010). Evidence on mental health benefits includes improved mood, decreased hostility and depression and reduced stress, particularly for those who are chronically stressed (Morita *et al*., 2007) and increased feelings of vitality, positive effect and restoration (Takayama *et al*., 2014). Several laboratory-based studies have also been conducted to isolate the 'woods' component of the physiological benefits experienced, such as the odour of wood or the sounds and sight of the forest (Tsunetsugu *et al*., 2010).

Like much of the European work on health and the natural environment, the variety of outcome measurements is huge, making cross comparisons challenging, although Meyer and Arndt (2014) identify some consistency with regard to use of the Japanese Profile of Mood States scale. Studies are frequently field based and with strict use of control groups (e.g. forest walk vs urban walk), which gives robust data, allowing reliable inferences about outcomes to be made. However, most of the studies have been on short visits or one-off interventions, rather than measuring the cumulative effect of repeated visits. Shorter term follow-up measurements are involved in very few studies and more research on longer term and accumulative effects would add considerable weight to this fascinating and highly valuable research.

In a review of Asian forest and human health studies, there was found to be a broad cross section of age and gender although a sample bias towards young males was observed, with a third of participants being young adults and 90% of those being male students (Meyer and Arndt, 2014). The same challenge has been aforementioned with regard to Western research. Nonetheless, whilst cultural equivalence cannot be assumed, the Japanese body of work represents an important and rigorous contribution to scientifically explaining and validating the health and wellbeing potential and impacts of the woodland habitat. Indeed, their evidence-based approach has inspired initiatives globally, such as the "From cradle to grave, life with forests" forest welfare plan by the Korea Forest Service which involves 51 healing forests and a national forest healing centre (Youngkyoon, 2017). This is beginning to gain traction in a Western context, for example, the US based Association of Nature and Forest Therapy Guides and Programmes training, has produced guides that work all over the world (Association of Nature and Forest Therapy Guides and Programs, 2016). The term is also becoming more familiar in Europe, with several lay 'how to' books having been published (Li, 2018; Clifford, 2018; Miyazaki, 2018) in recent years.

In short, there is strong evidence quantifying the physical and mental health benefits of time spent in the woods from Japan. Alongside this, there is a need for research that focusses on how this is working in a different cultural context. A deeper understanding of what woods mean to people and how this might impact their wellbeing over time would be a fitting complement to this calculable evidence base.

2.4 Who accesses the natural environment and woodlands?

Having reviewed the literature, it is clear that greater interaction with the natural environment has significant influences on both health and wellbeing (Hartig *et al*., 2014; WHO, 2017[a]; Bragg and Atkins, 2016). As stated in the introduction however, not everyone is gaining *access* to greenspace and so they are missing out on this pathway to wellbeing. A closer look at the spatial and demographic dimensions of access in this section will help to understand this picture, and what is known about the psychosocial dimension of personal and perceived barriers will be explored in the following section.

At its simplest, woodland access pertains to the physical entry to and use of forests, based on ownership permissions and public rights of way. In 2000, the Countryside and Rights of Way Act represented a major change in access rights for the general public to open countryside in England and Wales, a victory for ramblers and walking groups who had campaigned on this issue for many years. Woodland is not covered by the act and The Woodland Trust argue that there is insufficient woodland coverage for the health and wellbeing of the nation, particularly as many UK woodlands are privately owned with no permissive access. Their 'Woods for People' data shows that less than half the woods in the UK (43% in Wales) are publicly accessible (beyond the right to pass through) (Forest Research, 2020). They pro-actively campaign for increased physical access to woodlands, in part through the development of a Woodland Access Standard, which sets out aspirations for minimum distances between citizens and their nearest woodland (box 2.7). In fact, only 21.1 per cent of people in the UK (23.6% in Wales) meet the first aspiration, to have a small woodland nearby, whereas 72.7 (80.6% in Wales) percent have a larger woodland within an 8km round trip.

Woodland Access Standard:

The Woodland Trust believes that in terms of provision of natural green space, woods should be seen as the optimal habitat. The Woodland Trust's Woodland Access Standard aspires that:

1. No person should live more than 500m from at least one area of accessible woodland of no less than 2ha in size, and

2. There should be at least one area of accessible woodland of no less than 20ha within 4km…of people's homes

Box 2.7: Woodland Access Standard (Woodland Trust, 2017)

Current state of play

The UK is well-served with robust population level statistics on use of the countryside as a whole, not least through the Monitoring of Engagement with the Natural Environment study (MENE)-mentioned earlier. The national survey data of Wales on outdoor recreation gives a countrywide picture of access and demonstrates that taking all habitats into consideration, in Wales, forests and woodlands are the third most popular place

to visit. Interestingly, parks are the most popular outdoor place to visit (fig. 2.6), perhaps illustrating the importance of proximity, followed by beach, sea or coastline (Natural Resources Wales, 2017).

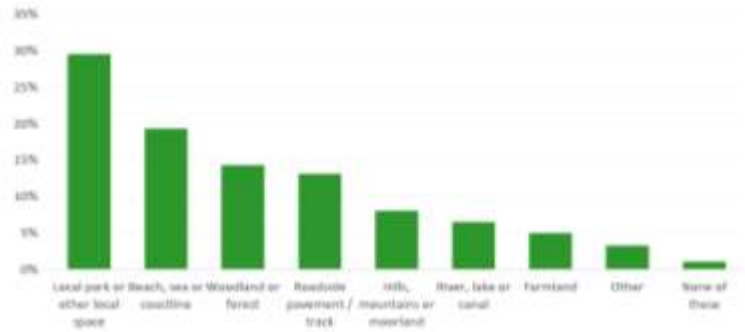
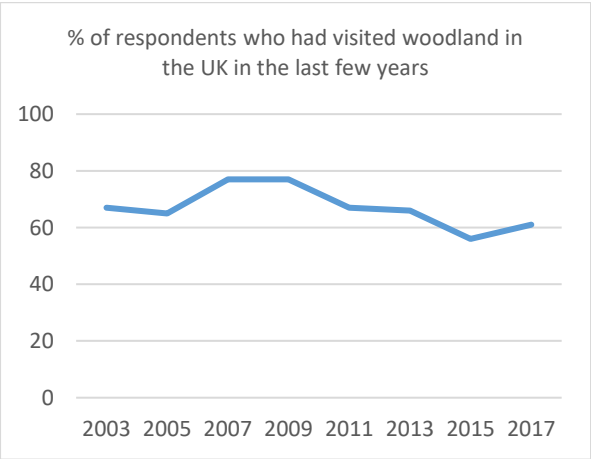


Fig. 2.6: Location of most recent visit to the outdoors (NRW, 2017)

With respect to woodlands in particular, since 1995, the Forestry Commission has gathered biennial data from a representative sample of around 2,000 members of the public on their visiting behaviour and attitudes to forests and woodlands through the Public Opinion of Forestry Survey (POFS). This shows an emerging picture that the number of people visiting UK woodlands has steadily fallen from a high of 77% in 2007/9, but rose again in 2017 to 61% (fig. 2.7). When the Welsh figures are examined more closely, we see a similar picture with numbers steadily falling from a high of 79% in 2007, but rising to 72% in 2017, somewhat higher than for the UK as a total (fig. 2.8). Of those who said that they had visited in the previous year, 77% were regular visitors, having visited more than once a month in the summer. Seasonal variation had a marked impact, and this number dropped to 44% for the winter (Forestry Commission, 2017[a]).



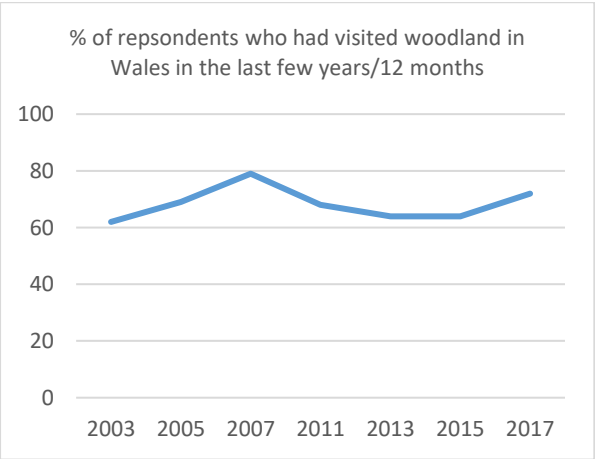


Fig. 2.7: Left: Adapted from Public Opinion of Forestry 2017, UK and England (Forestry Commission, 2017[a])
Fig. 2.8: Right: Adapted from Public Opinion of Forestry 2017, Wales (Forestry Commission, 2017[b])

Which forests and woodlands are accessed is also worth noting, with visits to woods in the countryside being much more popular (86%) than visits to woods in and around towns (67%)(Forestry Commission, 2017[a]), a bias that is much more pronounced in Wales (66%/34%) (Forestry Commission, 2017[b]). Indeed, the national

survey of Wales data on outdoor recreation shows a significant tendency for visits from rural dwellers to be higher (Natural Resources Wales (NRW), 2017). It is very evident from the data that proximity matters, with almost half of Welsh adult visits to the outdoors being within a mile of their address (NRW, 2017). Although not woodland specific, this does emphasise the importance of the Woodland Trust's drive for woodland access close to home.

Who is not using the natural environment?

What the above data (figs 2.7 and 2.8) also reveal is that there is a core of at least 20% of the UK population who do not visit woods and forests. This is true for outdoor recreation more widely in Wales, where although engagement is high, with 81% of adults having participated in one or more activity over the past year, almost a fifth (19%) of the population have not (NRW, 2017). There is a similar picture in data for access to the wider countryside in both English and Welsh surveys, with the proportion of people who state that they never visit (8–10%) or who identify themselves as infrequent visitors (33–37%) remaining fairly stable in England (Natural England, 2017[a]). MENE data offers a valuable insight into this group of *non*-visitors, which as the graphs below show (fig. 2.11), is skewed toward people who are over 65, from lower socio-economic groups, with a disability and from non-white ethnic groups (Natural England, 2017[b]). The data below is taken from the data set for 2014/15 but there is little variation in the pattern going back to 2009.

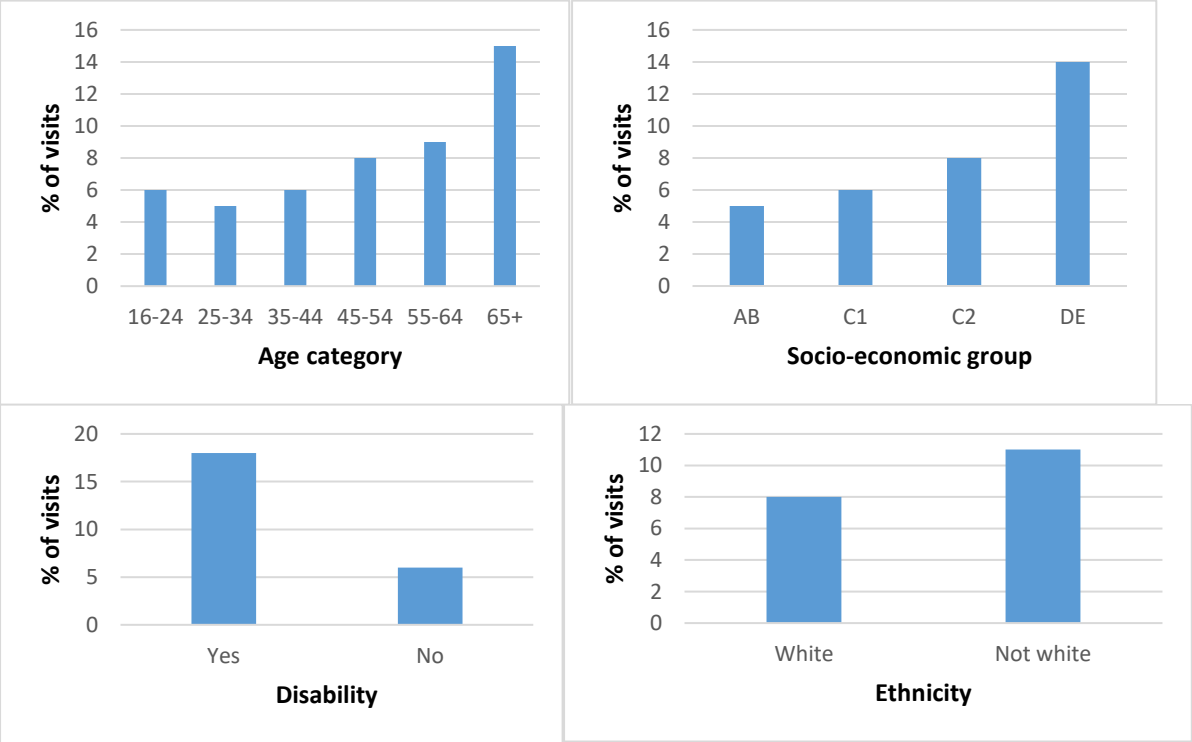


Fig. 2.9: Percentage of people who indicated that they have not spent leisure time outdoors away from their home in the last 12 months, Adapted from Natural England, 2017[b]

The pattern is not dissimilar across Europe, with many European countries lacking visits to green infrastructure from older people and those from lower socio-economic groups (De Vreese *et al.,* 2016). In

seeking to understand these distributions, two population level studies for England have shown that people in more deprived areas tend to have less greenspace in their locality (Mitchell and Popham, 2008) and also to use it less (Mitchell and Popham, 2008; Jones *et al*., 2009). Indeed, the 25 Year Natural Environment Plan for the UK recognises a need to focus on disadvantaged areas within their aim of encouraging children to use nature more (DEFRA, 2018).

In Wales, these trends appear to be somewhat different, with a more complex relationship between outdoor recreation and deprivation, whereby significant differences between countryside access and levels of deprivation appear only for the second most deprived quintile (NRW, 2017). As Wales is more rural, it would seem that there is less inequality of access here. The gender difference is also different in England and Wales. Whilst the MENE data shows no gender differences in visits to the natural environment, the National Survey for Wales covering outdoor recreation, showed that visit frequency for men is significantly higher. Whilst older age has a distinct impact on people not spending time outdoors in the English data, respondents in the 65-74 age category were those who had made the highest number of visits over a 4 week period than any other age grouping in Wales, perhaps reflecting the habits of an active group of recent retirees with more time available. Whilst the picture is mixed, what the data tells us is that access to woodlands and to the wider countryside is not equal, which has a wider relevance to fair access to the health and wellbeing benefits outlined earlier, and their potential to reduce such inequalities.

2.5 What encourages and discourages access?

Given the aforementioned picture of who is and is not accessing the natural environment, the environmental and psychosocial factors that encourage and discourage people will now be considered. Where possible, the focus is on woodlands, but given that many studies do not distinguish, the wider context of the natural environment, of which woodlands are part is considered.

What drives access to the natural environment?

In her essay on the importance of making space for individual agency in use of greenspace, Bell (2014) questions whether people make the conceptual link to wellbeing. However, for those who visit the natural environment, data shows an increasing emphasis on health and exercise as a motivating factor with just under half of the 18,429 respondents in a MENE survey citing it as a reason (Natural England, 2017). In a much smaller study, Hansmann, Hug and Seeland (2007) found that 98.4% of 164 visitors to the Zurich-berg Forest in Switzerland do in fact believe that visiting the forest impacts on their wellbeing. Feelings of wellbeing were described as a 'significant factor' in O'Brien's 2004 qualitative study. Linked to this, the beneficial effects on positive emotions of simply arriving at the forest have already been mentioned (Morita, 2006). Of course, the

perceptions of those that do not visit the natural environment and their wellbeing are more difficult to capture.

In the Public Opinion of Forestry (POFS) data for those who had reported visiting woodlands, the top three factors they saw as important have consistently been seeing woods as places they can relax and de-stress, places to have fun and enjoy themselves or places to exercise and keep fit (Forestry Commission, 2017[b]). In Wales, the reasons are broadly similar, but with attractive scenery and peace and quiet taking precedent (Forestry Commission, 2017[b]). The opportunity they provide for a low cost day out was also seen as important, particularly for low income families, unemployed people and non-car users (O'Brien, 2004). In terms of the wider countryside, the importance of a canine companion is evident, with almost half the visits being to walk a dog (Natural England, 2017). For Welsh adults in the wider countryside, walking is by far the most popular outdoor recreation activity (72%) (Natural Resources Wales, 2017). Woodlands in Wales are widely perceived as being accessible, with around two thirds of POFS respondents believing that there was a woods or forest they could get to easily without using a car or other transport. They were perceived as desirable woods too, as of these, 84% gave a rating of good or better for how safe and welcoming their local wood is (Forestry Commission, 2017[b]).

Investigating barriers

Data reviewed above has shown that many UK dwellers are regular users of the countryside, and that for some, a desire for improved wellbeing is a motivating factor for this. Whilst organisations such as the Woodland Trust campaign for increased woodland close to home, proximity does not necessarily result in use. Indeed, as the 'Turning the Tide' report addressing inactivity levels showed, volume of greenspace and levels of physical inactivity are not significantly correlated (UKActive, 2014). As established, access to most woodlands and the wider natural environment is free and benefits are manifold, they can play a vital role in improving the health and wellbeing of those who stand to gain the most. Therefore, paying attention to the factors that discourage venturing outdoors is important. As a starting point, the POFS data can provide a reliable picture of barriers and help to understand the status quo at population scale. In Wales, the consistent top two disadvantages of woodlands for the local community, perceptions which likely act to discourage visits, are identified as fly tipping (22%) and that they are a place for criminal activity (9%). When asked about actual visiting behaviour, the barriers that pre-dominate (fig. 2.10), are 'too busy/not enough time' or 'other personal mobility reasons' (Forestry Commission, 2017_2). This is true of outdoor recreation across Wales, with a perceived lack of free time being the largest barrier. This was particularly pertinent for younger people, where 'lack of time' was the main prohibitive reason for 57% of 16 – 44 year olds. For visit frequency, weather was the most frequently cited barrier (NRW, 2017), followed by 'busy-ness'. For those reporting *no* visits in

the last 12 months physical disability (24%), health reasons (19%) and old age (19%) had a marked prominence in dissuading outdoor recreation (NRW, 2017).

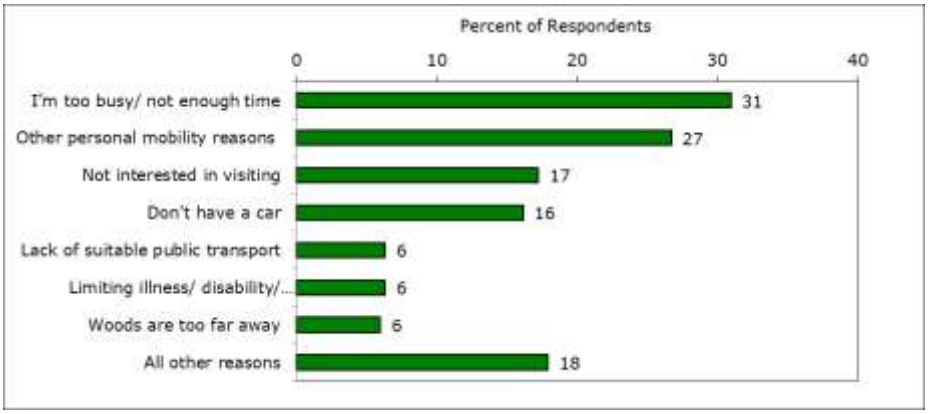


Fig. 2.10: Main reasons for not visiting woodlands in the last 12 months (Forestry Commission, 2017[b])

As fig. 2.11 below shows, of those with a chronic physical or mental health condition, 56% not visiting stated that their condition affected their use of woods and greenspace. For this group, physical barriers like a lack of suitable paths, lack of public transport and lack of accessible facilities were the main factors discouraging visits (Forestry Commission, 2017[b]).

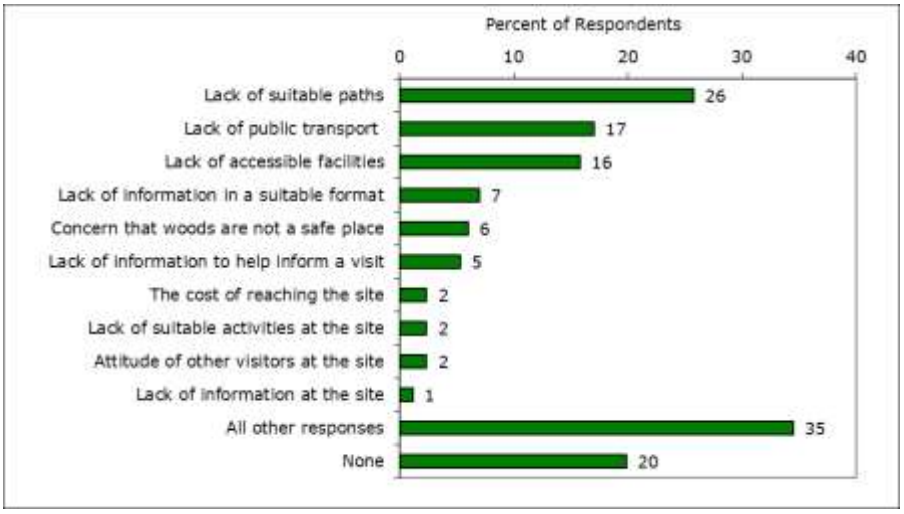


Fig. 2.11: How condition/illness affects use of woodland use of woodlands/forests or other green spaces (Forestry Commission, 2017[b])

Although Wales is unique in asking this group about barriers, the UK data does now ask respondents with a chronic health condition whether their illness affects their use of woodlands and forests and the picture is similar with almost half (49%) stating that it does. This is skewed to 56% for DE (the lowest) social grade categories, compared to 44% for AB (the highest), again showing income related inequality. A better understanding of people's experiences beyond the statistics could also help to encourage access. For example, a fruitful line of enquiry would be to delve further into 'too busy', knowing as we do that even the briefest of exposures to greenspace has health benefits, whether intentional or not.

Mental accessibility

Much attention has historically been placed on the physical barriers to greenspace use by countryside site managers, but as the above figures show, except where there are health reasons, it is often more nuanced than this. A Forestry Commission review of their literature on woodland access set out a typology of barriers, differentiating between physical and socio-cultural barriers:

1. **Physical and structural barriers**
    a. General/over-arching e.g. weather
    b. On-site barriers (e.g. access points, signage, facilities)
    c. Off-site barriers (e.g. lack of information and transport)
2. **Socio-cultural and economic barriers**
3. **Personal barriers** e.g. values and perceptions

Fig. 2.12: Typology of barriers, adapted from Molteno *et al*., 2012

This section focusses on the latter two, particularly the perceived psychosocial barriers, such as low self-esteem or self-efficacy and the degree to which nature is seen as threatening or unthreatening. De Vreese *et al*., (2016) highlight the importance of '*mental accessibility'* as well as physical accessibility. This was recognised by the Forest Research review of Forestry Commission literature on access, which covered 20 research projects and studies and 22,863 respondents, which further reflected on the '*deep-seated psychological, emotional and socio-cultural nature'* (Morris *et al*., 2011:375) to some of the barriers. This was further broken down into three key issues:

- Knowledge and awareness of where and how to use woods
- Motivations and enthusiasms to use woods
- Feeling welcome and finding suitable physical access and facilities

Personal safety concerns consistently arise as a mental barrier, particularly in more deprived areas (Weldon *et al*., 2007; Jones *et al*., 2009) and particularly for women (O'Brien, 2004). Factors mitigating safety concerns include the company of others or a dog, with qualitative research giving insight into a sense of discomfort when visiting woods alone (O'Brien, 2004). Research on urban forests suggests that concerns can be moderated by promoting a sense of safety and inclusion, through for example, good maintenance, a staff presence and led activities (O'Brien *et al*., 2010). In the aforementioned Bristol Quality of Life community level study of 6821 adult residents, (Jones *et al*., 2009) researchers found that residents in more deprived areas had more negative perceptions of greenspace in general and tended to use it less, which raises questions about the quality of greenspace on offer. Anti-social behaviour by others has been raised as a constraint, as well as doubt around where to go and fears of trespassing, the latter described as having potential to be mitigated by good information on where to go and what to do (O'Brien, 2004). Many studies reporting on countryside access do not cover details such as site characteristics, accessibility, degree of maintenance or vegetation composition. One exception to this was a review on safety concerns (particularly by women) around urban woodland vegetation by Jansson *et al*., (2013) which suggested that feelings

experienced can be moderated by vegetation character, maintenance and design, and that open areas of vegetation with low density undergrowth can help. Although this is potentially more difficult to translate to a rural environment, or larger wooded areas, and may be at odds with biodiversity requirements for woodlands where a more complex structure is desirable, it could be applied to points of access, areas of seating or targeted rights of way. Cultural factors were also identified as being important, in that in Nordic countries, far fewer people report feeling unsafe outdoors than in other countries, including the UK.

Cultural norms

Part of understanding the psychological barriers to greenspace access that people face is the fact that our daily lives are radically different now to historically, whereby woodland access for fuel for cooking and heating was considered a necessity '*as vital as bread'* (Matteson, 2015). In contemporary times, foraging involves a drive to the supermarket or a home delivery, ordered on the computer, and vocational and recreational activities frequently involve computer screens. A study on declining national park visits in the US found a significant correlation with their decline in usage and electronic entertainment indicators such as hours of television, video games, home movies and internet use. Whilst correlation does not equal causation, Pergams and Zaradic (2006) postulate that in terms of how the public are choosing to spend their leisure time, 'videophilia' is the new 'biophilia'.

The term 'nature-acculturation' (Bell *et al*., 2014; Ward Thompson 2008) highlights the fact that if children do not visit the natural environment when young, then they are much less likely to in later years. In a study which examined the significance of childhood experience on adult visits, a strong relationship was found. As the graphs below clearly demonstrate, old habits die hard, or new habits are extremely challenging to form. The research relied on people's memory of their childhood visiting behaviour, but the correlation was strong enough to show a pattern that is difficult to refute. Interestingly, the Scottish survey asked people (n=339) in public venues, whilst the English survey asked people (n=459) at greenspace sites, which may have skewed the results slightly, as it is possible that people are more readily able to connect with prior memories of being in the natural environment whilst present in it. Similar findings came from a review of social evidence of practical programmes relating to trees woods and forests, associating the frequency of childhood visits to the woods with a healthy adult relationship with natural or greenspaces, including the confidence to go alone and possibly predicting visit frequency (Stewart and O'Brien, 2010).

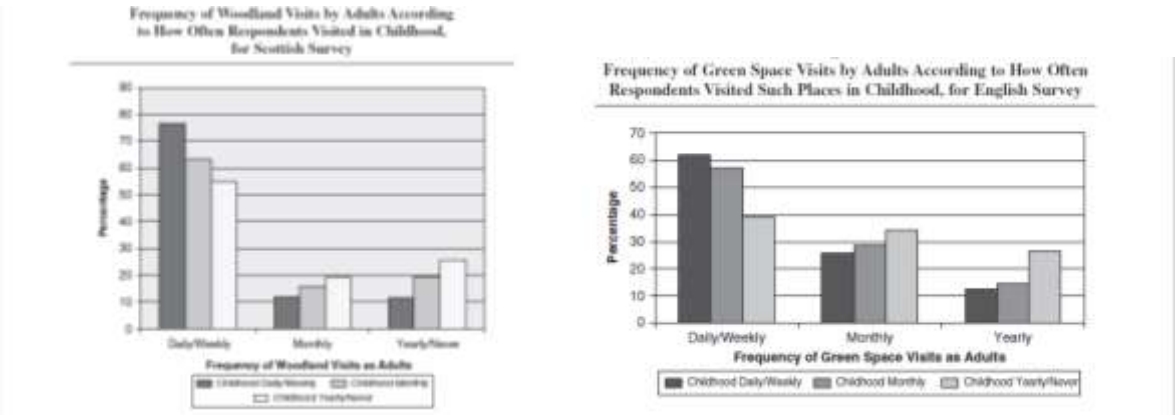


Fig. 2.13: Frequency of woodland visits by adults compared to visits as children (Ward-Thompson *et al*., 2008)

In a qualitative study on office–workers (lawyers) and their use of greenspace, Hitchings discovered that they had simply lost touch with the '*very idea*' of spending time outside during the working day, with established indoor habits and powerful personal routines. This idea of what constitutes 'normal' or desirable behaviour is a challenge and Hitchings (2013:101) suggests that "*one important task might be about finding ways to help the very notion of going outside insinuate itself into the consciousness of this group".* This is a pertinent suggestion, given that almost a fifth of those who never visit Welsh woodlands do not do so because they are 'not interested' (Forestry Commission, 2017[b]). Perhaps in place of concentrating resources on making sites more visually appealing or physically accessible, efforts should be focussed on helping people to remember the existence of greenspace or to find ways to place it onto their radar. Hitchings stressed the need to work with the lifestyle grain of the office workers he studied, to find ways to jolt their normal routines in order to "*think about helping our greenspaces tug at the sleeves of everyday routines that otherwise carry people through life in ways that render them relatively indifferent to the idea of spending time within these spaces*" (Hitchings, 2013:101). Bell (2014) takes this one step further by discussing ideas around self-identification and connection to nature, suggesting that there is a greenspace 'turning point' in our lives that has potential to impact on our visiting habits.

Different barriers for different groups

It is difficult to make broader generalisations from the group of city lawyers studied by Hitchings (2013), and it would be valuable to know more about how such findings resonate with groups most disadvantaged in terms of access. Research on greenspace access have been criticised for tending to refer to people as a homogenous group (Hitchings, 2013; Bell *et al*., 2014). In order to address this deficiency in the literature, Morris *et al*., (2011) produced a typology of the different barriers (table 2.1) faced by different groups. Although their research only covered publications commissioned by the Forestry Commission, it provides a helpful overview of the bespoke nature of challenges faced by different excluded sub-groups. What this and similar research (Weldon *et al*., 2010) recognised and drew attention to is the different barriers faced by

different groups at different times in their lives. Despite this, categories of course overlap as individuals belong to multiple social categories, that is the 'mother' can also be the 'dog walker', 'older person' and 'rural inhabitant', so that inevitably the barriers faced by an individual are multivariate.

Table 2.1: Typology of barriers by different groups, based on Morris *et al*., 2011

Group	Barriers faced
Age	Young people: fear being labelled as troublemakers; young women have personal safety concerns Middle aged people: fear of encountering anti-social behaviour, fear of unknown spaces, lack of information Older people: concerns re: physical mobility; need to be accompanied
Gender	Women: personal safety concerns Men: lack of clear information
Socio-economic status	Lower SE groups: Low motivation/priority; financial cost of travel or refreshments; 'restricted horizons' – lack of knowledge & ideas about where to go
Disability	Transport issues; lack of on-site facilities; other forest users (e.g. cyclists) feeling awkward; need for detailed information
Ethnicity/BAME	Different social and cultural norms; lack of cultural affinity with woods; lack of confidence about visiting; low levels of awareness of nearby woods; cost; lack of info in own language or use of appropriate communication channels

Evidence demonstrates that the benefits are not evenly distributed and that people with disabilities, females, black and ethnic minority and low-income groups experience the greatest number of barriers to access (Morris *et al*., 2011). Going beyond whether or not accessing the natural environment is on people's radar is a consideration of whether or not they feel it is for them or feel welcome there. For example, Askins (2009) described how "*national imagery of rural space*" could be seen to exclude ethnic minorities, amongst other groups, from accessing the countryside emotionally as well as physically.

Linking back to literature on the meanings people give to spaces and places referred to earlier, therapeutic landscapes in particular, this body of work highlights the complex and relational nature of whether or not places feel therapeutic, perhaps invoking pleasure, but perhaps discomfort (Conradson, 2005; Lea, 2008). Invariably, cultural differences and influences will affect this in the same way childhood experiences do. Some adults will have less comfortable relations with nature, and the way that different individuals or groups will construct their understanding is socially and culturally mediated, which in turn affects their attitudes and access behaviour. The Forest Research review on access literature (Morris, 2011:394) stated that, "*Overcoming barriers to access is a topical and important subject for forestry policy, management and research".* Hence, there is a need to explore individually 'constructed' understandings and responses to

woodlands, and it is for this reason that qualitative and experiential accounts are necessary alongside quantitative data.

2.6 Nature-based Interventions (NBIs) for health and wellbeing

In response to the growing evidence base on the natural environment, health and wellbeing outlined above, the importance of nature-based activity for wellbeing is gaining recognition. This final section of this chapter focusses on the role that NBIs for adults can play. As outlined in Chapter One, a nature-based intervention can be defined as structured or led activities in nature where there is a direct aim to use nature to improve health and wellbeing, and indeed, promising results in relation to wellbeing have been found from a range of studies. In 2017, WHO advocated targeted, evidence-based interventions in greenspace based on a review of impacts and effectiveness, highlighting the range of public health benefits they can provide (WHO, 2017[a]). In the aforementioned meta-analysis on the PWB benefits of woodlands (O'Brien and Morris, 2014), eleven of the 31 studies reviewed were interventions or programmes to encourage woodland access and use, some targeted at 'hard to reach' groups. A key finding was how successful and effective such programmes are at widening access to wellbeing benefits of woodlands. This was reported to be partly due to them being tailored to particular groups, the support of the group for those less familiar with woods, and the partnering with a range of organisations. Such schemes clearly have a vital role in encouraging and enabling population groups who use greenspace less to engage, and for whom it is increasingly apparent that provision needs to go beyond providing physically accessible sites.

This next section reviews some key research specific to the woodland environment in the UK, where woodland activity is supported to facilitate improved health and wellbeing. Whilst evidence supports the benefits of activities in woodland environments, a need for further research in this area has been identified (Meyer & Arndt, 2014; Bragg, 2016). One such 'forests on prescription' programme was the Chopwell Wood Health Project, a pilot developed between the Forestry Commission, two primary care trusts and the local community in a 'health action zone' in Gateshead. The 91% retention rate reported for the 13 week activity programme offers some evidence of its success with the 33 patients who were offered it. This was an option where exercise referral was also offered due to illnesses such as coronary heart disease, raised blood pressure, being overweight and knee or back pain. Quantitative data indicative of wellbeing changes was not gathered, however a focus group reported the biggest impact to be on their physical health, but also highlighted the social aspect, which they stated had been a catalyst to building on social networks. Although it was a small study, it performed it's function in showing clear promise as a partnership between health and the forestry sector. The substantial potential for benefit is well summarised by the following quote "*I was*

improving, not a great deal, but I was improving. In actual fact I stopped the heart spray and a lot of the tablets" (O'Brien and Snowdon, 2009:53).

A key contribution to the evidence base is the robustly studied 'Branching Out', a 12 week woodland activity programme run by Forestry Commission Scotland for people with severe and enduring mental health problems. They have been rigorous in measuring pre and post outcomes since the programme`s inception in 2007 and found strong positive trends for improvements in mental wellbeing (on both the mental component of the SF-12 and the Warwick and Edinburgh Mental Wellbeing Scale) for high severity groups, although little change for other groups (Wilson, 2009). One of the strengths of the programme has consistently been the low attrition rate. When these results were further explored through qualitative interviews, confidence, self-esteem and social benefits emerged as particular themes. Results from the 2009 survey showed a significant increase for physical activity (measured by the Scottish Physical Activity Questionnaire) comparing pre and post scores for 72 clients. Later evaluations attempted to include a three month follow up data collection point, but found it challenging to obtain sufficient numbers from which to make reliable inferences. The data did however suggest that patient`s scores on the SF-12 were worse for all dimensions except for the social dimension, perhaps because the programme prevented deterioration whilst they were attending. Like the Chopwell Wood project and other NBI studies, due to the lack of a control group, it is difficult to say with absolute certainty the extent to which benefits and changes experienced were due to the programme or to other interventions, e.g. other activities or services engaged with. For practical reasons such as the extra funding requirements, the use of control groups in this type of evaluation is rare, and is perhaps a trade-off of the value of doing research with 'real life' participants.

When Kamioka *et al*., (2012) undertook a systematic review of randomised control trials on forest therapy, they found only two studies which passed their criteria, citing poor methodological and reporting quality with "*a remarkable lack of description*" as recurrent issues. This was a view echoed by Shanahan *et al*., (2016) who highlighted the value of interventions such as park prescriptions to encourage the use of natural environments to widen access, but that *"careful evaluation of the efficacy of such programmes is still rare"*. However, there is evidence that this is beginning to change as organisations become increasingly aware of the need to provide 'hard' evidence in order to move towards the mainstreaming of NBIs and to secure funding. An example of this is the interim results by the Mersey Forest on their 12 week Nature4Health programme, which they claim saw improvements in both mental wellbeing and daily levels of physical activity using the Warwick and Edinburgh Mental Wellbeing scale (WEMWBS) and the International Physical Activity Questionnaire against baseline measurements (Fig. 2.7). Details of numbers of participants and type and duration of activities were not presented, but results showed an eight point increase on the WEMWBS as an average across their projects and a 19.5 point increase on their Health Walks project. As yet, these

considerable gains have not been broken down or further analysed. Early indications by the Mersey Forest suggest that the social aspects of their projects are crucial for reducing loneliness and building social capital (The Mersey Forest, 2016[b]).

Fig 2.7: Results of interim report of participants in Mersey Forest's 12 week Nature4Health Programme (The Mersey Forest, 2016[b])

The above project was borne of a drive by Mersey Forest to widen access and engage people beyond the regular walkers and runners to those who would not normally go out into greenspaces (Mersey Forest, 2014). Increasingly, individual projects are placing emphasis on non-monetary gains by calculating 'Social Return on Investment' (SROI), for example, gathering evidence for the benefits of and avoided medical costs from their green-care schemes. The Mersey Forest's evaluation of their Natural Health Service project, comprised of NBIs such as those evaluated above, forecast that for every £1.00 invested in the project, a £6.75 social return would be generated (Cogent Ventures, 2016). Prevention is better than cure from the perspective of avoiding unnecessary human suffering, and results like this show that this makes sense economically too.

Beyond health and wellbeing, research shows that facilitated access can be a great catalyst for further independent access too (Interface NRM Ltd., 2004; Goodenough *et al*., 2015). For example, in the Chopwell Wood Healthy Schools Project, 42% of 229 children who had been to the woods on a school visit said that they went back after school and 48% said that they went to the woods more often. Although the aforementioned Chopwell Wood Health project had no formal long term follow up, anecdotal evidence stated that participants continued to engage in woodland activities and that of the 33 participants, six people bought a bicycle and one was declared fit to return to work and began training as a health leader (O'Brien and Snowdon, 2007). Qualitative evidence gathered as part of the Branching Out evaluation (Wilson, 2009), from both clients and clinicians suggested that the programme acted as a halfway house between isolation and inactivity and venturing out. In an intervention aimed at facilitating families to engage in led woodland activities, there was an indication that the activity may have been a springboard for future "*core leisure engagement with nature"*. Carers reported feelings of being "*competent, confident and happy"* as part of a

group (Goodenough, 2015), but researchers stated that follow up research would be needed to know if this resulted in actual visits. However, there is a paucity of long term research with only anecdotal evidence as to the extent that programmes are a catalyst to other activity (O'Brien and Snowdon, 2007; Wilson, 2009). The costs of long term follow up is challenging and difficult for small projects, but it would be a useful contribution to the field if the role that schemes such as these play or do not play as catalysts to wider changes in participants' lifestyles, including their countryside access behaviours could be captured more formally.

As the aforementioned 'Access for All' study spells out, facilitated access must be making contact with a group, providing transport and running a taster activity, which is different to activity programmes that conservation organisations traditionally offer, where people make their own way to a site (Morris *et al*., 2011). This is what the Active Woods England project did, identifying non-users and running focus groups following the activity, where a desire to return and increased confidence about doing so was expressed (Morris and O'Brien, 2011). This was an important study, as it captured views of non-users. However, as above, the missing piece of this puzzle and where follow up study would be critical, is whether or not people actually *did* return unsupported and how that experience was for them. The Forestry Commission increasingly recognise that '*led activities…are crucial for reaching under-represented groups'* (Morris and O'Brien, 2011), stressing the importance of partnership working with those outside traditional forest and recreation sectors in order to bolster skills and widen access.

Despite strong evidence that those in greatest need stand to benefit the most, it is still difficult to reach those people and facilitate effective partnerships between health and environment. In the case of evaluations of Branching Out, Chopwell Wood and the West Midland Woodland and Health Pilot, even where considerable efforts had been made to garner referrals from GPs and the wider health sector, the majority of referrals came from community based projects. The Forestry Commission (FC) identify *"…a clear need for research to inform the careful design of community engagement programmes, to improve wider public perceptions of the FC owned woods*" (Morris *et al*., 2011). Although evidence is limited, there is an obvious role for facilitated access or 'soft' investment to act as a catalyst to widening the invitation and sense of possibility to the currently excluded fifth of the population will need more than the provision of accessible woods.

2.7 Research gaps and challenges

Despite an extensive body of literature on natural environment, health and wellbeing, there are notable gaps. Much early research took place in controlled environments, with pre and post assessment of highly managed and short interventions. Most studies have been based on visits or one-off interventions, rather than measuring the cumulative effects. Consequently, the most commonly occurring critique of the field is the lack

of long term research meaning that the sustainability of effects over time, in terms of maintaining benefits and behaviour changes that enhance wellbeing is unknown (Hartig *et al.,* 2014; Thompson-Coon *et al*., 2011; Bowler *et al.,* 2010; Kamoika *et al*., 2012). The gap in the broader nature and wellbeing literature for long term studies is also very apparent in NBI research, and the few NBI studies with follow up research indicate that sustained benefits may not be being realised by participants (Husk et al., 2016; Wilson, 2009). It is vital to investigate in more depth what might be at play for participants here. Large, comparative, and well-controlled studies are expensive and hence do not happen very often, yet the need for such research is widely recognised (Hartig *et al.,* 2014; Thompson-Coon *et al.,* 2011; Bowler *et al.,* 2010; Kamoika *et al.,* 2012).

Furthermore, studies have tended to focus on healthy populations, often students, rather than comparing more diverse sectors of the population (Hitchings, 2013; Linton *et al*, 2016). Whilst such studies can provide robust data, allowing reliable inferences about outcomes to be made, their limitations highlight a need to undertake further research in context. It has been suggested that too much research focusses on existing users, and that until we address potential barriers to non-users, we are merely 'tinkering around the edge' rather than addressing fundamental challenges (Hitchings, 2013:99). Much of research is on urban greenspace and its transferability to people living in rural areas is questionable. With regard to access, there is an abundance of population scale data, but less rigorous and independent qualitative data, and again, there is a particular gap for research which follows up behaviours of participants.

The methodology of studies has been criticised by systematic reviews (Hunter *et al*., 2015; Thompson-Coon *et al*., 2011; Husk *et al*., 2016; Bowler *et al*., 2010). Where field-based research has taken place, the evidence has been said to fall short due to an absence of control groups, small samples, vaguely defined methods and subjectivity (Bragg and Atkins, 2016). In their review of nature-based interventions for mental health care, Bragg and Atkins called for large scale demonstration trials to test and evaluate new approaches to scaling up delivery. Kamoika *et al*., (2012) argue the many studies where urban, city or man-made environments are used as a control are inappropriate to explain why forest-based therapy is better than other types of interventions. It would be helpful to know more about the woodland component of NBIs from a qualitative perspective exploring what they mean to different people in order to further understand processes of change. Whilst there is a wealth of data on likely mechanisms of effect such as reduced stress, attention restoration and physical health improvements, broader social processes enacted during outdoor activity are rarely explicitly measured, yet are often cited as important. There is therefore a need to consider how social dynamics work within a nature-based context to better understand the current evidence base (Meyer and Arndt, 2014).

Further research is needed to investigate the role of NBIs in supporting wider lifestyle change for enhanced wellbeing and the extent to which supported programmes are a catalyst to independent activity in the natural

environment. In particular, there is a need to understand whether benefits for some participants are only possible with support and structure of NBIs, or whether there is more that projects could do to support sustainable independence and personal responsibility for wellbeing beyond project delivery. A challenge is understanding the maintenance of behavioural changes for increased wellbeing. In addition to establishing benefits, a better understanding of barriers to the independent use of greenspace for less frequent users would help targeted development of and spending on interventions. Hence, what is needed is a more integrated study that brings together distal and psychological factors. The combination of methods used in our evaluation of the Actif Woods programme aims to answer some of these questions, particularly how the programme works for the maintenance of participant wellbeing over time.

CHAPTER 3 QUANTITATIVE STUDY OF BASELINE DATA

3.1 Aims and objectives

As per the Introduction in Chapter One, the primary aim of this study is to develop an improved understanding of the impact of Actif Woods Wales (AW) on personal wellbeing and of the psychosocial and geographic dimensions of woodland use. This chapter presents quantitative baseline data (T1) from an adult cohort of AW attendees, outlining the methods used and examining questionnaire data collected at the beginning of the intervention. From this data, we will gain an understanding of who is using AW and their current state of wellbeing and gain insight into their use of and attitudes towards woodlands and associated factors. These descriptive data will be analysed and discussed to address the following research questions:

Personal wellbeing

- What are the psychosocial characteristics of the cohort?
- Do demographic factors relate to participants' wellbeing?
- What is the interplay between the psychosocial factors measured?
- Do these psychosocial factors relate to behaviour?

Woodland use

- What is the frequency of their current use of woodlands?
- Do demographic and psychosocial factors relate to woodland use?
- What are their perceived barriers and enablers to woodland use?

3.2 Methods

Study sites and participants

The study was conducted in woodland venues regularly used by Actif Woods Wales (AW) in Gwynedd, Anglesey, Ceredigion, Swansea, Neath Port Talbot, Treherbert and Merthyr Tydfil. Recruitment was open to all courses and criteria for inclusion was those which had a defined start and end point. Eligibility included all adults (over 18 years old) participating in Actif Woods who had the mental capacity to provide consent and reflect on their wellbeing, as assessed by AW. Their suitability for the programmes is assessed at point of referral (Box 3.1):

- Physically well enough to participate in outdoor sessions
- Participants need to understand that they are taking part, at their own risk
- In need of intervention – i.e. have a physical, mental or social issue that would benefit from AW
- If part of Active Inclusion programme, need to be over 25, and long term unemployed or economically inactive.
- Not be a risk to leaders and other people.

Box 3.1: AW criteria for course participants

Some programmes offered were aimed at particular groups, for example the charity Mind brought groups to AW, a group from an older persons' sheltered housing project or those attending from a brain injury unit. Others had multiple referral routes, which included self-referral, Hafal (a mental health project), recovery from addiction communities, domestic violence programmes and GISDA (a charity for homeless people).

Ethics

Ethical approval for the initial study of Actif Woods provision was granted by the University of Bangor School of Psychology ethics committee (2017-16105). In November 2017, AW secured funding through the European Structural Fund 'Active Inclusion' to run a 12 week woodland activity programme for participants referred by health and social service sectors. To accommodate this course in the research, NHS ethical approval for the whole study was sought (17/WA/0297) and a favourable opinion granted on 26th September 2017.

Procedure

This quantitative longitudinal study involved a self-completed questionnaire at baseline (T1), at the end of the course (T2) and at a three month follow up session (T3). A time gap of three months was deemed to be appropriate to the aims of the research, that is, to provide enough time for any immediate impacts of the course to have subsided in the day to day or week to week lives of participants so that the degree to which any impacts had endured could be ascertained. It was also a short enough time period to be practical in terms of the period available for the study and the ability to maintain the sample after programme completion. Woodland mentors introduced the study to course participants and where possible the researcher (HG) attended week one of each course to brief potential study participants. For this and the qualitative studies, the researcher participated in activities on the day of data collection to promote feelings of group safety and trust. Those interested in taking part were given a participant information sheet (PIS), consent form and baseline questionnaire to complete (Appendices 3.2- 3.4). Following questionnaire completion, participants received a debrief/thank you sheet with advice on support should any distress have been caused (Appendix 3.5). The PIS, consent form and debrief sheet were available bilingually (Welsh/English), but due to the use of pre-validated scales, the questionnaire was in English only.

Measures

As outlined in the literature review, personal wellbeing is defined here as a subjective assessment of how people feel about their own lives. Whilst acknowledging the many different definitions and measures (Linton, Dieppe and Medina-Lara, 2016), the questionnaire assessed the primary outcome measure of personal wellbeing measured using the Short Warwick and Edinburgh Mental Well-being Scale (Stewart-Brown & Janmohamed, 2008). The decision to use this measure was a pragmatic one based on its demonstrated good reliability, validity and robustness (Stewart-Brown *et al*., 2009; Trotter and Adams, 2017; New Economics

Foundation, 2012) and the fact that it had been used by AW for monitoring since the project began, allowing analysis to be linked to this. Whilst recognising that it only measures mental wellbeing, it is a widely used scale in the field particularly in similar studies, enabling comparability across projects for example by the Mersey Forest Project (Nature4Health, 2016), and Branching Out (Wilson, 2016). Pertinent to funders and policy makers, the ability to cost improvements using this scale can also provide valuable data on impact (Trotter and Adams, 2017).

In common with wider research into the multifaceted concept of human wellbeing, and to get a broader picture of change, understanding the impact of AW involved the assessment of a range of different aspects. Thus, a range of factors potentially associated with personal wellbeing were also measured, the importance and relevance of which were highlighted in the literature review. This included general health, known to closely align with personal wellbeing (Appleby, 2016), and physical activity, known to influence physical (WHO, 2013) and mental health (Tessier, 2017). Additionally, both factors replicated measures used in previous AW studies and were already in use by AW for their in-house monitoring, so provided consistency and continuity of data collection. Given the key role of the social dimension for overall wellbeing, as discussed in the literature review, and it's primacy as a benefit experienced by participants in Wick's (2016) earlier qualitative work on AW, it was important to isolate this as a factor to investigate (New Economics Foundation, 2012). Self-efficacy and self-esteem (Schwarzer and Jerusalem, 1995, Rosenberg, 1965) were also measured as belief states that can positively or negatively influence or be influenced by the decisions people make regarding their health behaviours (such as activity). Detail on each measure is given below, however in general, these measures were based on their prevalence in the literature and on demonstrable reliability and validity. Short versions of scales were used where possible to minimise participant burden in the field.

A separate section of the questionnaire asked how regularly participants visited woodlands and inquired about factors affecting this. Expectations of the programme were assessed by asking participants to indicate what they hoped to gain from getting active in the woods using a pre-set list of possible replies on a five point Likert scale that ran from strongly agree to strongly disagree. Provided options covered social, physical or mental health benefits, being in nature, education and support, with space to indicate expectations other than those listed. Demographic data collected included gender, age, ethnicity and education and employment status. Participants were also asked to list their main health conditions or concerns with an open question that did not specify physical or mental health, namely 'If any, can you list your main health issues or concerns (e.g. heart disease, dementia, depression)?'.

Short Warwick and Edinburgh Mental Well-being Scale (Stewart-Brown & Janmohamed, 2008)

The Short Warwick and Edinburgh Mental Well-being Scale (SWEMWBS) is a 7-item scale with five response categories summed to provide a single score. It enquires into functioning by presenting a series of statements

about feelings and thoughts over the last two weeks such as positive feelings (optimistic, relaxed), sense of meaning (usefulness) and closeness to others. As a shortened version of the 14 item Warwick and Edinburgh Mental Wellbeing Scales it was considered more suitable. Scale reliability in the current study was excellent (Cronbach's alpha coefficient .894). Values over .7 are considered acceptable and above .8 are preferable (Pallant, 2016). Asking participants to reflect over the previous two weeks minimises the effect of mood and more immediate circumstances on scores.

7 day Physical Activity Recall

A single question inquired how into many days in the past seven physical activity had been undertaken, defining this as that which increased their heart and breathing rate or made them sweat a bit.

Social trust

A single question about social trust measured on an 11 point Likert scale invited people to state whether 'generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people'. This succinct question was recommended by the Centre for Wellbeing at the New Economics Foundation (2012) and is widely used, frequently in social capital research (Thoni *et al.,* 2012; Delhey and Newton, 2012) and notably the World Values Survey (Inglehart *et al*., 2014).

Self-reported Health

In addition to being asked to list their main health issues or concerns in the demographic data section, self-reported health was measured by asking participants to choose which score best described their general health on a 5-point scale from poor to excellent. This can encompass measures of both physical and mental health. The question is from the widely used SF-12 questionnaire (Quality Metric Inc., 2012), a 12-item questionnaire measuring 8 health domains as a generic measure of health status. The first question only was used to minimise participant burden in the field.

Generalised Self-Efficacy Scale (GSES)

Beliefs about self-efficacy were measured using the General Self-Efficacy Scale, which has been used in over 1,000 studies (Schwarzer & Jereusalem, 1995). The 10-item scale assesses self-belief around ability to cope with a range of difficult demands (e.g. 'I can always manage to solve difficult problems if I try hard enough'). Compatibility with statements uses a 4-point Likert scale format ranging from 'not at all true' to 'exactly true', which add up to a sum score ranging from 10 to 40 points. This scale demonstrated excellent internal reliability in the current study (Cronbach's alpha coefficient .920).

Rosenberg Self-Esteem Scale (RSE)

Self-esteem in the study was measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965). It has 10 statements concerning participants' general feelings about themselves (e.g. self-worth, self-respect, pride

and satisfaction in one's self and social comparisons). A 4-point Likert scale format ranges from strongly agree to strongly disagree and several statements are reverse scored. It is a validated and well-used scale, in particular it has been used in widely cited, peer reviewed studies on nature and health (Barton & Pretty, 2010; Gladwell & Brown *et al*., 2013; Pretty *et al*., 2007). This scale demonstrated excellent reliability (Cronbach's alpha coefficient .905).

Frequency and factors affecting use of woodlands

In order to ascertain pre-intervention frequency of woodland use, attendees were asked to indicate how regularly they visited the woods prior to the AW programme. Five answer options ranged from never to weekly. They were then asked to select which, if any, from a list of 16 potential reasons stopped them visiting woods outside a structured programme, indicating whether each was a major, a minor, or not a reason. These barriers were pre-dominantly based on those used in the Public Opinion of Forestry surveys (Forestry Commission, 2017) allowing comparison of the Actif Woods cohort and any impact of the programme to the national data. The Cronbach's Alpha co-efficient for these items in the current study was a highly satisfactory .889 suggesting they reliably assess barriers. Finally, participants were asked to spontaneously elicit the top three factors that would encourage them to visit woodlands.

Analysis

Analysis was conducted using IBM SPSS Statistics Version 24. Prior to analysis, data was screened for missing or incomplete responses. For responses to the GSES and RSE where less than 30% of the response was missing, a mean substitute based on the completed 70% for that individual was inputted. Where someone gave a score that bridged categories, a cautionary approach was taken and scores were moved down. For example, self-reported health went from very good down to good and in the partially reverse scored RSE they went down for positively worded statements and up for negatively worded statements. For the SWEMWBS, any missing values in the 7-item scale resulted in case omission for this measure (Stewart-Brown *et al*., 2009). For ease of interpretation of the data, answers for the single question on self-reported health were re-scored to run from low to high (so that 1 = poor, 2 = fair, 3 = good, 4 = very good and 5 = excellent), in line with the other measures.

Missing data for the key measures was highest (with nine cases missing) for the reverse scored self-esteem scale and lowest for the single question measures of exercise (3) and social trust (3). Seven cases were classed as missing data for the SWEMWBS. Reasons included missed scales due to administrative difficulties e.g. bad printing of the form by intermediaries in a couple of cases, missed pages in a couple of cases, or inexplicable omissions of certain scales. In five cases, there were concentration or previously undetected comprehension issues. For the GSES measure, there were six mean substitutes and six cases where half scores went down. Two half scores were moved down for self-rated health. For the self-esteem scale, there were three mean

substitutes and four half scores which were moved down. In this scale which is reverse scored, internal inconsistency was suspected for four people. In three instances, 'agree' was ticked for all answers and in the others, there were conflicting answers. However, these participants were kept in the study as this may not have been the case.

Tests of normality

All data were analysed for normality using the Kolmogorov-Smirnov test (Appendix 3.6). As the results for all measures, bar the Rosenberg Self Esteem were significant, it suggested that assumptions of normality for the other measures were violated. This is quite common in larger samples (30+) and according to Pallant (2016), this violation should not cause any major problems. Skewness and kurtosis were examined, and on inspecting the actual shape of the distribution in the histograms, scores appeared to be reasonably normally distributed, and therefore suitable for parametric statistical tests. No extreme outliers were found, which were searched for by inspecting the box plots, whereby any that extend more than three box-lengths from the edge of the box (which represents 50% of the cases) are asterisked.

Descriptive analyses examined participant profiles across all key measures (*n* and % calculations, means/medians, standard deviation (SD)/standard error of the mean (SE). T-tests and ANOVAs investigated relationships between independent variables (gender, age, education, type of health issue) and the key psychosocial measures. This was repeated for the frequency of woodland use data. Partial correlation explored associations between the psychosocial variables to see how they influenced one another at baseline. For the access data, the number of barriers per person was totalled and examined in relation to frequency of woodland use. Barriers to woodland use were ranked and the top five investigated against demographic variables using Chi-squared tests. The free comments from the factors to encourage woodland use were categorised and totalled.

3.3 Results

Sample descriptives

Participants were 120 adults who took part in one of 20 different courses which were largely multi-activity programmes (e.g. bushcraft, foraging, campfire cooking, woodland crafts), but also included two more specific 'mindfulness in the woods' courses and one 'coppice products' course (Appendix 3.6). Programme length varied from 4 – 14 weeks (Appendix 3.6). Participants completed baseline questionnaires between May 2017 and November 2018. Of the 120, 73% were completed face to face. In a few cases this was not viable (e.g. because the researcher could not attend the first session) and completed questionnaires were later forwarded by the woodland mentor. 16 were removed for reasons of unsuitability i.e. one participant was found to be underage, 15 were removed due to comprehensions concerns, e.g. multiple ticking. These

participants were all recruited through a group with learning difficulties and although initially deemed eligible they were found to be unsuitable for the study due to their level of mental capacity.

As seen in table 3.1, there was a fairly even male/female split, and the majority were Caucasian first language English speakers. Over 80% were aged between 18 – 64, with a smaller proportion who were over 65 (16.7%), 5.8% of whom were over 75. In terms of education, just over a third had left school at 16, with two of this group stating that they had left at 14. Those educated to 18 had either stayed on at school (7.7%) or completed technical training (17.9%). Just over a third of the cohort had completed university education or higher. Of the 6.9% in the 'other' category, four had attended special needs schools.

The majority of the group (for which we have data on this) were unemployed, with an additional small number of retirees. Of the 15.1% who said that they were employed, three were support workers who played a dual role in the programme supporting attendees and also participating. Five indicated that they worked part time, and two stated that they were carers, one in an unpaid role. 22 people chose not to answer the employment status question, and due to an administrative error, the first 27 participants were not asked about employment.

Table 3.1: Key demographics of sample at T1

	n	Valid %
Gender	**120**	
Male	54	45
Female	66	55
Age	**121**	
18 – 44	49	40.8
45 – 64	51	42.5
65+	20	16.7
Ethnicity	**118**	
White British	112	95.7
White other	3	2.6
Other ethnic group	2	1.7
First language	**120**	
English	97	81.5
Welsh	21	17.6
Other	1	0.8
Education	**117**	
Secondary school to 16	39	33.6
In education until 18	30	25.9
University or higher	39	33.6
Other	8	6.9
Employment	**94**	
Not stated	20	21.5
Employed	14	15.1
Unemployed	48	51.6
Retired	11	11.8

Health conditions

Where participants had listed their main health conditions or concerns, these data were subsequently categorised as physical or mental health disorders, using 'The Diagnostic and Statistical Manual of Mental

Disorders' (DSM-5®), (American Psychiatric Association, 2013) as a guide. As fig. 3.1 below shows, physical and mental health issues co-occurred in almost a third of the sample. There was a reasonably even split between those who presented with only physical health problems or only mental health problems, although slightly more reported mental health issues alone. This can in part be accounted for by attendance at AW by specific mental health groups, e.g. Mind. Just over a fifth of the sample either had no health issues or chose not to disclose. Non-disclosure is suspected for some cases, rather than an absence of issues. For example, two people attending one of the organised mental health groups, did not disclose any issues. Where a participant had not listed anything but was part of a learning disability or brain injury group and had a support worker, this was logged as a health condition. Where what a participant disclosed was not a medical condition, e.g. grief or "*being overweight and unfit"* this was not logged. In addition, historic conditions (such as having had anxiety or a stroke, past drug or alcohol dependence or "*meditation keeps depression at bay"*) were not counted.

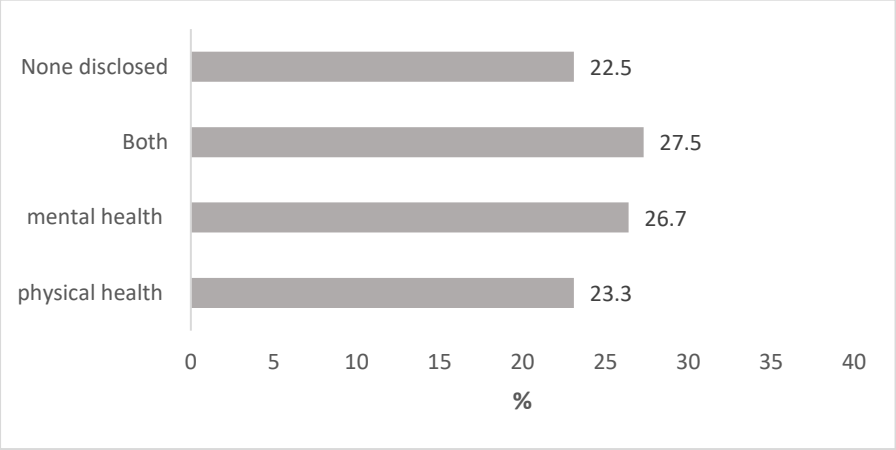


Fig.3.1: Type of health condition (*n* = 120)

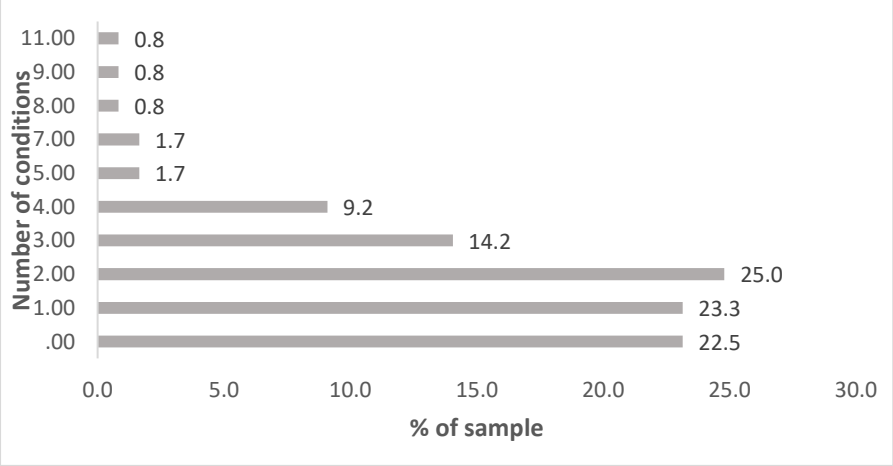


Fig.3.2: No. of health conditions per person (*n* = 120)

In terms of the number of conditions each person reported (fig. 3.2), almost a third of the sample had plural co-morbidities of more than three conditions, with 5.8% having in excess of five issues each. Almost a quarter

had a co-morbidity of two issues, whilst just over a fifth each reported none or one issue. Of the physical health conditions recorded, there were 33 instances of musculoskeletal issues (most commonly arthritis), 10 of cardiovascular and a broad range of other conditions including vertigo, chronic fatigue, high cholesterol and migraines. Of the mental health issues or concerns, depression was the most commonly occurring issue, for 42 participants, frequently being concurrent with anxiety (in 18 cases) or other conditions (8 cases). Anxiety showed up as an issue for 31 participants, usually in tandem with depression or a more severe condition. The sample also consisted of individuals living with conditions such as schizophrenia, psychosis, paranoia or Obsessive Compulsive Disorder (OCD), amongst others.

Hoping to gain

People had high expectations for what they hoped to gain from the programme (fig. 3.3). A desire to be in nature and mental health were the most popular choices, although scores were spread fairly evenly across the categories. Support was the least anticipated benefit, although 72% still either agreed or strongly agreed that this was something that they hoped for. A few free comments written in the margins of this question perhaps shed further light on these scores, for example, "*sharing experiences*", "*to be freee*" and "*showing me a new activity to improve my mental health*".

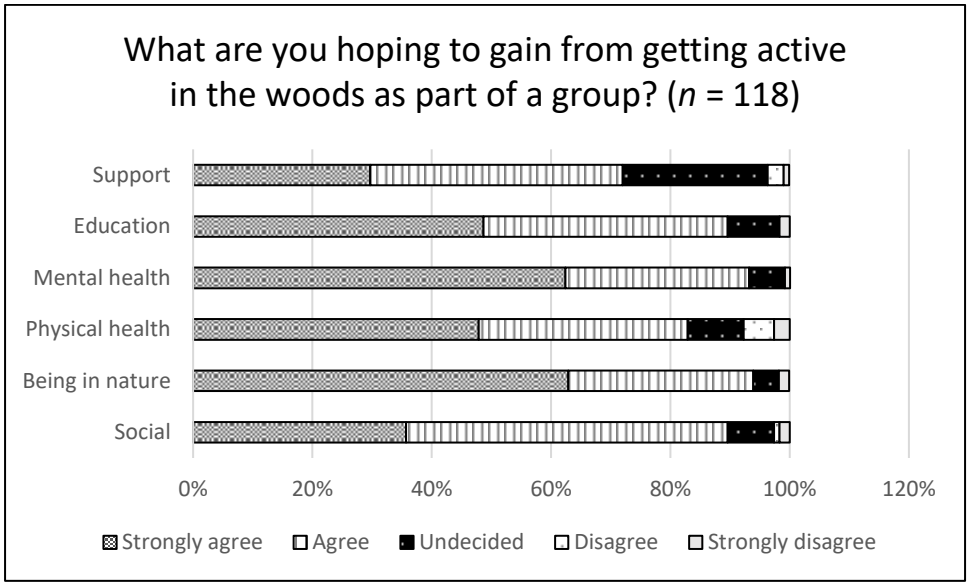


Fig. 3.3: What participants hoped to gain from taking part in AW

Other activities

In order to isolate the impact of AW as far as possible, an attempt was made to establish participants' activities outside the programme by asking what regular and led activities they took part in outside of AW. The data was somewhat variable however, in that it was difficult to discern whether activities were led or independently undertaken. Over half the sample had misinterpreted the question and listed potentially independent activities like running, gym, walking, swimming, gardening, fishing, cycling or socialising and so

were not counted. Others had clearly written "*none*" and one person had written "*None – no longer have the confidence".* It was clear that *'none'* was the most commonly occurring answer at this stage (37.3%, *n* = 83). 36.1% of those that answered took part in one other regular and led activity, and a further quarter took part in three or more other activities. Activities listed ranged from National Exercise Referral Scheme gym and pilates classes to walking groups and voluntary work. Certain groups were particularly active, taking part in activities linked to a particular voluntary organisation such as Mind. Due to an administrative error, the first group of 10 who took part were not asked, and form part of the 38 people who did not answer this question.

3.3.a Psychosocial factors

This section presents results of the psychosocial measures at baseline (T1), starting with a breakdown of participants' wellbeing prior to starting AW (table 3.2). As a whole cohort, the mean score was slightly toward the higher end of the scale for mental wellbeing, slightly above mid-range mean for self-esteem, and more so for self-efficacy. Mid-range scores were evident for social trust and general health. Scores were mid-range for physical activity, measured by days of exercise, although just under a fifth of the sample had done no exercise at all in the last 7 days and 14.9% had exercised daily. These scores will be further discussed in relation to what might be considered normal in the discussion section 3.4.a.

Table 3.2: Summary of mean scores for data for key measures (*n* = 120)

	Scale	*n*	Mean	SD	SE	Median	Range
Mental wellbeing (SWEMWBS)	*7 – 35*	*114*	**20.46**	4.44	.42	**19.98**	7-35
Social trust	0 – 10	*118*	**5.14**	2.60	.24	**5.0**	0-10
Self-rep. health	1 – 5	*113*	**2.58**	1.08	.10	**3.0**	1-5
Self-efficacy	*4 – 40*	*113*	**27.44**	6.00	.56	**29.0**	10-40
Self-esteem	*0 – 30*	*112*	**16.38**	5.88	.56	**16.0**	0-30
Days of ex.	*0 - 7*	*118*	**3.13**	2.37	.22	**3.0**	0-7

There is debate around the use of free comments in a quantitative study and whether or not these should be analysed using a particular qualitative method. Those presented here provide interesting context or insights that are in no way representative and they have not been analysed per se. One participant had written next to the SWEMWBS that she had recently lost her mother, stating that it had been a very bad time of bereavement. Another had put a general comment at the end of the questionnaire stating, "*difficult to put in a box especially with B.P.D (*borderline personality disorder*) because emotions fluctuate widely*". Next to two items on the SWEMWBS one person had written "*sister helps me*" (next to ability to deal with problems item) and "*sister*" (next to decision making item), communicating the role that familial social support played in her wellbeing scoring. A free comment next to the self-efficacy scale referred to a participant's attitude to coping, stating in capitals, "LIFE HAS FORCED ME TO DEAL WITH ANYTHING THAT IS THROWN AT ME!!".

Exploring demographic influences on key baseline measures

In order to examine whether there were any influences of gender, age, type of health condition or level of education on key baseline measures, t-tests and one-way analysis of variance tests (ANOVAs) were used.

Does gender influence key measures at baseline?

Independent samples t-tests were conducted to examine potential gender influence on the scores (table 3.3). Levene's test for equality of variance showed that equal variances could be assumed and there were no significant differences on any of the scores. There was a trend observed whereby men reported slightly higher rates of exercise than women, but overall, there were no significant effects of gender on baseline measures.

Table 3.3: T-test results for effect of gender on key baseline measures

		Male		Female				
	Scale	*Mean*	*SD*	*Mean*	*SD*	*t*	*(df)*	*p*
SWEMWBS	7 – 35	20.46	5.17	20.46	3.79	0.00	112	0.997
Social trust	0 – 10	4.94	2.55	5.31	2.66	-0.75	116	0.452
Self-rep. health	1 – 5	2.70	1.18	2.48	1.00	1.09	111	0.278
Self-efficacy	4 – 40	27.92	6.10	27.05	5.94	0.77	111	0.444
Self-esteem	0 – 30	17.22	6.36	15.69	5.40	1.37	110	0.172
Phys. activity	0-7	3.57	2.41	2.75	2.30	1.90	116	0.060^

Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.

Does age influence key measures at baseline?

Levene's tests showed that homogeneity of variance had not been violated for any of the measures. The ANOVA results (table 3.4) showed that there was a significant difference in the measures of self-reported general health, whereby the over 65 age group had the highest mean score, followed by the youngest. The difference was statistically significant between the upper and middle age groupings as measured by post-hoc comparisons using the Tukey HSD test. There was also a significant result for physical activity measured by days of exercise, which saw the lowest levels for the 45 – 64 year olds, compared to a mean of almost four days per week for both the older and younger ager groups. A post-hoc Tukey HSD test indicated that the difference was significant between the young and middle-aged groups.

Does type of health condition influence key measures at baseline?

In exploring the type of health conditions participants disclosed and their associations with the study measures, they were assigned to one of four groups - mental health issues only (MH), physical health issues only (PH), both mental health and physical health issues (Both) or nothing disclosed (None). This enabled comparison between these health issues, or their dual presence or absence. Levene's tests showed that homogeneity of variance had not been violated for any of the measures. One-way analysis of variance tests revealed a significant difference between the groups for all measures (table 3.5). Tukey's post hoc tests (table 3.6) showed that significant differences were between both conditions and no reported conditions for all

measures, and for the other measures, sometimes physical health issues only and both conditions and sometimes mental health issues only and both conditions. As table 3.5 shows, those with no health issues had the highest scores on all measures except for self-esteem. Those living with both physical and mental health conditions scored the lowest across all measures.

Table 3.4: Effects of age on key baseline measures (ANOVA)

		18-44		45-64		65+			
	Scale	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
SWEMWBS	7 – 35	20.29	4.67	20.05	4.39	22.13	3.68	1.46 (*2,111*)	0.237
Social trust	0 – 10	5.06	2.49	4.88	2.77	6.00	2.38	1.37 (*2,115*)	0.258
Self-rep. health	1 – 5	2.66	1.05	2.29	1.14	3.18	0.73	4.81 (*2,110*)	0.010**
Self-efficacy	4 – 40	26.86	5.98	27.20	6.34	29.67	4.85	1.52 (*2,110*)	0.223
Self esteem	0 – 30	15.55	5.74	16.41	6.27	18.71	4.74	1.85 (*2,109*)	0.163
Phys. activity	0 – 7	3.61	1.99	2.47	2.49	3.67	2.68	3.59 (*2,115*)	0.031*

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Table 3.5: Effect of type of health condition on key baseline measures (ANOVA)

	PH		MH		Both		None			
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
SWEMWBS	22.42[2]	4.17	20.02[3]	3.99	17.23[4]	3.15	23.19[1]	3.94	14.81 (*3,110*)	0.000***
Social trust	5.46[2]	2.63	4.94[3]	2.48	4.19[4]	2.75	6.19[1]	2.18	3.27 (*3,114*)	0.024*
Self-rep. health	2.54[3]	1.14	2.73[2]	1.05	1.97[4]	0.93	3.20[1]	0.87	7.42 (*3,109*)	0.000***
Self-efficacy	29.73[2]	5.09	27.19[3]	5.26	22.72[4]	6.44	30.59[1]	3.63	12.82 (*3,109*)	0.000***
Self esteem	18.96[1]	5.04	15.32[3]	5.05	13.35[4]	6.75	18.88[2]	4.36	7.22 (*3,108*)	0.000***
Phys. activity	3.41[3]	2.37	3.55[2]	2.11	2.00[4]	2.26	3.74[1]	2.44	3.79 (*3,114*)	0.012*

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: [1234] denotes rank order of mean score, [1] = high

Table 3.6: Effect of type of health condition on key baseline measures, Tukey tests

SWEMBS	PH and both; MH and both, MH and none; Both and none
Social trust	Both and none
Self-rep. health	MH and both; Both and none
Self-efficacy	PH and both; MH and both; Both and none
Self esteem	PH and both; Both and none
Phys. activity	MH and both; Both and none

Note: mental health issues only (MH); physical health issues only (PH); both MH & PH (Both); nothing disclosed (None)

Does level of education influence key measures at baseline?

The potential effect of participants' educational attainment on their wellbeing and the other psychosocial variables were examined using ANOVA tests (table 3.7). Significant differences in self-esteem were found between the group schooled up to aged 18 and the 'other' category, whereby the 'other' category had much higher wellbeing (using the Tukey HSD test for post-hoc comparisons). A strong trend was observed for self-efficacy also whereby the University educated and the Other group reported higher self-efficacy than the two groups schooled either up to aged 16 or aged 18 years. However, the interpretation is limited due to uneven

group sizes, with a considerably smaller number in the 'other' category, half of whom had been in Special Needs Education (so could be said to lack insight into their wellbeing).

Table 3.7: Effect of education on key baseline measures

	School to 16		Education to 18		Uni or higher		Other			
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
SWEMWBS	20.51	5.04	20.28	4.40	20.55	3.98	20.34	4.93	.023 (*3,107*)	0.995
Social trust	4.54	2.84	4.87	2.70	5.84	2.25	6.00	1.93	2.03 (*3,110*)	0.113
Self-rep. health	2.44	1.08	2.52	1.15	2.79	1.06	2.33	1.21	0.18 (*3,106*)	0.489
Self-efficacy	26.24	6.06	26.41	6.62	29.39	4.96	29.43	3.05	2.60 (*3,106*)	0.056^
Self esteem	15.78	5.70	14.36	6.16	17.56	5.29	21.33	4.13	3.48 (*3,105*)	0.018*
Phys. activity	3.16	2.61	3.07	2.24	3.10	2.27	4.13	2.64	0.45 (*3,110*)	0.719

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Do the psychosocial measures correlate with each other?

This section explores the associations between the key psychosocial variables, using partial correlation to control for any previously identified effects of the type of health condition, age and education levels. Significant positive correlations were seen between mental wellbeing and all other psychosocial measures (table 3.8), demonstrating that those rating their personal wellbeing highly also rated their other psychological measures highly, and exercised more. In terms of interrelationships between the independent variables the most strongly associated with each other were self-efficacy and self-esteem, sharing almost 50% of the variance (.74 squared = 49). Inspections of the zero-order bivariate correlations (Appendix 3.8) suggested that controlling for effects of health, age or education had little effect on the strength of the relationship between these variables.

Table 3.8: Partial correlations between measures

	1	2	3	4	5	6	7
1. SWEMWBS	-						
2. Social trust	.38[a]***	-					
3. Self-rep. health	.45[b]***	.29[b]**	-				
4. Self-efficacy	.58[a]***	.46[a]***	.57[b]***	-			
5. Self esteem	.61[c]***	.39[c]***	.59[d]***	.74[c]***	-		
6. Phys. activity	.27[b]**	.14[b]	.34[b]***	.22[b]*	.21[d]*	-	

Note: [a]partial correlation controlling for type of health condition, [b]partial correlation controlling for type of health condition and age, [c]partial correlation controlling for type of health condition and education, [d]partial correlation controlling for type of health condition, age and education

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)

Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

3.3.b Woodland use

This section turns from the results of the psychosocial make-up of the cohort at baseline to explore their behaviour and attitudes in relation to woodland use, namely, how often participants visit woods, what stops them from going more often and what encourages them.

Frequency of visits

When asked about the frequency of visiting woods at baseline it was found that habits varied across the sample (fig. 3.4) from almost a fifth who never go and a third who only go between one and five times a year, to just over half who visited woods either monthly or weekly. Of the nine that missed this question, missing the last page, due to an oversight or loss of concentration is suspected.

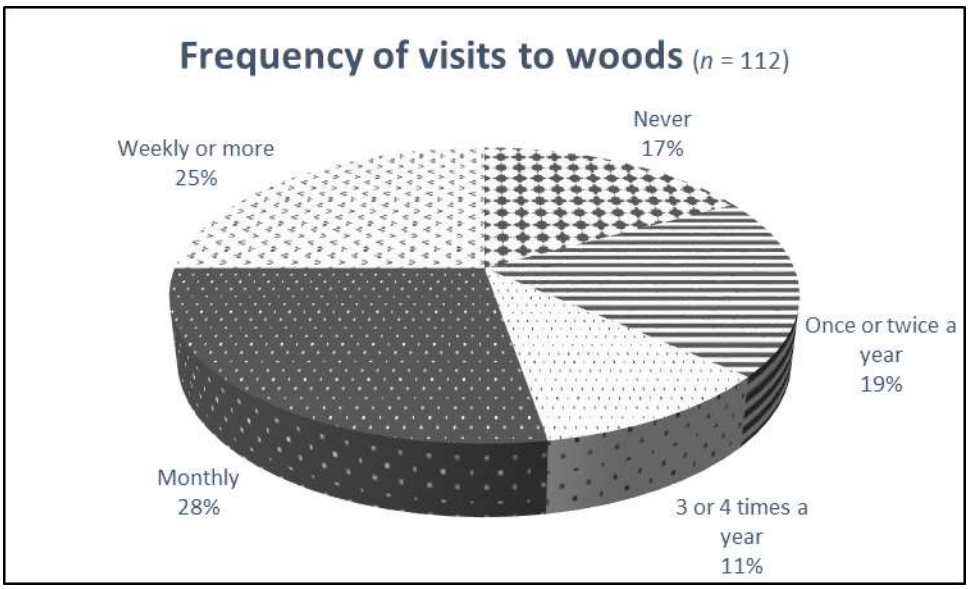


Fig. 3.4: How regularly participants visit woodlands (prior to starting AW)

Effects of demographic variables on frequency of woodland use

To examine potential influence of demographic characteristics on frequency of woodland use, t-tests and ANOVAs were used. There was no significant gender influence, tested with an independent samples t-test (p=0.343, appendix 3.8.a). An ANOVA test showed that there were no significant influences in relation to age group (p=0.343, appendix 3. 8.b) or type of health condition (p = 0.503, Appendix 3.8.c) either. When the influence of education was examined however, a statistically significant difference between the groups was found (table 3.9). Tukey post-hoc tests showed this difference to be between the group educated to 16 years old and both those educated to 18 and those who had been to university, whereby those groups educated to higher levels used the woods more often.

Table 3.9: Effect of education on wellbeing measures on frequency of woodland visits

	School to 16		Education to 18		Uni or higher		Other			
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
Woodland use	2.61	1.52	3.61	1.23	3.55	1.41	3.38	1.51	3.67 (*3,106*)	0.015*

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Associations of psychosocial variables with frequency of woodland use

The visits to woods data was further explored to see whether any of the psychosocial variables were associated with visiting habits (table 3.10). Partial correlations (controlling for type of health condition, age and education, as described above) showed that the strongest positive relationships were with social trust and days of exercise, albeit a small (but significant) relationship for both. No significant associations were seen in relation to mental wellbeing, self-reported general health, or the other psychological measures.

Table 3.10: Partial correlations between psychosocial variables and frequency of visits to woods

Key measures	Woods visits
1. SWEMWBS	.07[c]
2. Social trust	.23[c]*
3. Self-rep. health	.13[d]
4. Self-efficacy	.010[c]
5. Self esteem	.04[c]
6. Phys. activity	.27[d]**
7. Woodland use	-

Note: [a]partial correlation controlling for type of health condition, [b]partial correlation controlling for type of health condition and age, [c]partial correlation controlling for type of health condition and education, [d]partial correlation controlling for type of health condition, age and education
Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)
Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

Barriers to woodland use

Having considered frequency of woodland use above, participants' reasons for not visiting woods, (where they were asked to tick any reasons that applied to them), are now presented (fig 3.5). The most commonly occurring reason, given by almost half the sample, was not having anyone to go with. For almost a third of the group, this was perceived as a major barrier. Other key barriers identified as major, for approximately a fifth of the cohort, were health reasons' and not having a car. The top five reasons for not visiting the woods, combining the minor and major reasons were as follows:

1. No-one to go with
2. Bad weather
3. Too busy
4. Lack of confidence
5. Health reasons

Reasons that occurred less frequently as barriers were cost, not being interested, or woods being badly maintained. Missing data (nine) on this measure were most often due to this page being missed out, it being on the last page. In one case, this was suspected to be due to comprehension difficulties with the whole form. In response to the invitation to list reasons other than those suggested, 12 people had responded. In three cases, physical reasons were given, such as "*UNABLE TO REACH ANYWHERE*" (presented in capitals by the participant for emphasis), "*Uneven path*" and "*Fear of falling*". Problems for specific physical needs were a barrier in a couple of cases, for example, "*Need support at all times due to memory*" or "*Need sighted guide*". For another, barriers were cognitive, such as "*never really thought about it*"; "*like Go Ape e.t.c.*" or "*apathy discourages*". Although the questionnaire did not ask respondents to specify whether health reasons were mental or physical, one person had written depression as a major reason not to go. For another it was a skills issue, stating that they "*Can't read a map and would like to know circular routes*". Practical reasons, such as the woods being a "*tip site*" and a "*lack of equipment*", were also given. One access related general comment, possibly commenting on perceived societal disconnection from nature, stated, "*I love the outdoors but the life we have to lead now makes it difficult to be where we would wish to be*".

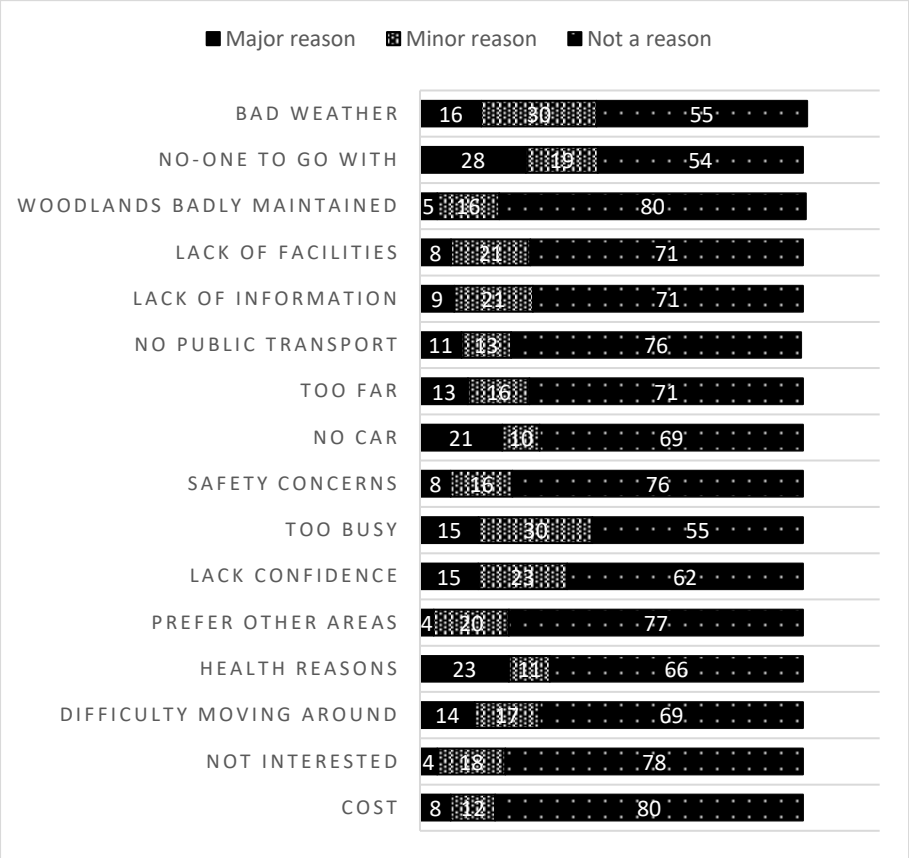


Fig. 3.5: Barriers to visiting the woods (%, *n* = 112)

Exploring demographic influences on barriers to woodland use

The five barriers that ranked most highly were further explored for demographic influences using chi-square tests for independence (with Yates' Continuity Correction). This showed that there was no significant effect of gender on perceived barriers (Appendix 3.9.a.). There was no effect of age either (Appendix 3.9.b), although there were a few trends observed, for example, bad weather was reported as more of a barrier for the 18-44 year old age group than for the older age groups (X^2 *(2, n = 112), p*=.09) and lack of confidence was less of a barrier for those over 65 (X^2 *(2, n = 112), p*=.08). Type of health condition (categorised into none, physical, mental, none or both) was not a significant influence on the top three barriers reported. However it did significantly affect the barrier of lack of confidence (X^2 *(3, n = 112, p*=.04), whereby those in the 'none' category were much less likely to tick this (16% compared to 35 – 52% for the groups with physical, mental or both conditions). In addition, those in the 'none' category were less likely to give health reasons as a barrier to woodland access, and this was statistically significant at *p*=.003, (X^2 *(3, n = 112, p*=.003). It was not possible to examine levels of education as a factor as the statistical assumption that every cell should be 5 or more was violated.

Is the number of barriers a person reports related to how frequently they visit woods?

The expectation was that the more barriers a person listed the less likely they would be to use the woods. This was tested using Pearson *r* (as the data was normally distributed), whereby the number of barriers per person was calculated (a major barrier was given a score of two and a minor barrier was given a score of one) and correlated with the frequency of visits to woods scores. There was a significant negative correlation between the two variables, *r* = -.274, *n* = 112, p .004, confirming that a high number of barriers was indeed associated with a lower frequency of visits.

Facilitating factors to encourage woodland use

Contrary to what might prevent people going to the woods, the results of their perceived facilitating factors are presented here. From the open question about what three factors would encourage visits, answers participants gave were placed into 10 categories (fig. 3.6).

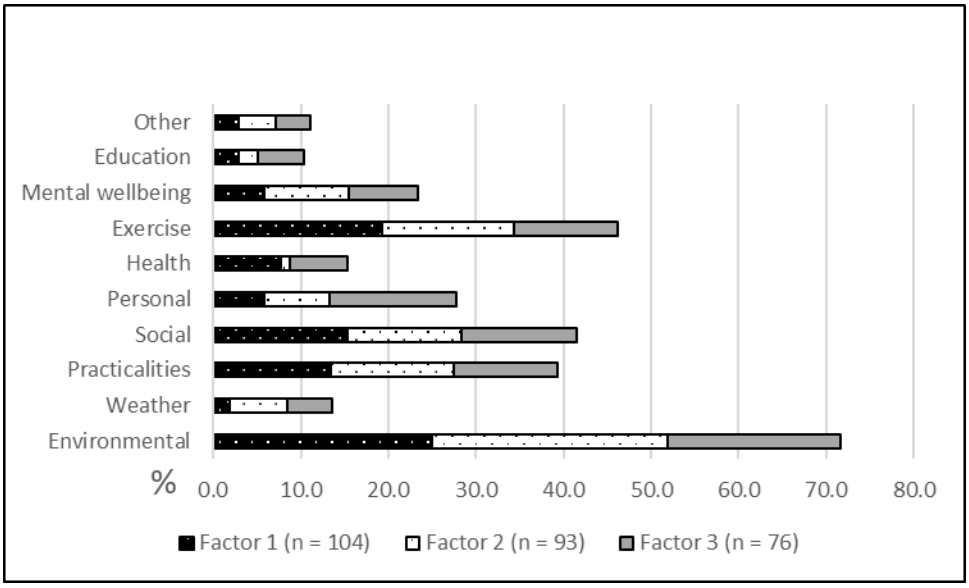


Fig. 3.6: Top three factors to encourage woodland visits (independently of AW)

Although participants were not asked to rank their top three factors, it could be assumed that their first elicited answer had a higher importance to them, particularly (as the *n* figures in fig. 6 show) as there were diminishing frequencies of answers from factor one to three. As the graph shows, environmental factors were clearly the most common facilitator of visits. This category included naming a particular species, like '*bluebells*' or '*to see birds'*. It also encompassed activities such as foraging or simply wanting '*fresh air'*. Factors related to exercise were also commonly provided, expressed by comments such as '*keep fit'* or '*I like walking'*. The third most common facilitating factor listed overall was social, where comments referred to going to the woods to be with other people, such as '*meeting people'*, '*company/don't enjoy going alone'* or '*go with a friend'*. However, this was not a universally held aspiration, as for some, comments related to valuing the woods for quiet time, (categorised as personal) with factors such as '*quiet and solitude'*, '*peace and quiet'* or '*commune with nature'* listed. The 'practicalities' category included factors such as distance, access provision and facilities. As the mental wellbeing category shows, for some a direct link was made between maintaining or improving this and visits to woods.

3.4 Discussion

The goals of this chapter were to ascertain the cohort characteristics at baseline, their demographic and psychosocial characteristics, and their behaviour, specifically physical activity and woodland use. We also sought to examine the interplay between the two, exploring associations and effects prior to their engaging in the NBI. With regard to woodland use, the intention was to discover the frequency of their current use of woodlands and to ascertain how demographic and psychosocial factors might impede or enable this. This data also gives insight into who AW are being used by and evaluates to what extent they are meeting their

goal of working with those in need of support. Here, the key findings and their relevance will be discussed in a wider context in relation to the research questions.

3.4.a Psychosocial factors

The data presented offers a comprehensive overview of the cohort prior to intervention providing a useful and essential baseline against which the NBI impacts could subsequently be evaluated. As less than a quarter of the sample reported having no health issues and over half reported co-morbidities of two or more conditions it is clear that AW's target of working with those in need of support, certainly from a health perspective, is successfully being met. This is particularly so in relation to mental health, whereby over half of the cohort reported a mental health issue, twice the population average of a quarter (WHO, 2013). It is also evident from the employment figures (just over half of working age were unemployed, which is twice the Welsh national average (Welsh Government, 2020), that they are meeting the wider challenge of engaging with lower socio-economic status groups and thus, extending the benefits of time in nature to a wider audience. This is largely due to a history of successful partnership working with health and social support providers, a recognised benefit of NBIs (O'Brien and Morris, 2014), and the explicit targeting of the Active Inclusion project noted above.

Mental wellbeing scores were 3.15 points lower than the UK population norm (23.61, SE .05, n = 7196)(Warwick Medical School, 2011), further suggesting that AW reaches those in need of support. Whilst there was no significant effect apparent for gender, age or education on mental wellbeing in our study, what did have a significant impact (and indeed on all the psychosocial measures) was the prevalence of physical and mental health conditions. As discussed in the literature review, although poor health does not *have* to equate with poor wellbeing, it often does (Merad *et al*., 2013; Appleby, 2016), so it is not surprising that those with comorbid physical and mental health conditions reported the lowest wellbeing in this study.

The mean score for self-reported health for the cohort sat between 'fair' and 'good', which again is somewhat lower than what might be considered normal, whereby a majority of adults in most European countries self-rate their health as good or very good (Morrison and Bennet, 2020). In terms of age however, it was interesting to note that the over 65 age group had the highest self-reported general health. Given that physical health challenges usually increase with age, self-rated health might be expected to be lower for this group, indeed this is the national picture in Wales whereby self-reported health commonly deteriorates with age (Welsh Government, 2018). Instead, what we see here could be a reflection of how the self-reporting relates to how participants *feel* their health is (compared to others of the same age for example) as indeed, self-related health judgements do not always coincide with actual health status (Morrison and Bennet, 2016). It is also possible that the older age group are attending for leisure/pleasure rather than a need based on

poor mental or physical health, or that those attending are elderly people who feel well enough to take part in a woodland activity programme.

The self-efficacy mean total of the cohort (M = 27.44, SD = 6.00) also appears to be marginally lower than what might be considered standard. In an examination of the psychometric properties of the measure with 19,210 participants from 25 countries, the mean total was 29.55 (SD = 5.32), with Great Britain at just over 30 (Scholz *et al*., 2002). With respect to self-esteem, scores for the AW cohort were considerably lower by comparison to wider trends at just above the midpoint of the scales. In a review of studies by Baumeister *et al*., (1989), they conclude that there is substantial evidence to demonstrate that a majority of people rate themselves as high above the average. By contrast, the study mean total of 5.14 for social trust was marginally higher than 'normal'. In a country comparison of social wellbeing, taking into account supportive relationships and trust and belonging, the UK scored 4.90 (Michaelson *et al,* 2009). However, only the latter was measured in the study, making a direct comparison difficult. A further study suggested that in the UK only 30% of the population expressed trust in others, effectively categorising it as a relatively low trust nation (Delhey, 2005). It is possible that by virtue of their willingness to participate in a group activity there is an inclination towards those that would be more trusting of others at recruitment phase.

In terms of physical activity, the mid-range mean score of 3.13 days per week reflects the habits of a fairly active group and suggests that the programme attracts those who are already reasonably active. With reference to the global challenges of physical inactivity outlined in Chapter 2.1 it could be argued that from this perspective, AW is missing those in need. However, given that current guidelines are to engage in some type of physical activity *daily* (NHS, 2020) there is room for improvement. Moreover, the fact that at the extremes, just under a fifth of the sample had done no exercise at all in the last seven days, demonstrates effective recruitment of a hard to reach population who rarely or never exercise. Whilst the older and younger age group reported almost four days per week the middle-aged group had significantly lower levels, which perhaps indicates how busyness, stress or responsibilities in middle life play a part in making time for activity for this group. Here, the longitudinal data from the study will be able to inform as to whether they gain differentially.

In a classic view of health, Bauman proposed that having a general sense of wellbeing, or feeling that their lives are going well was seen as having comparable importance to an absence of disease or the ability to function (Bauman, 1961). As seen in the study results, the psychosocial measures were all highly correlated with each other, that is, if you were high or low in PWB, you were high or low in self-reported health or self-efficacy for instance. In line with this, self-rated health is tied to health behaviours that affect health, higher self-rated health being more tied to preventative rather than risky ones (Idler and Benyamini 1997; Stranges *et al*., 2014). Indeed, a state of equilibrium that encompasses both psychological and functional aspects of a

person is considered key to good wellbeing (Ryan and Deci, 2001). In Chapter Four, the study will examine whether *change* in measures over time is equally as correlated or not.

3.4.b Woodland use

With reference to woodland use, the study aims of finding out about current use of woodlands and attitudes and behaviour to them were achieved. The data showed that (17%) of our sample had *never* visited the woods prior to the course starting. Albeit slightly lower, this roughly correlates with UK data whereby there is a group of 20 – 31% (bi-annual surveys from 2009 – 2019) who likewise *never* visit (Forest Research, 2019). The same and latest report by Forest Research on recreational visits showed that three quarters of their sample visited at least once a month. 30% in this study reported going only between one and four times a year. This demonstrates a slightly lower visiting frequency than the national average and that the programme has successfully recruited people who stand to gain if their access habits can be changed by participating. Whilst increasing independent woodland use is not a direct aim of AW, increasing wellbeing is, and so recruitment from this group presents an opportunity to effect change through the well documented benefits of time in nature with a hard to reach group.

It is interesting to consider the positive association that emerged between frequency of visits and levels of social trust. Corroborating this, when asked what might prevent woodland use, the most commonly occurring reason given (by almost half the sample) was not having anyone to go with. These findings could well link to an increased prevalence of and awareness of loneliness, known to negatively impact on mental health and wellbeing (Valtorta *et al*., 2016; Holt-Lunstad and Smith, 2015). One assumption might be that those with stronger social networks (i.e. people to go to with the woods with) have higher levels of social trust, which in turn results in increased woodland access. Certainly, as mentioned in Section 2.6, the Forestry Commission recognise the importance of structured activities (Morris and O'Brien, 2011) for widening access and that once people get to the woods, the possibility of appreciating them as a setting for "*social interaction and for forming and strengthening social bonds"* is live (O'Brien, 2004:52). A real challenge is how to facilitate them getting there in the first place, and what the results of this study really highlight is the extent to which a lack of company affects this independent access. This demonstrates the kind of questions that quantitative data can usefully raise, and that qualitative data can further explore, and indeed, as will be seen, actual and attitudinal changes to social interaction are key themes in Chapters Five and Six.

Although wellbeing was not correlated at baseline to woodland usage levels (beyond social trust and exercise levels) the T2 and T3 data reported in Chapter 4 will allow insight into whether increasing time, association and connection with woods can affect this and help to enhance other aspects of wellbeing through the course. It is surprising that there was no significant effect of health condition on frequency of visits reported by the

study participants, as Forest Research data for Wales reports that half of those surveyed with a long term health condition (physical or mental) reported their use of woodlands or greenspaces as being affected by this (POFS Wales, 2019). When asked in relation to barriers, whilst not the most prominent, health reasons, did however feature as something which would stop woods visits. A reflection on the study design here is that it would have been helpful to have separated physical and mental health reasons to further disentangle perceived barriers.

A novel and perhaps not unexpected finding was that the numbers of barriers a person listed correlated negatively with their visit frequency, that is, a higher number of barriers resulted in less visits. In terms of what those barriers were, whilst the list of possibilities in our questionnaire was based on the Public Opinion of Forestry Surveys (POFS), it was not identical. It is worth re-iterating here that there are minor variations between the Welsh and the UK survey questions, for example, 'lack of confidence' is an option in the Wales but not the UK POFS, although research highlights the important of self-confidence/self-efficacy to behaviour change (Williams and Rhodes, 2016) and 'weather' is an option in the UK but not the Wales POFS. In fact, a factor that we added for this study ('no-one to go with', as mentioned above) turned out to be the key barrier reported in our data. Other major barriers were more aligned with POFS data, that is*, '*bad weather' and *'busyness'* were of marked importance (Forest Research, 2019 - UK). Although 'lack of confidence' was an important barrier for the study cohort, this was not reflected in the Forest Research data, very possibly due to the cohort that AW work with (those in need of an intervention) and the lower than average scores on items such as self-efficacy and self-esteem. Somewhat surprisingly, 'safety', often cited as a constraining factor (Weldon *et al*., 2007; Jones *et al*., 2009; O'Brien, 2004) did not feature prominently with this cohort. Partly, this could be due to the rural nature of much of Wales, as indeed, safety has been found to be marginally less concerning in rural areas (O'Brien, 2004). It is also possible, that people selected 'no one to go with' as a barrier rather than safety given that company has the effect of dissolving safety concerns (O'Brien, 2004). Interestingly, one person had put 'too expensive' as a major reason, but added that they had never really thought about going before, and that when they did go it was to do expensive activities like 'Go Ape'. This is the kind of perception that a project such as AW may be able to challenge, presenting a new way to be in the woods. It is also important to appreciate that as there is a question asking about barriers, people will list them, for example, what would have been spontaneously elicited without a presented list may well have been different.

The fact that environmental reasons incentivised visits was wholly in line with the POFS data for both the UK and Wales (POFS 2019, UK and Wales) and also tallies with participants' main anticipated gain, 'being in nature'*,* from the AW programme. Aligned with wider research in this area (Natural England, 2017; Hansmann, Hug and Seeland, 2007; O'Brien 2004), although not a primary motivating factor, an awareness

of the potential health and wellbeing woods visits was apparent from the facilitating factors question. It is worth noting that mental health benefits held more weight than expected physical benefits.

3.5 Conclusion

In summary, the sample size recruited to this study and the baseline data analysis enabled a good overview of who is using Actif Woods and a sound insight into their characteristics and any factors associated with key variables such as wellbeing and woodland use. The subsequent longitudinal follow-up data will enable us to dig deeper into the question of whom the programme works for over time, meeting key gaps in the evidence. From this baseline data, it is apparent that compared to national averages for mental wellbeing, self-reported health, self-esteem and self-efficacy, the study cohort have room for improvement, being below average on these measures. The negative impact on wellbeing and other psychosocial measures of co-morbid health conditions within the cohort was also clear. Given that 20% of the population are not accessing greenspace, and that as discussed in Chapter Two, greenspace can moderate health inequalities (De Vries *et al*., 2003; Mitchell and Popham, 2008; Wheeler *et al*., 2015), it is clear that AW are appropriately targeting socio-spatial disadvantage. The insight into the overriding importance of having company to woodland use is worthy of consideration for those seeking to encourage access to the natural environment, particularly from more marginalised user groups. Furthermore, the addition of this important barrier to access may be a worthwhile addition to future POFS surveys.

In terms of study limitations, there were some practical challenges in relation to the timing of data collection. For example, some participants had joined programmes mid-term and attended every subsequent session but were not recruited to the study as this had not coincided with the researchers visit and woodland mentors did not always have time to administer questionnaires. Additionally, it takes time to get groups going, and a researcher with a questionnaire is not always a welcome sight at a first session. In terms of further challenges experienced and how they were addressed, one concern related to participant fatigue, particularly for those with mental health challenges, and that a personal questionnaire would jar with the sense of the course as 'time-out' to relax and rejuvenate in the woods. Indeed, a first questionnaire with the full SF-12 survey was later revised to use a shorter single health question based on feedback. As shown in Section 3.3a where the psychosocial data is presented, there were occasional comments which suggested that participants' answers may not be indicative of their general state of wellbeing. The challenges of such retrospective self-report data were discussed in Section 2.2.

A practical challenge was an occasional lack of support for the study from staff. Whilst the AW woodland mentors and most of the external agency support workers or volunteers were very supportive of the study, there was occasionally doubt from mentors about attending a session with a new group, due to not wanting

to ‘bombard’ participants with paperwork. This was particularly the case as a new funding stream for the project came online mid data collection with much more onerous administrative requirements. In one quantitative data collection session, a mental health worker was audibly dismissive about research and made *“just want to get on with it”* type comments. With respect to the incongruity of taking paperwork into the field, whilst a small number of those eligible who were approached chose not to participate and one person had commented, *“Stressful completing form in room full of other people”*, 120 adults agreed to participate at baseline. Questionnaires were usually completed at the beginning of the session over a cup of tea by the fire, thus providing a relaxed but supportive context. On the whole, the methods used enabled appropriate data collection.

Chapters Four (quantitative) and Five (qualitative) will reveal to what extent AW is able to effect change in wellbeing and woodland use. Combined, they will give further insight into how and why these changes do or do not occur, adding to our understanding of the issues raised in the baseline data presented in this chapter. Together with the quantitative data in Chapter Four, the concurrent qualitative data in Chapter Six will examine whether or not these changes gain traction in the wider lives of participants on a longer term basis.

CHAPTER 4 QUANTITATIVE STUDY AT END OF COURSE AND FOLLOW UP

4.1 Introduction

Following examination of the cohort at baseline (*n* = 120) in Chapter Three, this chapter examines the quantitative data concerning any impacts of taking part in the Actif Woods (AW) programme on the wellbeing of participants and their use of woodlands. Firstly, early change (T2) is reported between baseline and the end of the course (*n* = 74), followed by examining the sustainability of changes as reported in later follow up, T3 (*n* = 57). As presented in the literature review (Chapter Two), there is evidence that interventions such as this have a positive effect on wellbeing (Natural England, 2016), however often that evidence is derived from healthy populations, or an intervention that is not independently evaluated, and furthermore limited research has looked at the woodland environment as a particular habitat. Additionally, evidence on whether any benefits gained are maintained over time is limited, and that which exists suggests that they do not (Wilson, 2009). Hence, research questions specific to this chapter are:

- What, if any, changes in wellbeing and psychosocial factors did participants report?
- Did woodland use and perception of barriers and enablers change, and if so, how?
- Were any reported changes maintained?
- Were reported changes in health outcomes or barriers to woodland use related to participant demographics?
- What was the interplay between key psychosocial change measures?

4.2 Methods

For the T2 'end of course' questionnaires, the researcher attended the final session where possible. Of the 74 questionnaires, 74% were completed face to face (three were received by mail, nine were received via email as an online questionnaire and seven were sent via the relevant mentor). For the T3 'follow up' questionnaire (approximately three months after the course had ended), the researcher attended a one-off follow up session organised by the relevant woodland mentor and asked participants to complete the same questionnaire (Appendix 4.1). In several cases, this was not viable (e.g. because a participant missed the last session or was no longer engaged in the service), and so of the 57 questionnaires, 43% were completed face to face (one was completed via telephone, 15 were received by post, 13 were received via email as an online questionnaire and four were sent via the relevant mentor). As for baseline, following questionnaire completion, participants received a debrief/thank you sheet with advice on support should any distress have been caused (Appendix 3.5). Below is a summary of the measures used, with further detail and justification already provided in Chapter Three:

- Short Warwick and Edinburgh Mental Well-being Scale (SWEMWBS)
- Social trust
- Self-reported health
- Generalised Self-Efficacy Scale (GSES)
- Rosenberg Self-Esteem Scale (RSE)
- 7 day Physical Activity Recall
- Frequency of woodland use
- Barriers to woodland use
- Factors to encourage woodland use

Attrition analysis

Attrition analysis was conducted twice, to compare the characteristics at baseline of those who left the study with firstly, those who continued to T2 and secondly, with those who completed questionnaires at all three time points in order to take potential bias into consideration and to ensure a good understanding of the sample. This was completed for both demographics (using chi-squared tests for independence for gender (with Yates' continuity correction for gender as a two category variable), age, educational level and type of health condition) and psychosocial variables (using independent sample t-tests to compare each time point to baseline).

Firstly, there were no significant differences in demographic composition of those who left and those who continued to T2 or to T3 (Appendices 4.3.a – 4.3.d), thus it can be concluded that demographically speaking, the sample who continued with the study at the end of course stage were representative of the whole sample. Secondly, for differences in psychosocial scores at baseline it was found that scores were broadly similar for general health, self-efficacy and self-esteem for those who participated in the study at T2 than for those that did not (n = 74, table 4.1). For social trust and woods visits however, baseline scores were significantly higher for the group that continued with the study, and also higher (but not significantly so) for mental wellbeing and days of exercise. When comparing those who did not continue with the study to those who completed at all three time points (n = 57, table 4.2), results were also broadly similar, except that the difference for social trust was only a trend. In summary, the attrition analysis showed some differences in the psychosocial makeup of those who continued with the study and those who did not. That is, those who have higher levels of social trust and visit the woods more often were more likely to continue.

Table 4.1: Ind. sample t-test results comparing T1 scores of those who completed at T2 with those who left study

		Continued		Left study				
	Scale	**Mean**	**SD**	**Mean**	**SD**	**t**	**df**	***p***
SWEMWBS	7 – 35	20.98	4.23	19.63	4.67	1.60	112	.11
Social trust	0 – 10	5.53	2.43	4.54	2.77	2.03	116	.05*
Self-rep. health	1 – 5	2.56	1.07	2.60	1.12	-.225	111	.82
Self-efficacy	4 – 40	27.70	5.85	27.02	6.28	.580	111	.56
Self-esteem	0 – 30	16.35	5.18	16.44	6.92	-.082	110	.93
Phys. activity	0 - 7	3.37	2.23	2.73	2.57	1.42	116	.16
Woodland use	1 - 5	3.49	1.34	2.83	1.56	2.29	79.05	.03*

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: Sig. values for Levene's tests >0.5 so equal variances assumed

Table 4.2: Independent sample t-test results comparing T1 scores of those who completed at all three time points to those who left study

		Continued		Left study				
	Scale	**Mean**	**SD**	**Mean**	**SD**	**t**	**df**	***p***
SWEMWBS	7 – 35	20.97	4.51	19.99	4.35	1.176	112	.24
Social trust[a]	0 – 10	5.63	2.51	4.71	2.63	1.93	116	.06^
Self-rep. health	1 – 5	2.55	1.05	2.60	1.12	-.283	111	.78
Self-efficacy	4 – 40	27.28	5.62	27.59	6.37	-.278	111	.78
Self-esteem	0 – 30	16.44	5.48	16.33	6.29	.092	110	.93
Phys. activity	0 - 7	3.39	2.25	2.89	2.47	1.15	116	.25
Woodland use	1 - 5	3.55	1.35	2.97	1.50	2.15	110	.03*

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: [a]=equal variances not assumed

It is worth noting that not everyone leaving the research study will have left the Actif Woods programme. People tended to return the questionnaires if the researcher met them at the end of course or follow up session but return rate by post or email was lower. Therefore, if they were not present at the session for any reason, they were less likely to continue with the study.

4.3 Analysis

Analysis was conducted using IBM SPSS Statistics Version 24 as for the baseline data. Following procedures outlined in Chapter Three, end of course and follow up data were screened for missing or incomplete responses. This preceded the calculation of totals of multi-factor scales, transforming of the SWEMWBS data and reversal of the running order of the self-reported health data (so that it ran from low to high in line with the other measures). Cronbach's Alpha coefficient scores for use of the multi-factor scales with the smaller end of course data cohort were calculated and all found to be over the threshold of .7 (Warwick .88; GSES .902; RSE .863) which is considered acceptable (Pallant, 2016).

Normality testing and treatment of outliers

Total scores for key variables at T2 and T3 were checked for normality using the Kolmogorov-Smirnov test (Appendix 4.2). Results for all measures, except the Rosenberg Self-Esteem scale were significant, which suggests that assumptions of normality were violated. As outlined in the previous chapter, this is quite common in larger samples (30+) and this violation should not cause any major problems (Pallant, 2016). Skewness and kurtosis were examined, and on inspecting the actual shape of the distribution in the histograms, despite a clustering of scores towards the high end for social trust and self-efficacy, scores appeared to be reasonably normally distributed, and therefore suitable for parametric statistical tests. Box plots were inspected for extreme outliers (those more than three box-lengths from the edge of the box, which represents 50% of the cases) for mean total scores at T2 and T3 and none were found. For correlations and hierarchical multiple regression, preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity.

When the change scores comparing the end of course (T2) to baseline (T1) scores were calculated and distribution inspected, five outliers in five separate cases were found (SWEMWBS, GSES, RSE, frequency of woods visits). This was done by inspecting the box plots as above whereby extreme points are asterisked by SPSS. Following checking of the raw data, for these cases (details of which are provided below), the group mean for their T2 score (minus their score) was calculated and used to replace their extreme score, thus keeping them in the change analysis, without their score distorting the statistics (Pallant, 2016, Tabachnick and Fidell, 2013).

Of the five participants, the first had a mental wellbeing gain of 15.75. On checking their individual circumstances, field notes stated, "*woodland mentor said her and another participant have started a relationship with each other recently having got to know each other at AWW*". They were in a women's refuge at T2 and referred to past domestic violence in the free comments about what had stopped them visiting the woods previously. In the free comments at T2 they had put, "*V. good sessions. Really enjoyed walks, all the fresh air and woods*", suggesting in summary, that the score may have been genuine. The second had a self-efficacy gain of 16. Their free comments said "*I have thoroughly enjoyed this course. I have laughed so much and drunk loads of tea herbal and ordinary. Thank you*". They rated it a 7 for how important it had been for them, stating that, "*thoroughly enjoyed being with nature. I have learnt new skills and made new friends. I have also started sketching but am not very good*". Again, this suggests that the gain in feelings of self-efficacy could have been genuine. The third person had lost 13 points on the self-esteem scale. On investigation, their T1 scores were consistent according to the reverse scoring for this measure, but at T2, they had ticked 'agree' for all the positive and negative comments, suggesting they had not read the instructions regarding the reverse scoring properly at this time point. As they had scored the importance of the course to them at 8 and

had moderately positive scores on all other psychosocial measures, it would seem that the score was erroneous.

With regard to the final two outliers, on the measure for change in frequency of visits to woods visits, both had both put 'weekly' at baseline and 'never' at the end of the course. On inspection, the first had said at both T1 and T2 that a factor that encourages her is free transport, suggesting difficulties in accessing woods independently. In a free comment at T2 they had expressed positive feelings about visiting woods, *"I have not had a very good life and from a very young age I always went to the woods it was like my safe place. Later years if I could get time I would always take my dog to the woods. To get there with Actif Woods for me it was like feeling safe almost like being home. Relaxed".* At T3 when asked why they were no longer attending the programme, they had put "*It came to an end. Lack of transport to go to other places*". It is possible that they mis-read the question in the baseline questionnaire, which said 'before you started the AWW programme, approximately how regularly would you visit the woods?' and put weekly here as they were attending AW. Additionally, this participant had very low wellbeing scores at both time points, suggesting that lack of motivation outside a structured course may have been a factor affecting their visiting behaviour. For the second participant, as I had visited on the second week of the programme, they could have mis-read the 'before you started the AWW programme' part of the question and put weekly as they were attending weekly with AW. Why they then put 'never' for T2 is something of an anomaly. They did put "*Because I had to go into hospital for an operation"* for reason no longer attending at T2, suggesting that medical reasons may have later affected their visiting behaviour. However, for other activities, they had put 'rambler's group' at both T1 and T2. When these two T2 scores were replaced with the group mean, they went from 'never' (1) to 'monthly' (4) woodland visits.

There were no outliers for the change scores from T2 to T3, except for woods visits, where there were 12. For this measure, the majority of scores did not change at all, hence further calculations on demographics and inter-relations with other measures were not executed for this measure. Data on frequency of woodland use was examined in tandem with the other psychosocial data as above. For the frequency of woodland visits T2 and T3 data, the first 21 questionnaires said, 'Since joining AWW, how regularly have you been visiting woods?'. As the researcher suspected that people might be putting 'weekly' due to attending AW weekly, the question was changed to 'Since joining AWW, how regularly have you been visiting woods (outside the AWW programme)?'. A new variable was created which excluded these 21 (although kept in one that had a hand-written note saying "*outside the AWW prog*").

Subsequently, as for the baseline access data, at both time points, the number of barriers per person was totalled and examined in relation to frequency of woodland use. Barriers to woodland use were ranked and the top five investigated against demographic variables using Chi-squared tests. The freely elicited comments

from the factors to encourage woodland use question were categorised and totalled using the categories created at baseline. These data were then compared to the baseline data and the follow up data were compared to the end of course data.

Psychosocial data

Change over time from the baseline to the end of course scores was investigated using paired-samples t-tests (also known as repeated measures t-tests). Following this, change scores were computed for the psychosocial measures at two points, firstly subtracting end of course (T2) scores from baseline (T1 scores), and secondly, subtracting follow up (T3) scores from T2 scores. These change scores were then further analysed for demographic influences using t-tests and ANOVAs, and correlations between the change scores calculated and examined. To examine change at all three time points, the one-way repeated measures ANOVA test was used on all psychosocial scores. Finally, in order to predict the amount of variance in wellbeing that could be explained by demographic factors and by change in psychosocial variables, hierarchical multiple regression was employed.

4.4 Results

4.4.a Descriptive statistics

The breakdown of the 20 different courses included in this part of the study can be seen in Appendix 3.6.

Early change cohort (T2)

Of the 120 adult participants in the baseline study (T1), 74 completed the 'end of course' questionnaires at T2 between June 2017 and February 2019. As table 4.3 below shows, there were slightly more women than men in this sample, which was predominantly white British. Most of the group fell into either the young or middle-aged category with a smaller number of participants who were over 65. In terms of education, 40% had been to university, whilst 29% had left school at 16. Of the 53 who responded to the question about employment, almost half were unemployed.

From a health perspective, across the cohort at T2, 27% had no disclosed health issues, 25.7% had physical health issues only, 24.3% had mental health issues only and 23% had both mental and physical health issues. The number of health issues per person at T2 varied, with 27.0% having none, 21.6% having one, 23.0% having two and 28.4% having three or more.

Maintained change cohort (T3)

63 participants filled out the 'follow up' questionnaires (T3) between December 2017 and April 2019, six of whom had not filled out end of course questionnaires, leaving 57 participants who had completed at all three time points. Of the 57, nine were in focus groups at T2 and T3, four were in T2 focus groups and three were

in T3 focus groups (see Chapter Five). The demographic breakdown of the 57 at all three time points was very similar to at end of course (table 4.3), although this sample has a slightly higher percentage of unemployed and retired participants. The time lag between end of course and follow up varied from 6 to 31 weeks (Mean = 16.07, SD = 5.74, *n* = 57).

From a health perspective, at T3 the distribution was almost identical to T2 (physical health 28.1%, mental health 26.3%, both 22.8%, none disclosed 22.8%). For number of health issues, at T3 there were fewer people with none (22.8%), otherwise, the distribution was broadly similar (21.1% with one issue, 26.3% with two issues, 29.9% with three or more issues).

Attendance

Attendance for those who completed T2 questionnaires ranged from 8% to 100% with a mean attendance of 72.66% (SD 23.35, *n* = 74). The figure is the actual attendance of the number of sessions offered on a course, regardless of when they started it. In the majority of cases, this figure was derived from course attendance registers, however in a small number of cases where this data was not available, it was based on the participant's own estimate. Of the 72 people that we have this data for, none had attended AW previously. Three people were participating in more than one course, including one participant who began in one group but migrated to another. The other two were part of two courses simultaneously, including one participant who was attending a 13 week fortnightly multi-activity programme and six week weekly 'mindfulness in the woods' programme and one who was in two different multi-activity programmes, one weekly and one fortnightly. For the 57 participants in the study at all three time points, mean attendance was almost identical (72.21%, SD 22.85).

Table 4.3: Demographic data of samples

	End of course (T2)		Follow up (T3)	
	n **(74)**	**Valid %**	***n*** **(57)**	**Valid %**
Gender	**(Total *n*=74)**		**(Total *n*=57)**	
Male	32	43.2	24	42.1
Female	42	56.8	33	57.9
Age	**(Total *n*=74)**		**(Total *n*=57)**	
18 – 44	28	37.8	22	38.6
45 – 64	32	43.2	24	42.1
65+	14	18.9	11	19.3
Ethnicity	**(Total *n*=71)**		**(Total *n*=55)**	
White British	69	97.2	54	98.2
White other	1	1.4	1	1.8
Other ethnic group	1	1.4		
Education	**(Total *n*=73)**		**(Total *n*=56)**	
Secondary school to 16	21	28.8	17	30.4
Between secondary school and uni	20	27.4	16	28.6
University or higher	29	39.7	22	39.3
Other	3	4.1	1	1.8
Employment	**(Total *n*=53)**		**(Total *n*=42)**	
Not stated	9	17.0	4	9.5
Employed	11	20.8	8	19.0
Unemployed	26	49.1	23	54.8
Retired	7	13.2	7	16.7

4.4.b Early change (T2, *n*=74 max)

Paired-samples t-tests were conducted on absolute T1 – T2 scores to evaluate the impact of the AW programme on mental wellbeing and all key measures. As shown in table 4.4 below, there was significant increase across most of the psychosocial measures, with particularly significant change levels for mental wellbeing and general health. The frequency of visits to woods increased, although this was a trend, rather than being statistically significant. In order to gauge the magnitude of the intervention's effect, an effect size was calculated by hand using eta squared (Pallant, 2016:253). Looking at the eta squared values below, we can see that there was a large effect size for general self-reported health and self-esteem and moderate differences for all other measures, demonstrating substantial differences in the psychosocial scores obtained before and after participating.

Table 4.4: Paired-samples t-tests results comparing baseline to end of course means for key baseline measures

			T1		T2					
	Scale	***n***	**Mean**	SD	**Mean**	SD	***t***	***df***	***p***	**Effect size**
SWEMWBS	7–35	70	20.98	4.23	22.61	3.78	-3.47	69	0.001***	0.09
Social trust	0–10	72	5.53	2.42	6.33	2.35	-2.71	71	0.009**	0.09
Self-rep. health	1–5	70	2.56	1.07	2.87	0.96	-3.8	69	0.000***	0.17
Self-efficacy	4–40	70	27.7	5.85	28.98	5.26	-2.54	69	0.013*	0.09
Self-esteem	0–30	67	16.49	5.19	18.1	5.12	-2.96	66	0.004**	0.12
Phys. activity	0-7	73	3.37	2.23	4.01	2.08	-2.78	72	0.007**	0.10
Woodland use	1-5	48	3.65	1.31	4.0	1.32	-1.85	47	0.071^	0.07

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: Effect size guidelines: .01 = small, .06 = moderate, .14 = large (Pallant, 2016)

A change score comparing the end of the course scores (T2) to baseline (T1) was computed for mental wellbeing and all key variables by subtracting the baseline scores from the end of course scores. As seen by the scores (table 4.5), the general direction of change was positive. However, whilst all change was significant and positive at a group level, as the minimum scores presented show, some individuals went down in their mental wellbeing and related psychosocial scores. In addition, the large standard deviations indicate the dispersed nature of the values. Differences with and without the outliers (as detailed in the analysis section), were marginal as the scores prior to their removal show (Appendix 4.4). The following sections break down the change scores to look for any demographic influences of gender, age, education or the type of health condition that participants presented with on the key study variables to establish whether some people benefitted more than others.

Table 4.5: Early change (T2 minus T1)

	Scale	***n***	**Min.**	**Max.**	**Mean change**	SD
SWEMWBS	7–35	70	-6.87	12.65	1.45	3.53
Social trust	0–10	72	-8.00	6.00	0.81	2.53
Self-rep. health	1–5	70	-2.00	2.00	0.31	0.69
Self-efficacy	4–40	70	-10.00	11.00	1.18	3.93
Self-esteem	0–30	67	-9.82	16.00	1.65	4.30
Phys. activity	0-7	73	-6.00	6.00	0.64	1.98
Woodland use	1-5	48	-1.00	4.00	.48	1.01

Do demographic characteristics influence early change in key measures?

Gender, age and educational effects on change in the key psychosocial variables and activity were not significant. Independent sample t-tests were used to compare the mental wellbeing and all other change scores for males and females (Appendix 4.6). Although female change scores were higher for mental wellbeing (MWB), self-reported health and self-esteem and male change scores were higher for the active measures, days of exercise and visits to woods, these differences did not achieve significance. One-way

between-groups analysis of variance were conducted to explore any effects of age (Appendix 4.7) or education (Appendix 4.8).

Type of health condition

As the one-way between-groups analysis of variance test (ANOVA) to explore effects of type of health condition on change variables showed (table 4.6 below), significant effects were found in relation to mental wellbeing only. Those with mental health conditions had a positive mean change in wellbeing that differed significantly from those with physical health conditions who had a small mean decrease in wellbeing, and from those reporting no health conditions who had virtually no change. There was a trend towards a significant difference in changed general health, but here, those with physical health conditions had the largest gain.

Table 4.6: Effect of type of health condition on early change (T1 to T2)

	PH		MH		Both		None			
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (df)**	***p***
SWEMWBS[b]	-0.23	2.73	3.61	3.79	2.47	2.78	0.09	3.41	5.793 (69)	0.001***
Social trust[b]	0.68	3.06	1.59	2.15	0.44	2.85	0.55	1.99	.731 (71)	0.537
Self-rep. health	0.61	0.61	0.35	0.79	0.31	0.48	0.00	0.75	2.593 (69)	0.06^
Self-efficacy[b]	0.65	2.85	2.85	4.29	1.47	4.58	-0.10	3.56	2.012 (69)	0.121
Self-esteem[b]	0.81	2.20	2.91	5.84	2.00	3.64	0.96	4.50	.885 (66)	[a].464/.442
Phys. activity[b]	1.06	1.47	0.06	2.51	1.41	1.77	0.15	1.84	2.151 (72)	0.102
Woodland use	0.92	1.32	0.50	0.85	0.00	0.94	0.36	0.67	1.710 (47)	0.179

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Note: [a]Where Levene's test for homogeneity of variances is <.05 (i.e. assumption of homogeneity of variance has been violated), *p* values shown are from Welch/Brown-Forsythe test)

Note: [b]Group sizes are unequal and harmonic mean of the group sizes is used. Type I error levels not guaranteed

Correlations between early change scores for key measures

Correlations were used to explore the relationships between early changes in the key measures (Pearson product-moment correlation coefficient). For mental wellbeing, partial correlation controlled for type of health condition, as a consequence of the previously described ANOVA.

As table 4.7 below shows, there were significant positive correlations between changes in mental wellbeing and social trust, self-efficacy and self-esteem, and a positive trend between change in MWB and self-reported health. That is, if an individual increased in MWB over time, they were likely also to show an increase in these other measures. There was however no significant correlation between improved MWB and the behavioural variables of days of exercise and frequency of woods visits. Other statistically significant correlations between change scores were positive ones between self-efficacy and social trust, and self-efficacy and self-esteem.

Table 4.7: Correlations between change scores for key measures (T2)

	1	2	3	4	5	6	7
1. SWEMWBS	-						
2. Social trust	0.26[a]*	-					
3. Self-rep. health	0.23[a]^	0.08	-				
4. Self-efficacy	0.56[a]***	0.28*	0.20	-			
5. Self-esteem	0.43[a]***	0.01	0.07	0.38**	-		
6. Phys. activity	-.04[a]	0.02	0.04	-.145	0.12	-	
7. Woodland use	-.12[a]	-.039	-.021	-0.036	-.085	-.038	-

Note: [a]partial correlation controlling for type of health condition, otherwise, bi-variate Pearson correlations

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

Correlations between frequency of attendance and change scores

The relationship between frequency of attendance and change in all key measures was investigated using Pearson product-moment correlation coefficient and no significant relationships were found (table 4.8). Inspections of the zero-order correlations suggested that controlling for effects of type of health condition for MWB had little effect on the strength of the relationship with frequency of attendance

Table 4.8: Correlations between % attendance and change in key measures

Measure	*r*	*p*
1. SWEMWBS[a]	0.16	0.197
2. Social trust	-0.12	0.311
3. Self-rep. health	0.15	0.226
4. Self-efficacy	0.07	0.576
5. Self-esteem	0.11	0.388
6. Phys. activity	0.04	0.730
7. Woodland use	-0.02	0.921

Note: [a]partial correlation controlling for type of health condition, otherwise, bi-variate Pearson correlations
Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)
Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

As the correlation test findings indicated that the number of times a participant attended a course had no significant association with key outcomes, further analyses were carried out to investigate thresholds of attendance. Participants were split into four roughly equally sized percentile groups based on their attendance (1 – 61%, 62 – 75%, 76 – 92% and 93 – 100%) and then one-way between-group ANOVA were carried out on the key measures. As table 4.9 below shows, none of the differences were statistically significant.

Table 4.9: Effect of % attendance on early change (*n* = 74)

	1 - 61%		62 - 75%		76 - 92%		93 - 100%			
	M	SD	M	SD	M	SD	M	SD	F (*df*)	*p*
SWEMWBS	0.34	3.24	1.90	3.64	1.68	4.20	1.71	2.91	0.68	0.57
Social trust	1.44	2.36	0.30	2.32	0.82	3.05	0.71	2.44	0.65	0.59
Self-rep. health	0.12	0.93	0.45	0.51	0.41	0.71	0.25	0.58	0.87	0.46
Self-efficacy	-0.21	5.16	2.02	3.34	1.82	3.96	0.91	2.85	1.20	0.32
Self-esteem	0.69	3.16	2.18	4.52	2.00	5.10	1.64	4.42	0.39	0.76
Phys. Activity	0.29	1.26	1.14	1.56	0.44	3.20	0.59	1.28	1.20	ª0.34/0.57
Woodland use	0.83	1.40	0.29	0.73	0.38	0.96	0.44	0.88	0.69	0.56

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: ªWhere Levene's test for homogeneity of variances is <.05 (i.e. assumption of homogeneity of variance has been violated), p values shown are from Welch/Brown-Forsythe test)
Note: Group sizes unequal and harmonic mean of the group sizes used. Type I error levels not guaranteed

Course length

To address whether our findings pointed to any optimal course length (as one might hypothesise that longer courses would achieve greater effects), participants were split into four roughly equally sized percentile groups based on the length of the course they attended (1 – 7 weeks, 8 – 10 weeks, 11 – 12 weeks, 13+ weeks). There were no significant effects of the length of the course on the study variables (table 4.10), although there was a trend for woodland use, where the longer courses had resulted in more independent visits.

Table 4.10: Effect of course length on early change (*n* = 74)

	1 - 7 weeks		8 - 10 weeks		11 - 12 weeks		13+ weeks			
	M	SD	M	SD	M	SD	M	SD	F (*df*)	*p*
SWEMWBS	2.49	2.19	1.77	3.37	-0.10	3.89	1.84	4.24	2.03	0.12
Social trust	0.89	3.07	0.95	2.70	0.60	2.14	0.79	2.22	0.07	0.98
Self-rep. health	0.45	0.51	0.35	0.49	0.10	0.85	0.38	0.87	0.95	0.42
Self-efficacy	1.79	3.03	1.28	3.71	0.02	4.13	1.92	5.01	0.89	0.45
Self-esteem	2.53	2.87	1.86	5.07	1.08	4.82	1.08	4.52	0.46	0.71
Phys. Activity	1.25	1.86	0.06	2.60	0.43	1.12	0.86	2.18	1.31	0.28
Woodland use	0.50	0.93	0.08	0.67	0.43	1.12	1.29	0.95	2.30	0.09^

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: ªWhere Levene's test for homogeneity of variances is <.05 (i.e. assumption of homogeneity of variance has been violated), p values shown are from Welch/Brown-Forsythe test)
Note: Group sizes are unequal and harmonic mean of the group sizes is used. Type I error levels not guaranteed

Type of course

It was possible that the above non-significant effects of course length were influenced by the fact that over half of the participants (13/20) in the shortest length grouping were on the two (shorter) mindfulness courses. As the breakdown of courses in appendix 3.6 shows, of the 20 included in the study, most were mixed activity (*n* = 54), one was 'coppice products' (*n* = 8), which included a range of woodland management and craft

activities and two were pilot six week weekly 'mindfulness in the woods' courses (*n* = 13). As the mindfulness courses had more explicit intentions around managing thoughts and feelings and stress reduction, T2 change scores for these courses were looked at in comparison to the mixed activity courses using independent sample t-tests (although due to the uneven group sizes, this calculation does not have good statistical power). Whilst the mindfulness change scores were higher across all measures (Appendix 4.5), there were no statistically significant differences.

4.4.c Maintained change (T3, *n*=57 max)

As the above results clearly show, there were positive gains in all measures by the end of course time point. This section now examines whether and to what extent these gains are maintained by the 57 participants who took part at all three time points. One-way repeated measures ANOVA tests completed on the key measures, comparing absolute scores for key measures at baseline (T1), end of course (T2) and follow up (T3) (table 4.11) showed no significant changes between the end of the course and the follow up. Also, as fig. 4.1 below illustrates, for most measures the general trend was that T2 gains continued to increase (not the case for social trust and days of exercise which had dipped slightly by T3).

Table 4.11: One-way repeated measure ANOVA results on key measures

	Baseline		End of course		Follow up					
	M	**SD**	**M**	**SD**	**M**	**SD**	**WL**	***p***	***F (df)***	**Effect size**
SWEMWBS[c]	20.97	4.51	22.37	3.66	22.55	3.90	0.812	0.004	2, 53	0.19
Social trust[a]	5.63	2.51	6.48	2.40	6.20	2.28	0.88	0.032	2, 55	0.12
Self-rep. health[c]	2.52	1.04	2.80	0.88	2.93	0.91	0.79	0.002	2, 52	0.21
Self-efficacy[c]	27.28	5.62	28.63	4.67	29.70	5.61	0.71	0.000	2, 52	0.29
Self-esteem[b]	16.62	5.49	17.95	5.08	18.75	5.83	0.76	0.001	2, 51	0.24
Phys. activity	3.39	2.27	3.89	2.14	3.54	2.24	0.92	0.114	2, 54	0.08
Woodland use	3.55	1.38	3.93	1.38	4.05	1.26	0.89	0.103	2, 38	0.11

Note: WL = Wilks' Lambada
Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)
Note: Pairwise comparisons = [a]Significant between baseline and end of course only; [b]significant between baseline and follow up only; [c]significant between baseline and end of course and baseline and follow up only
Note: Effect size (assessing size of difference between the three sets of scores) is partial eta squared, .01 = small, .06 = moderate, .14 = large effect

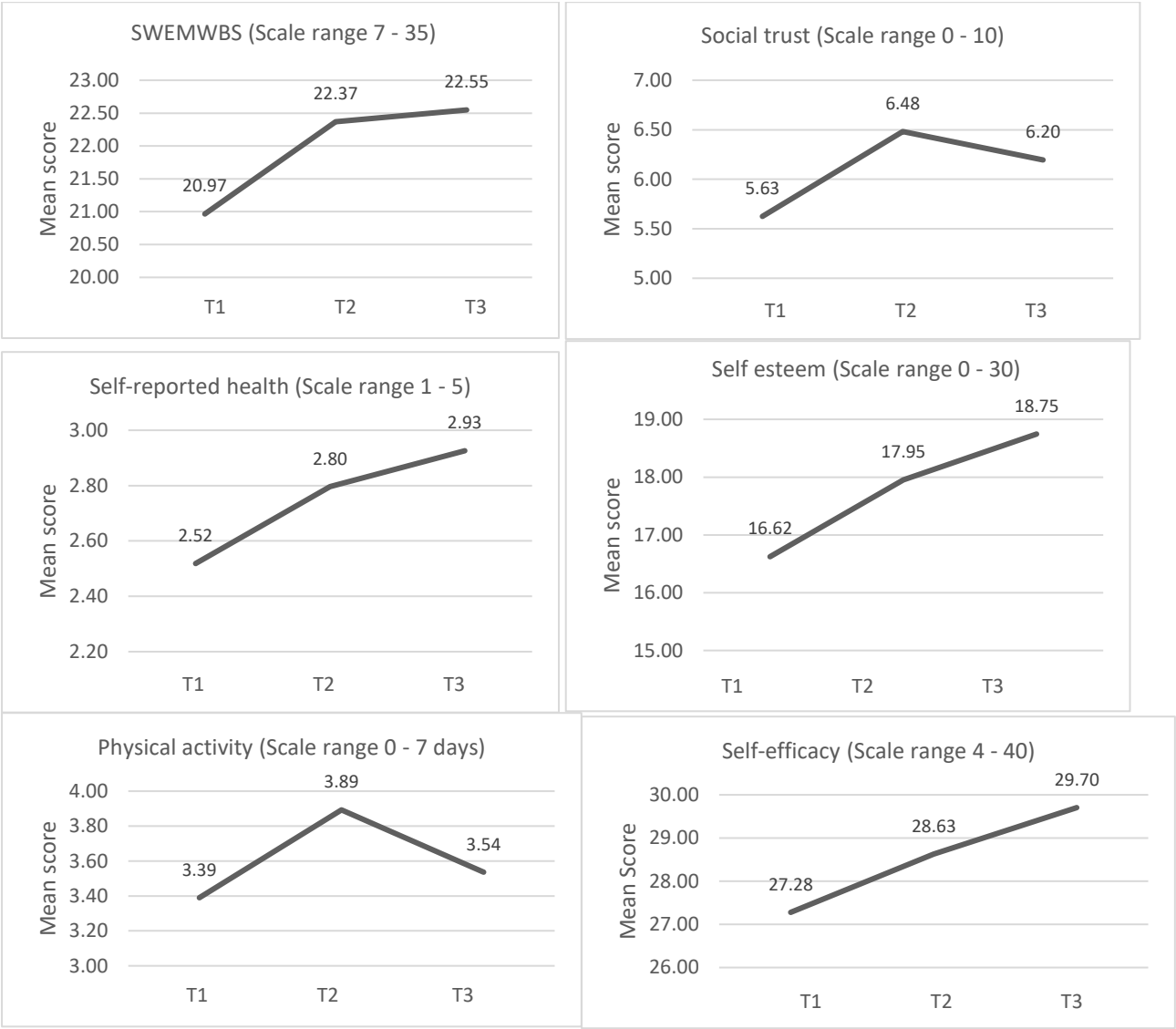


Fig. 4.1: Descriptive statistic scores for key measures at baseline (T1), end of course (T2) and follow up (T3)

Change score (T2 to T3)

Change scores were subsequently calculated, comparing end of course (T2) to follow up scores (T3) for all key variables, so that any demographic influences on maintained change could be investigated, and to see how longer term changes in the different measures might inter-relate. The bar charts below (fig. 4.2) visually depict differences between mean changes from T1 to T2 and mean changes from T2 to T3. As can be seen, changes at T3 were all positive except for social trust and physical activity. Mental wellbeing, self-reported health and woodland use stay relatively stable, whilst increases in self-esteem and self-efficacy were larger.

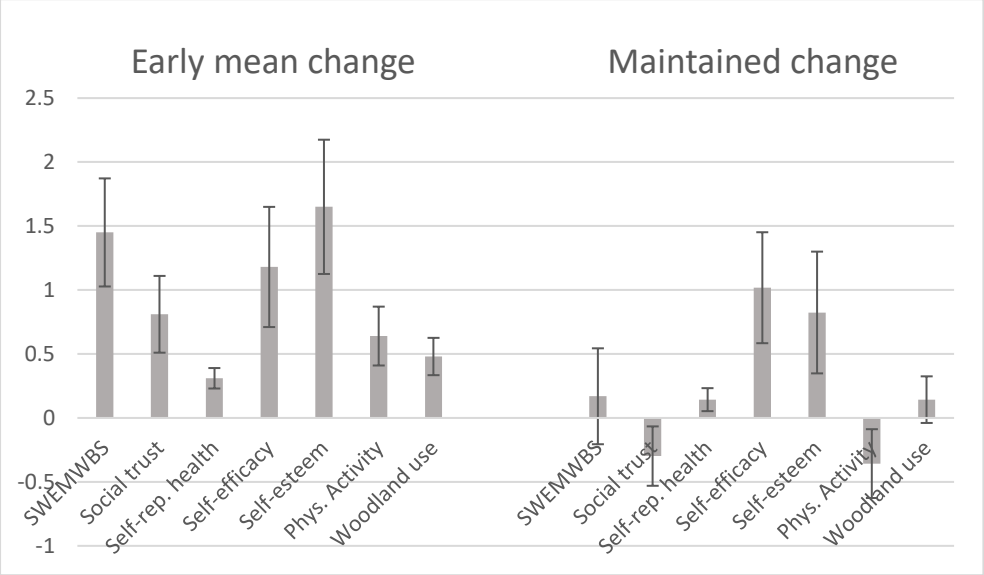


Fig. 4.2 Clustered bar chart for mean change (and standard error) scores at both time points

Do demographic factors influence maintained change in key measures?

An independent sample t-test (table 4.12) showed a significant gender difference in in terms of change in days of exercise over time, whereby women had made a slight increase and men had decreased by one day a week. Additionally, there was a trend seen in general health findings, whereby for men there was a small positive change, and for women, there was no change. One-way between-group ANOVA tests showed that there were no significant effects of age (appendix 4.9) or education (appendix 4.10) in these maintained change scores.

Table 4.12: Independent sample t-test results for effect of gender on change scores T2 to T3

		Male		Female				
	Scale	**Mean**	**SD**	**Mean**	**SD**	***t***	***(df)***	***p***
SWEMWBS	7 – 35	-0.07	3.1	0.34	2.65	-0.54	55	0.59
Social trust	0 – 10	-0.38	1.69	-0.24	1.82	-0.28	55	0.78
Self-rep. health	1 – 5	0.33	0.64	0.00	0.67	1.88	54	0.07^
Self-efficacy	4 – 40	0.52	3.17	1.39	3.3	-0.99	54	0.33
Self-esteem	0 – 30	0.5	3.84	1.08	3.24	-0.61	52	0.55
Phys. activity	0-7	-1.0	1.35	0.13	2.3	-2.14	54	0.04*

Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.
Note: Sig. values for Levene's tests >0.5 so equal variances assumed

Type of health condition

No significant effect of type of health condition on change scores was seen (table 4.13), however, there was a trend for days of exercise, whereby those with mental health conditions had increased in frequency for this measure since the course end, whereas the other subgroups showed decrease.

Table 4.13: ANOVA test results for effect of type of health condition on change scores T2 to T3

	PH		MH		Both		None			
	M	SD	M	SD	M	SD	M	SD	F (*df*)	*p*
SWEMWBS	0.95	2.28	0.55	3.96	-1.03	2.40	-0.03	2.06	1.32 (56)	0.19/.27
Social trust	0.06	1.24	-0.73	1.28	-0.54	2.03	0.00	2.42	0.73 (56)	0.54
Self-rep. health	0.13	0.72	0.20	0.56	0.17	0.72	0.08	0.76	0.08 (55)	0.97
Self-efficacy	0.00	3.63	1.10	2.38	1.00	3.38	2.19	3.44	1.10 (55)	0.36
Self-esteem	0.84	3.16	1.25	3.84	-1.23	2.38	2.08	3.88	1.99 (55)	0.13
Phys. activity	-1.40	1.64	0.60	2.69	-0.31	1.80	-0.31	1.11	2.71 (55)	0.06^

Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.
Note: [a]Where Levene's test for homogeneity of variances is <.05 (i.e. assumption of homogeneity of variance has been violated), p values shown are from Welch/Brown-Forsythe test)
Note: Group sizes are unequal, so harmonic means sample sizes used, type 1 error levels not guaranteed

How do maintained changes in the key measures inter-relate?

Correlations were again used to explore relationships between key measures at follow up. Pearson product-moment correlation coefficient was used, except for measures involving general health and days of exercise where partial correlation, controlling for gender was used, as it was significant in the t-tests described above. As table 4.14 below shows, on the whole and contrary to expectations given high inter-correlation at previous time points, change scores were not highly inter-correlated. There was a significant and counter-intuitive negative relationship however between change in self-reported health and self-esteem whereby an increase in one was associated with a decrease in the other. There was also a trend towards a positive association between change in mental wellbeing and change in self-efficacy.

Table 4.14: Correlations between change scores for key measures (T3)

	1	2	3	4	5	6
1. SWEMWBS	-					
2. Social trust	.05	-				
3. Self-rep. health	.09[a]	.14[a]	-			
4. Self-efficacy	.23^	.18	.11[a]	-		
5. Self-esteem	.16	.01	-.28[a]*	-.14	-	
6. Phys. activity	-.16[a]	-.13[a]	-.03[a]	-.09[a]	.22[a]	-

Note: [a]partial correlation controlling for gender, otherwise, bi-variate Pearson correlations
Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.
Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

Which variable is the best predictor of change in mental wellbeing?

In order to better address the question of explaining changes in wellbeing over time, hierarchical multiple regression analyses were built based on those variables that were significant in the previous t-tests, ANOVAs and correlations. This analysis assessed the extent to which early or maintained changes in self-esteem, social trust and self-efficacy predicted change in mental wellbeing, after controlling for the influence of type of health condition (table 4.15). Type of health condition was entered first as the only demographic variable,

followed by the more trait-like self-esteem variable, and lastly, social trust and self-efficacy. For early change in wellbeing (T1 – T2), 39% of the variance was explained. As table 4.15 shows, at this stage, type of health condition explained none of the variance in wellbeing change, whereas self-esteem accounted for 19% of the variance in wellbeing change, social trust added a further 8% and self-efficacy a further 12%, which were all significant. For late change in wellbeing (T2 – T3), only 16% of the variance was explained. As table 4.16 shows, type of health condition explained a non-significant 3% of the variance in later wellbeing change, change in self-esteem added a further non-significant 3%, social trust did not contribute, and self-efficacy accounted uniquely for 10% of the variance, which was a significant result.

Table 4.15: Summary of hierarchical regression analysis for variables predicting change in wellbeing (T1 - T2) (*n* = 61)

Step	Variable	R^2 change	Sig. F Change	β	Sig.
1	**Type of health condition**	0.00	0.82	0.05	0.67
2	**Self-esteem**	0.19	0.00***	0.28	0.02*
3	**Social trust**	0.08	0.02*	0.19	0.09^
4	**Self-efficacy**	0.12	0.00***	0.39	0.00***

Note: ^p <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: β = Standardised Coefficients Beta

Table 4.16: Summary of hierarchical regression analysis for variables predicting change in wellbeing (T2 - T3) (*n* = 54)

Step	Variable	R^2 change	Sig. F Change	β	Sig.
1	**Type of health condition**	0.03	0.21	-0.26	0.06
2	**Self-esteem**	0.03	0.23	0.22	0.11
3	**Social trust**	0.00	0.89	-0.03	0.80
4	**Self-efficacy**	0.10	0.02*	0.33	0.02*

Note: ^p <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.
Note: β = Standardised Coefficients Beta

4.4.d Woodland use

As the attrition analysis showed, those who had visited the woods more at baseline were more likely to continue with the study. Frequency of woodland use was examined in tandem with the other psychosocial measures, as described above, in order to avoid unnecessary repetition. In summary, mean visits at T2 had increased slightly (a non-significant trend), and the indication at T3 was that this change was maintained and had continued to rise (fig 4.3). As the frequency distribution data below clearly shows (fig. 4.4), for the vast majority of participants, visiting behaviour had not changed at all at either time point. It was also notable that the proportion of people who 'never' go to the woods outside of the NBI had decreased (17% at baseline (*n* = 112); 8% at T2 (*n* = 51); 12% at T3 (*n* = 43).

Fig 4.3: Descriptive statistic scores for frequency of woodland use

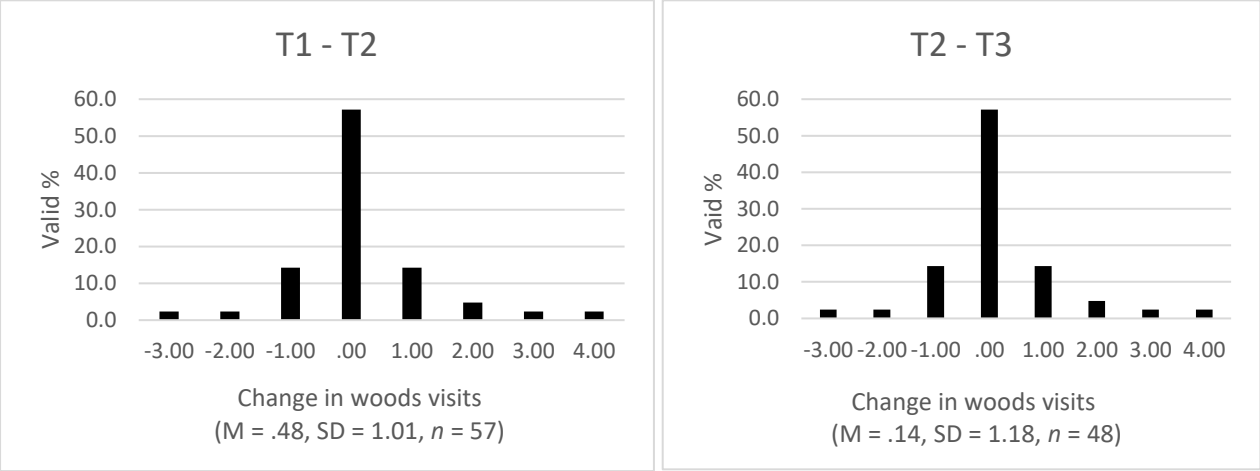


Fig. 4.4: Distribution of change scores

Barriers to woodland use

Taking the major barriers in rank order, the three major reasons not to go to the woods at T2 remained as 'not having anyone to go with', 'not having a car' and 'health reasons' (see fig 4.5 below). However, having 'no-one to go with' and 'health reasons' were also where the biggest decreases were seen, in addition to 'difficulty moving around'. Other larger decreases in what constituted a major barrier were 'bad weather', the 'woods being badly maintained' and 'not being interested'. Overall, when comparing the barriers to visiting woods at T1 to those at T2 it was apparent that the emphasis on what constituted major barriers had decreased. This was true of every barrier, except for two physical barriers, 'lack of facilities' which had stayed the same and 'no public transport' which had increased slightly.

Nine free comments in relation to a gap for 'other barriers' are tabulated below (table 4.17), two of which suggest social/caring responsibilities and one which relates to the weather. Expanding on 'no-one to go with' one person had written *"my friends not interested"* next to their tick for this. Further insight was given into 'cost', where the cumulative cost of protective clothing for a family was cited. Also related to cost, one comment referred at length to the challenge of car parking charges at a country park local to them and how

it was both a financial and psychological barrier for free access, but also to attending AW there, "*On occasion I was sweating as had no money on me for the car-parking fee of £3, the machine was out of order and the cafe didn't accept cards to pay"* and how this interacted with physical challenges *"You have to be able to afford the fee which is a genuine issue for people (unless you park outside and walk in which is not an option with M.E), then you need to have the right change in coins or interact with someone in the shop and traipse back and forth which is several transitions and interactions before you start to engage with being in nature. This is an ordeal for someone on the autism spectrum or with communication or energy limitations".* 13 comments were expressed as facilitators for example, "*having a dog or family"*; "*exercise"*; "*fitness"; "health and wellbeing"*; "it's *a calming environment"; "to meet others" or "free car parks"*.

Looking at how changes were maintained (T3) in the major barriers (fig.4.5), the top three remained the same, however the predominant trend was a continued, albeit smaller decrease. In particular, the main decreases were in 'public transport', 'lack of facilities' and 'safety concerns'. However, there were some small increases, which in rank order were 'difficulty moving around', 'being too busy', 'not being interested' and 'cost'. The seven free comments in table 4.17 below give further insight into barriers, such as changing life circumstances, how both physical and mental health can affect behaviour and simply a lack of motivation at times. As for T2, eight people had left positive comments, namely "*dogs allowed"*; "learning"; "fitness"; "more active"*; "being outdoors – you breath differently, you feel differently"; "for a walk"*; "*enjoy the environment"*. At both time points, comments echoed sentiments expressed in the question about what encouraged them to go.

Table 4.17: Free comments in response to 'any other barriers' question

Free comments at T2	Free comments at T3
▪ *Spouse disinterested unless I organise activities. Cost in itself is minor reason relating to transport, but if I wanted to go for a few hours all weather, I would need waterproof trousers for me, then multiply the need for waterproofs for child/ren and partner and the cumulative clothing cost adds up. We have waterproof coats for work and school but not trousers* ▪ *Husband is ill* ▪ *Difficult to get out of the house* ▪ *Past domestic violence. No confidence* ▪ *Depression* ▪ *Too windy*	▪ *Don't have a car* ▪ *Scared of getting lost* ▪ *Lack of motivation at times. Once I'm out there I usually enjoy it...but the initial motivation can be hard to find, especially if I am on my own* ▪ *Lack of confidence* ▪ *Health & future hospital operations* ▪ *My depression has been particularly bad these past couple of months compounded by problems with my knees making it painful to walk* ▪ *Dogs allowed (on lead)* ▪ *Been busy sorting out my house as I have relocated to Wales this spring* ▪ *Weather/season*

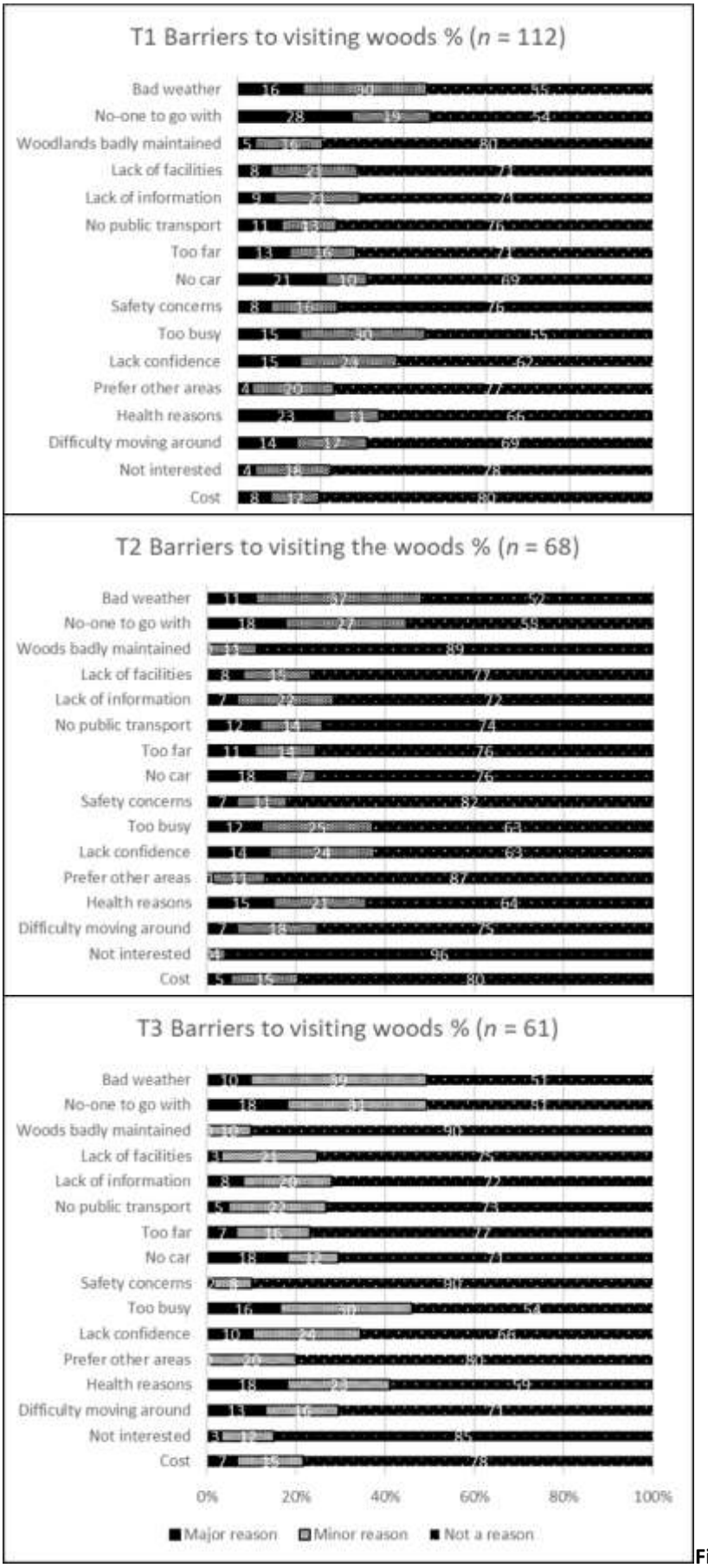


Fig. 4.5: Barriers to visiting woods (Valid %)

Number of barriers

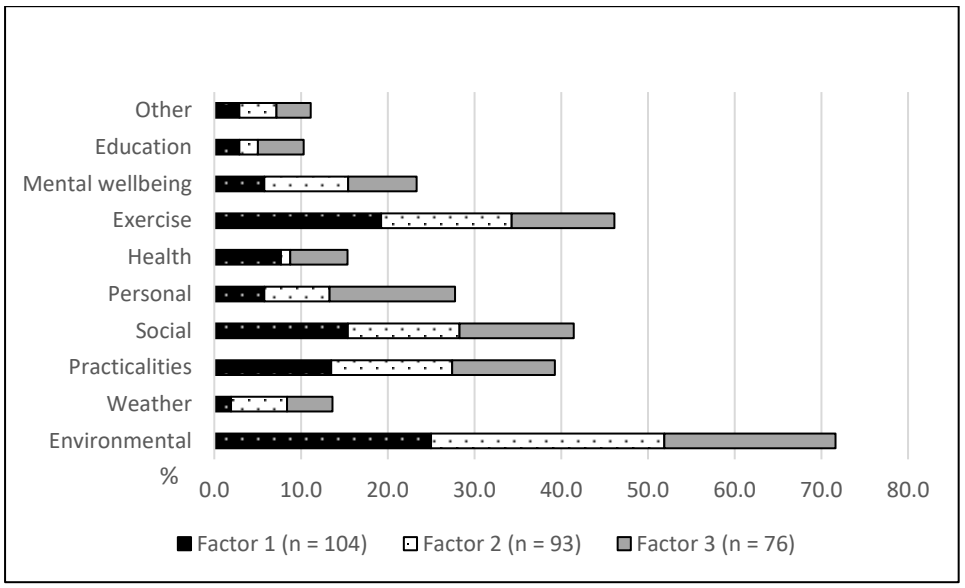
In order to get some indice of barrier 'strength', the number of barriers per person was calculated at T2 (scoring one for a minor barrier and two for a major barrier), and compared to the number per person at T1 using a paired-samples t-test. There was a statistically significant decrease from T1 (M = 7.24, SD = 6.75, n = 63) to T2 (M = 5.56, SD = 5.78), t (62) = 2.07, p = .043 (two tailed). High standard deviations indicate a wide range of values around the mean. The eta squared statistic (.06) indicated a moderate effect size (Pallant, 2016). When the T3 scores were calculated (M = 5.89, SD = 4.68), t (45)= -1.15, p = .256 (two tailed) and compared to T2 (M = 5.23, SD = 5.03) to ascertain maintained change there was a small increase that was not statistically significant.

Facilitating factors to encourage woodland use

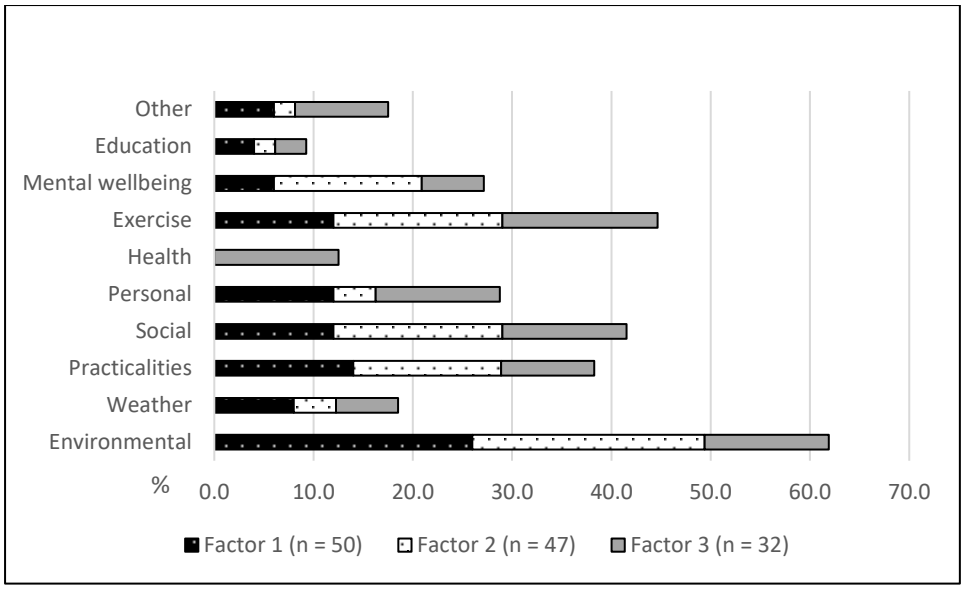
When the spontaneously elicited facilitating factors to encourage woodland use data from T2 were analysed, as fig. 4.6 shows, the breakdown was broadly the same as at T1 (as seen in Chapter Three). Environmental factors remained the main facilitator that encouraged independent woodland visits, followed by exercise and social factors. Within the 'environmental' category, a desire for *"fresh air"* featured prominently as did the practical activity of foraging. It also included feelings of fondness for the woods, e.g. "*I love trees"*, "*like birdsong"* or "*I love woodlands*". This extended further into for example, "*connecting with nature"*, "*amongst nature"* or *"feel close to nature"*. Comments about exercise often referred to a canine companion, like "*walk my dog"* or "*space to walk the dog"*. Comments organised into 'practicalities' were the largest category for factor one and like at T1, this included infrastructure such as toilets or a visitor centre, but also the cost factor was mentioned, as was a desire for organised activities, expressed as *"a purpose"*, "*more AWW"* or "*more activities like this"*.

Comments grouped under 'personal' showed how important the peace and quiet of the woods was for some, for example, "*woodlands are calm and sacred places to me"*, "*solitude*" or "*peace*". In the 'other' category, two comments referred to mindfulness (from two participants on the 'mindfulness in the woods' course), "*opportunity for mindfulness"* and "*to practice mindfulnes*s", suggesting an intention to continue practicing in the woods independently. One person simply said "*I can breathe in the woods"*. There were slightly more comments categorised under mental wellbeing than at T1, suggesting an increase in awareness of the benefits of time in the woods. These included *"to chill and be peaceful"*, "*to feel happy"*, "*improved self-esteem and energy"*, "*love the energy. Helps me be grounded and positive"* and the more spiritual *"I see woodland and forests as a cathedral or nature church, find it healing, relaxing and connects me"*. In the 'social' category, there were comments about spending time friends and family, but also the more poignant, "*I don't want to go just with me"* or "*trying to integrate with people"*.

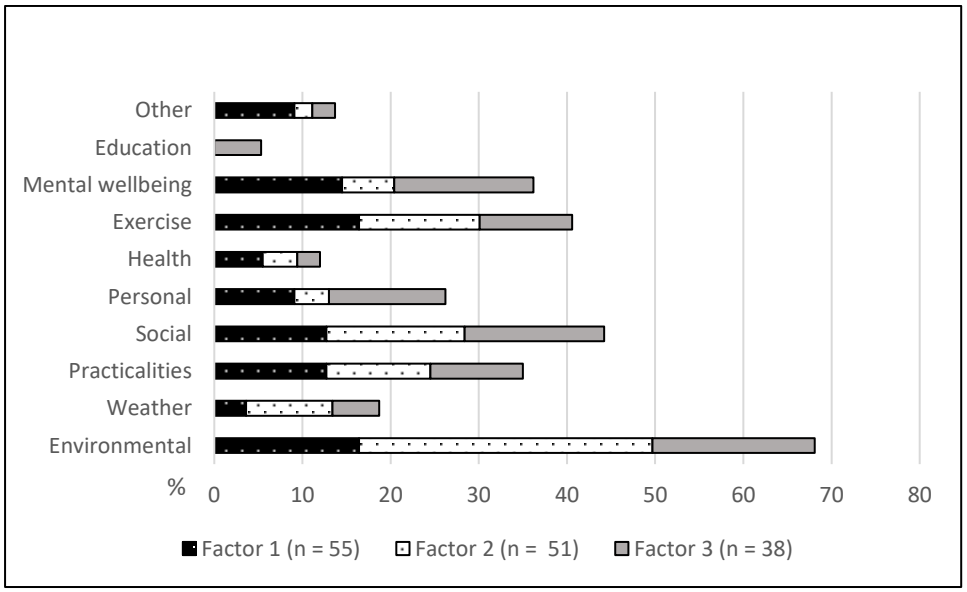
At T3, the breakdown was broadly similar, although the prominence of mental wellbeing as a primary factor had increased. Comments here referred largely to visiting the woods to relax the mind, for example "*frees your mind from everyday life"*, "*to clear my mind", "peace to think clearly"* and "*peace to think"*. It was clear from some of the comments that activities learnt on the programme acted as an incentive for return visits, such as mindfulness and foraging, e.g. "*Forage using skills I've learnt from Acting woods"*. The same dichotomy existed between those incentives under the personal category, like "*peace and quiet"* and "*to be alone"* and those under the social category like "*company"* or "*someone to go with"*. Answers were largely short, reflecting the space given for this spontaneous elicitation exercise, however, one longer statement spanning all categories was "*I love trees and nature, I believe in the beneficial effects, I love wildlife*" demonstrating the therapeutic properties that people experience as a result of spending time in the woods.



Baseline (T1)



End of course (T2)



Follow up (T3)

Fig. 4.6: Top three factors to encourage woodland visits at baseline, end of course, follow up (outside of AW)

4.4.e Importance of course

When asked how important the course had been to them on a scale of 1 – 10, the mean score at T2 was high at 8.35 (SD = 1.67, *n* = 69). This figure did not dip at T3, in fact it had marginally increased by .12 (Mean = 8.47, SD = 1.86, *n* = 60). Spontaneously elicited data from the box where participants were asked to say a little more about their score was categorised according to the frequency of use of terms. Spelling and grammar mistakes in quotes were corrected for ease of comprehension and place names changed to protect anonymity. End of course comments on the lower scores were inspected in some depth for insight into the minority of cases where the rating for importance was low. Of the 69, there was one score of one and two scores of six, but no accompanying comments. For four participants who had scored five, two of the comments were, "*It has been nice to meet new people but have found it physically challenging"* and "*thought it would be good to get out and meet people, but found the content was not as enjoyable as I thought it would be. Just me I'm afraid"*. The third related their score to life events that had prevented them from attending more frequently, but said, "*I always enjoyed it or got something from it when I could be there"*. The fourth lower score seemed to have misunderstood the context saying, *"I don't know about Actif Woods to be honest, but have enjoyed the outdoor meditation"*.

All other scores were seven or above and these answers were examined holistically. The most frequently occurring comment was quite clearly about how important the social benefits were. This ranged from it being "*nice*" or "*important*" to meet people, to meeting people "*to share experiences with"* or companionship, and in two cases making new friends, one who said they had previously been socially isolated. One comment referred to the course having given them the confidence "*to get out and meet other people and work alongside others in a team as a group in an outdoor environment"* and the mental health benefits of socialising, for example the importance of speaking to people following a stroke and AW having provided the opportunity to do so. One person said, "*meet new people talk about our disabilities. Feel needed as a person and not treated like a worn out pair of shoes to be discarded and thrown away".* Only two comments related to physical fitness, however many comments referred to psychological benefits, such as increased confidence or motivation, or decreased anxiety. References to mood were common, for example finding a *"place to relax", "I was so anxious and tense before and beginning of course"* or "*a place to relax, learn and share with people who understand".*

The importance of the structure of the course was referred to on a couple of occasions, for example, "*this has helped me to maintain a structure to my week and the routine and pleasant accountability has helped me to keep a handle on self-managing my mental health and attempting to keep mood more stable"*. An eager anticipation associated with the AW day was also mentioned, for example, "*with my illnesses I find it difficult to get out, but I look forward to this and get excited to attend to do different activities*" or "*Wednesday is Actif*

Woods Day does not come around quick enough. If for some reason I am unable to attend it is very disappointing". Six people referred to either "*getting up*" or *"getting out*" suggesting that they might not otherwise, for example "*Gets me out of the house and I meet people'* or "*It got me off my backside and got to meet new people and felt rejuvenated".*

The natural environment itself was mentioned, but not as frequently as the social or mental health benefits outlined above. Two of these were in relation to managing mental health, and illustrative examples include the course being important because "*It has helped me to get back to nature to help me calm myself"* or "*because getting out with nature and especially in the woods makes a big difference in my mood and wellbeing".* Education or learning was mentioned frequently. Some of these reasons related to the natural environment, for example, "*learning new things about plants and their healing properties"* or *"It has re-kindled my interest and love of woodland art and craft"*. The 'mindfulness in the woods' course elicited comments more specific to such a programme, such as *"have enjoyed the mindfulness course, gained a lot of benefits from day to day life"* or "*Helped me…to engage and practice relaxing techniques using mindfulness".* A different kind of engagement with or a new appreciation for the natural environment in relation to the mindfulness course was a recurrent theme. This was encapsulated by comments such as *"The course has deepened my mindfulness practice and has added an extra dimension by encouraging me to connect with nature".*

At the three month follow up stage, free comments on why the course had been important to them fell into similar categories to those at the end of course time point. Comments were universally positive, bar one which said, "*I already spend time walking in the countryside, so perhaps it isn't quite so important as it might otherwise have been"*. The social aspect remained the most prominent reason for the importance of the course, with three people mentioning previous social isolation. The way that the AW helped with this is reflected in this comment, "*Because it was outdoors, the focus wasn't on us, it was on the breath-taking scenery and we were relaxed"*. Mental health benefits, particularly confidence were again common, and several gave further insight into how this worked for them, reflected by for example, "*It helps deflect me from my mental illness and nature is important and good for me*".

Learning benefits were also mentioned, and in terms of gaining further insight into maintenance of any benefits, some comments related to how the course had been a catalyst to wider lifestyle changes. For example, *"I set up a children's woodland group that has helped me and others and been fun. It will help me career wise",* and *"It encouraged me to make an effort to attend community event that was stimulating and helped me overcome my health struggles"*. Two people mentioned how the benefits of attending the mindfulness programme appeared to have endured, for example, "*Has helped me introduce mindfulness into my life from day to day, and take more time to appreciate the moment"* and *"Mindfulness course helped me*

cope better with day to day life". On the whole, quotes were fairly short and pithy, however, this longer quote gives an overarching picture of how benefits were experienced by a participant reflecting back at T3:

> "*Being outdoors took me away from how I feel and made me aware that being happier doesn't lie in thinking and reasoning but you need to do and experience and live and not be so self-obsessed. It was so good to be in such nice surroundings, it was so peaceful and cleared my mind so much while I was there. I have started walking in the woods in the 'Afan woods' and at 'Chailey country park' now with just me and with friends".*

4.4.f What have you gained?

When asked what they had gained from the course by choosing a category, the item most strongly agreed with by the 74 participants at T2 was quite clearly 'being in nature' (fig 4.8), far exceeding expectations expressed by the whole group at T1 (fig 4.7). Education, social and mental health benefits and support were also seen as having been important gains, whereby education and particularly social benefits exceeded expectations at T1. Both physical and mental health benefits were less strongly expressed as gains experienced compared to hopes for the course at T1, although more participants reported support as important compared to what they had hoped to gain. Participants' reporting was predominantly positive, however 6% of the cohort actively disagreed that they had made any physical health gains. This corresponds with a similar figure from the cohort at baseline for expected gains on this item.

Seven people had written additional, positive comments in the margins for this question, for example, "*time out from stressful life"*, "*getting away from electric gadgets"*, "*made new friends"* and "*improved my fine motor skills"*. Another stated that they now took "*more notice of the outdoor environment trees, plants, birds and more"* and another cited the "*re-enforcement of mindful practice and re-connection after turbulence"* as a gain. Educational benefits were referred to, "*the woodland knowledge, of coppicing, crafts and general woodland facts was really helpful…and I think I can probably use this knowledge and experience in the future".* A sixth comment gave insight into how one participant managed external challenges whilst participating, "*Just had a lot to deal with and thought out this course But I put one foot in front other and got on with it".*

When the T3 distribution was inspected, scores were almost identical to T2 (fig 4.9). Nine people had written additional comments in the margins, which were also similar to those at T2. One was a less positive comment which said "*haven't done much exercise on the course"*. Conversely, an additional comment next to the physical health category said, "*Started course very tense. Think tension was psychological and by the end of it that tenseness was gone"*, suggesting that this related to activity. One comment related to benefits beyond individual ones, saying, "*Has helped the community as I have been organising children's groups, woodland cubs, which will bring engagement and some community harmony"*.

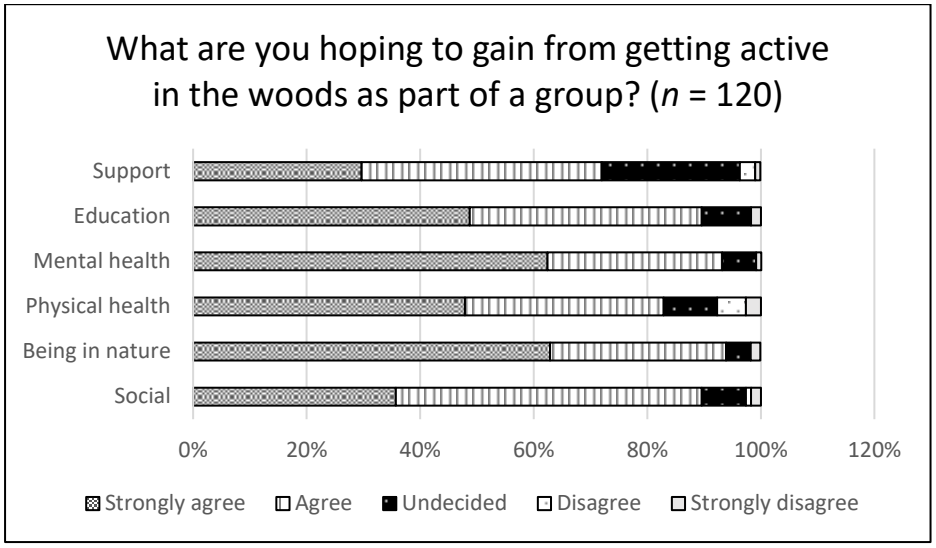


Fig 4.7: What participants hoped to gain from taking part in AW (T1)

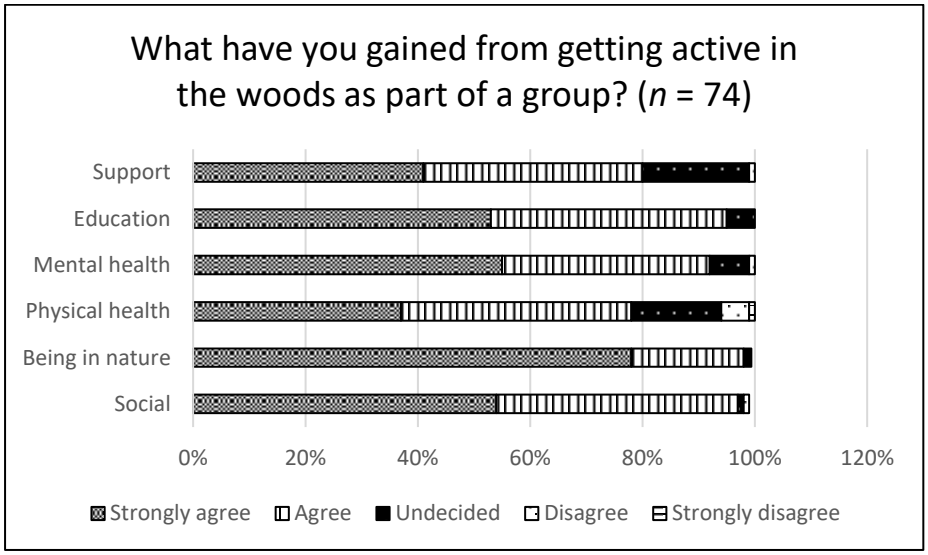


Fig 4.8: What participants had gained from taking part in AW at end of course (T2)

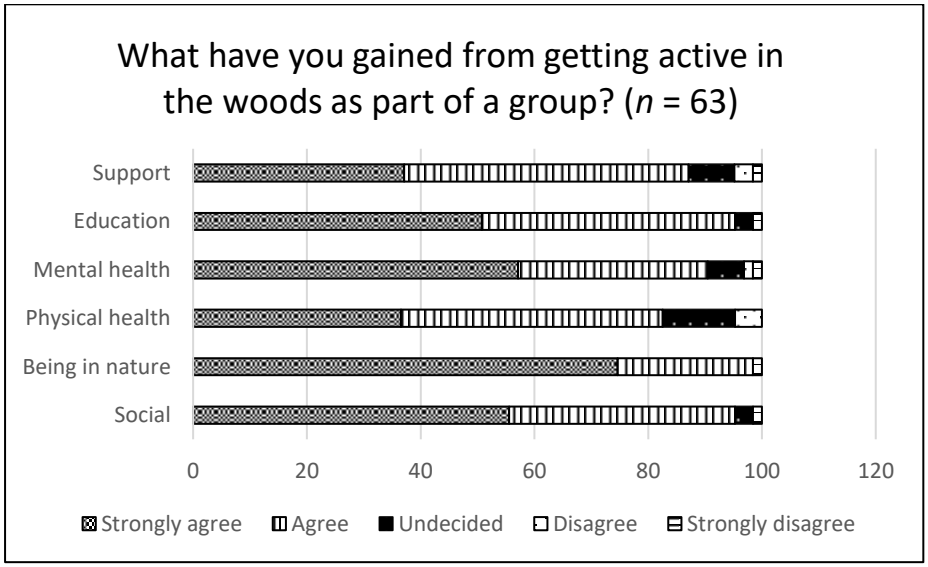


Fig 4.9: What participants had gained from taking part in AW at end of course (T3)

4.4.g Free comments

An opportunity was provided at the end of the questionnaire for free text, which as will be seen has strong links to themes from the qualitative research in Chapters Five and Six. At T2, sixteen comments referred to how much participants had enjoyed the course, for example the role the leaders had played, "*wonderful course and tutor", "Excellent leaders who were knowledgeable, relaxed, calm and encouraging. These are vital reasons to continue attending for the 12 week course"* and *"I feel this is run very well and am really enjoying the programme. It is the highlight of my week*". Others referred to how it had helped them in their daily lives, like "*Actif woods has been an excellent resource for socialising and destressing from everyday life", "Course was enjoyable and has made me more confident with people since I started"* and *"It combats loneliness. It has encouraged me to walk more and relax"*. Several referred to how the temporary nature of the course, like "*more of the same is needed"* and "*interested if anything else came up".* A further comment referred to how the social support from one of the mental health support agencies that AW partners with helped her to manage life, "*I have good days and bad, the ghosts of the past haunt me. My health is not always right, very often I am tired and my white blood cells are low. Going to 'Gofyn' mental health support group gives me a reason to live, I have friends there and they all help me and don't judge me".* Five comments referred to the questionnaire, four of which were negative, such as, "*It is not always easy to answer the questions"*, *"I found this questionnaire challenging", "I worry about forms, too many. I have lack of concentration"* and *"Hate having to do the same paperwork repeatedly".*

At T3, comments were not dissimilar, with thirteen comments referring to benefits of the course, such as the support of the leaders, "*I found active woods 1 of the best course which helped with my depression. Both (names of two woodland mentors) were very welcoming and patient with us. Really enjoyed it!!!*" and "*I am really thankful to have received the opportunity to take part in active woods, also the staff are lovely and easily approachable, I felt comfortable and very happy going"*. One comment referred to moving out of social isolation, "*I look forward to the outings as it takes me out of the walls, meeting people, learning about the countryside"*. Others referred to positive wellbeing benefits, such as "*My son has noticed a change in me - a real positive change in me. I'm much more confident. I'm my own person"*, "*As I am completing this over xmas break and off work I feel I was able to reflect on how relaxed I felt, how beneficial the mindfulness course and AWW has been and how much I appreciate it. Diolch o Galon/With heartfelt thanks!*" and "*I would spend all my time in the woods if I still had my car. it is better than all the pills you get for mental health".*

Conversely, there was one more negative comment referring to how they had experienced it as challenging in relation to their health issues, "*I felt self-conscious on the course as I felt I was being a nuisance due to my health issues. no one made me feel like that, I just really wanted to do it, but really I know that physically it would probably be a struggle".* Three comments referred to the questionnaire, one of which was more

general, "*The questions did not exactly fit me - but expected that. Not always easy to be totally honest with answers"*. Two further comments about the questionnaire referred to the ephemeral nature of their answers to some of the psychosocial measures, "*my depression has been bad recently so my answers reflect that. Sorry not to be more positive at the moment, things are improving slowly, I would welcome the chance to take the survey again further down the line*" and "*Days of exercise - 0 - doing 10 mins a day; General health score only 3 b/c have been doing more things so have been getting more tired"*. Reflecting on particular scales, one comment referred to how an adverse life event had affected their score, "*Family crisis - son in law lost job at Christmas and has debt issues so low at the moment"*. A further comment showed uncertainty about how to gauge the amount of activity they had been doing in response to being asked how many days they had been active, *"None, but I have been skipping in garden for about 30 mins a day".*

Two pieces of additional data were received which were outside the study design. The first was an article written for a mental health magazine by a participant in one of the mental health groups (Appendix 4.11) which describes the activities in which she had participated, how they had increased her confidence and strengthened the sense of team in her group, and how her PWB and been impacted. The second was an email from a participant (Appendix 4.12) who had set up a 'friends of' group calling themselves the 'fox clan' following the end of the Actif Woods programme detailing how the group had continued to meet and carry out woodland activities collectively.

4.5 Discussion

The analyses presented in this chapter address whether change in wellbeing or woodland use had occurred by the end of the course. Meeting an identified gap in the knowledge base, a key research question was also whether reported changes were sustained beyond the life of the course. Finally, the results presented here also sought to ascertain whether any of the reported changes in health outcomes or barriers to woodland use related to participant demographics and investigated the interplay between psychosocial factors of key change measures at both stages. Following examination of the cohort at baseline (n = 120) in the previous chapter, this chapter found positive gains for early change reported between baseline and the end of the course (T2, n = 74), which were maintained at the later follow up, (T3, n = 57). These findings denoting the longer term success of the NBI will now be discussed in a wider context, examining early change first.

Changes over time: Early change (T2)

Consistent with our expectations, there was significant increase across most of the psychosocial measures, (MWB, social trust, self-reported health, self-efficacy, self-esteem and physical activity) with particularly significant change levels for mental wellbeing and self-reported health at this stage. The 2.21 point increase in the sample mean observed in the mean score for the headline measure of mental wellbeing at T2 brought

it almost to the level of the UK population norm, enabling broad inferences about the success of the course to be made. At the level of the individual, a minimally important change is between 1 and 3 points (Warwick Medical School, 2011). Change in associated measures of self-efficacy and self-reported health also brought mean scores almost to normal levels. Changes in self-reported health are very positive, as ratings of a person's own perception of their health have been associated with major health outcomes, not least mortality (Idler *et al*., 1997). For mental wellbeing, change was similar to results for an earlier study (Sultana, 2016) and the improvements in psychosocial measures were in line with what was expected for positive end of course change (Pretty *et al,* 2007; The Mersey Forest, 2016[b]). In fact the sample exceeded gains reported in the Branching Out study, wherein the increases seen in mental wellbeing and self-reported health, were non-significant (Wilson, 2009). Changes in the measures of self-esteem and self-efficacy were identified as being particularly important for early and maintained change respectively and will be discussed below.

What predicts early change?

Studies have previously tended to measure a few individual constructs, however due to the range of factors measured in this study, it was possible to examine which aspect - demographic, personal, behavioural, cognitive, social - particularly accounted for wellbeing change. In addition to increasing significantly between baseline and course end, self-esteem was found to be particularly important. Theoretically, this makes sense, given that high self-esteem is positively associated with good wellbeing (Paradise and Kernis, 2002), adaptive outcomes (Pyszczynski *et al.*, 2004) and happiness (Bauminster *et al.,* 2003) and as discussed in the literature review, can function as a buffer against issues with psychological functioning such as depression and anxiety. Self-esteem was a measure on which the mean score for the cohort was notably low at baseline. Indeed a study comparing results on green exercise similarly found that those with initially poor self-esteem scores enhanced more than those with initially high values following the activities, concluding that they benefitted more (Pretty *et al*., 2007).

Who changes most?

Whilst there were some global gains, findings pointed to certain groups gaining more. Increases in mental wellbeing were particularly marked for those with mental health challenges and even more so for those with both mental and physical health challenges. As mentioned in the literature review, those with mental health challenges in particular have been proven to respond disproportionally well to greenspace (Gascon *et al*., 2015; Bowler *et al*., 2010) and this study was no exception. AW partner with a lot of mental health charities so participants potentially have extra support from staff and centres alongside the group mentors and AW activities. For example, one of the Mind referral groups also offered a daily menu of other activities, such as running or more therapeutic groups. Often groups would have a dedicated mental health support worker who knew participants well, plus volunteers as well as the woodland mentor for each group.

The impact was greatest for those who started out with lower wellbeing, which is consistent with Wick's (2016) findings. These results also reflect those of the Branching Out study which found strong positive trends for mental wellbeing and self-reported health for high severity groups, but little change for other groups (Wilson, 2009). Partly this stands to reason, because as the baseline data analysis in Chapter Three showed, they had the greatest change potential, in that those with no health issues had the highest scores on all measures except for self-esteem and those living with both physical and mental health conditions scored the lowest across all measures. Whilst the baseline data demonstrated the success of the organisation in reaching hard to reach groups, these results confirm that once recruited, an NBI can make a real difference to them, assisting people that are perhaps most in need of support.

Considering the 'dose'

Turning to the intervention itself, a surprising finding related to the length of the course. Although a larger study would be needed to confirm, data suggested that brief interventions achieved similar gains to longer ones. Other studies have compared intervention *type*, but to our knowledge, differing course lengths have not been compared. Whilst more of a good thing might be expected to have increased benefits, this did not appear to be the case, evidenced by the non-significant results for length or attendance level. Whilst not significant, it is worth noting that the highest mean change scores were observed in the grouping for courses of 1 – 7 weeks, excepting social trust, which was highest for the 8 – 10 week grouping and woods visits, which was highest (and a trend) in the 13+ weeks category. However, the quartiles were quite small, and follow up in larger study or analysis of a larger cohort is suggested to investigate further.

The type of intervention also did not have any apparent effect on the findings – getting out into the woods, participating in something together as a group generated positive change, and this it seems was regardless of what that 'something' was i.e. 'mindfulness in the woods' or multi-activity. With regard to course type however, the results should be interpreted with caution given the discrepancy in numbers (and characteristics) of those taking the different types of courses. These results do however tally with other studies in this area, for example those mentioned in Chapter Two. These include one which found beneficial effects from just arriving at a forest (Morita, 2006) or that the experience of positive mental health benefits was regardless of type, intensity or duration of a green exercise activity (Pretty *et al*, 2007). Indeed, just being out of the house was a substantial change for some participants. However, contradicting these findings, a linked SROI (to be published) using the data from this study found that the percentage of participants reporting improvement in all outcomes was higher for the 6-week mindfulness programmes than for 8-week or 12-week multi-activity programmes (Hartfiel *et al*., in preparation).

Maintained change

As indicated in the literature review and at the outset of this chapter discussion, studies on maintenance of green health benefits in general are conspicuously absent in the field (Bowler *et al*., 2010; Thompson-Coon *et al*., 2011). Whilst other studies have identified wellbeing gains as a result of NBIs, few have looked at whether these gains subsequently increased, stabilised or declined. This study has been able to show that following participation in the AW programme, gains reported at programme end for MWB and linked psychosocial factors were indeed maintained. In fact, mental wellbeing and self-reported health continued to increase, with the incremental gains taking the group means for these measures a small step closer to the population norms, although scores remained marginally lower. For self-efficacy however, the upward trajectory of the group mean, (lower than the population norm at baseline), actually exceeded what might be considered 'normal' by follow up. With regard to self-esteem, given the benefits of doing well in this construct identified earlier, that these gains were maintained is a really positive and valuable finding. Whilst previous studies have demonstrated that low self-esteem, a risk factor for depression and suicide attempts, can be raised by targeted interventions, evidence on longer term gains has been noted as lacking (Emler, 2001).

Overall, although there were no significant increases or decreases and group means for most measures were on an upward trajectory, those for social trust and physical activity had dipped at T3. To some extent, this could be explained by the fact that whilst lower than the norm for most measures at baseline, the group mean was high at the outset for these two factors, plus, the initial change to T2 was a large one. With regard to social trust, loss of the 'group' feeling may have contributed. Nonetheless, neither score fell below the baseline level. Thus, for this cohort, the AW programme could be said to be playing a preventative health role longer term, given the strong association between PWB and mental health (Tessier *et al*., 2017). Such findings are contrary to the Branching Out study (CJC Consulting, 2016) which, with the caveat that it was with too small a cohort to be representative, found no evidence that benefits (mental wellbeing and self-reported health) were maintained. One reason for this difference in findings might be that the fact that Branching Out work with people with more severe mental health issues, predominantly users of statutory services, whereas AW more commonly work with users of community based services.

Overall, the effects of demographic variables on maintained changes was minimal, although those with mental health conditions benefited disproportionately for days of exercise with a greater tendency to increase on this measure. Partly, this is due to their prior lower levels, which makes this is an important finding given how effective physical activity can be for treating depression (Blumenthal *et al*., 1999) and the positive impact of exercise on mental health (Fox, 2007). Additionally, there was a significant difference whereby women's gains had continued to increase compared to men's which had decreased by one day per week. Although there were no significant differences between men and women by T2, there was a trend in the

baseline data, where men reported slightly higher rates of exercise than women showing that they had less room for improvement. This is reflected in the UK population, where marginally more women (26%) are deemed physically inactive than men (23%) suggesting that they perhaps had more to gain in the first place (Pretty *et al*., 2016). More generally, whether women are better able to maintain beneficial lifestyle changes independently or had made new social connections to support their maintenance are interesting questions raised by these findings.

Although the lack of relevant longer term research has been stressed, since the study began, Forest Research published results of a multi-site programme aimed at increasing activity which included a three month follow up point (O'Brien and Forster, 2017). This study found an accelerating upward trend and a significant increase in sporting activity for less active individuals. Corroborating these findings, this study usefully demonstrates that targeted interventions can have long term implications for physical activity that are particularly notable for women and those reporting mental health challenges. Whether AW should consider doing more to actively promote maintenance of exercise for other sub-groups is thus worth considering, however, it is not a primary aim of the AW programme or what draws people to the programme.

Predicting wellbeing outcome

One of the research questions related to ascertaining the interplay between psychosocial factors of key change measures. Compared to the highly correlated baseline scores there was a lack of correlation between change in constructs at T3. This is not surprising as at T1, the measure was absolute scores, reflecting a moment in time, rather than later scores which reflect change, i.e. movement. Although as discussed, health is generally viewed as a state of equilibrium across various aspects, what causes change in one factor might be very different to what causes change in another even if absolute scores are very correlated. It is also possible that at follow up stage, too many other variables affect people's lives beyond the cohesion of the course.

Whilst self-esteem was particularly meaningful in relation to early change within the course it was self-efficacy that was the best predictor of maintained change in mental wellbeing at T3. This would appear to be theoretically sound given that general self-efficacy reflects beliefs about competence to act effectively in a broader life context (Bandura, 1989) and has been related to better psychological well-being (Bandura, 1986; Luszczynska *et al*., 2005). It is also likely that better self-esteem bolsters (subsequent) self-efficacy. The maintenance of change stage is necessarily about participants doing things for themselves, without the support of the group. A linked finding to the growth in self-efficacy is the 'hoped to gain' measure, where it was clear that 'educational' benefits exceeded participants' own expectations. The supporting qualitative data in the form of the email from the 'fox clan' (Appendix 4.12) mentioned in 4.4.f gives some insight into how some participants are able to continue meeting and carrying out woodland activities collectively

following the end of the programme. Whilst this snippet is interesting, it is not representative and does not really account for the *how* of participants' increase in self-efficacy in the way that the rigorous qualitative study will. In summary, these findings suggest that interventions focussing on self-esteem (promoting participants' sense of self) would support maximum wellbeing gain whilst taking part, whilst targeting self-efficacy, supporting confidence and skills, would be best for maintaining longer term wellbeing. This could include activities in the woods such as setting trails, or navigations skills to promote independent access. Whilst not a current Actif Woods goal, and not something that would work for all groups or individuals, given resource restrictions, a fruitful inquiry for NBIs might be around whether increased emphasis on the development of independent skills is required.

Access

This study set out to find out whether woodland use and perception of barriers and enablers changed and whether any reported changes were maintained. With regard to whether AW affected woodland use, it was evident that the programme had shifted behaviour and perceptions of barriers. The frequency of visits to woods increased (trend), although not to a statistically significant degree. Whilst the length of the course was not correlated with psychosocial variables or wellbeing outcomes, there was a trend indicating that longer courses were associated with more woods visits, suggesting that a growing familiarity with woods over time made a difference.

Whist facilitators measured by 'factors to encourage' visits changed very little, perhaps demonstrating that people were already cognizant of potential benefits, there was marked change in participants' perception of obstacles. Firstly, the number of barriers had decreased significantly by the end of the course and a reduction in the number of perceived barriers was maintained at T3. Indeed, the quote in Section 4.4.d about needing money for the car park and having multiple health issues reveals something interesting about the cumulative effect of barriers. Secondly, what constituted major barriers had decreased. This of course included the main barrier identified in Chapter Three of 'no one to go with', which for some people was the only barrier they had ticked at T1. It also included 'bad weather', a major barrier to more frequent visits in the population scale data for Wales (NRW, 2017). As AW go out in all weathers it is easy to see how this might become more normalised.

The fact that health reasons and difficulty moving around had decreased seems related to the increase in self-reported health. Our data could infer that AW supports people in poor health to realise that they can still benefit from woods visits despite health challenges, their health reasons being less of a barrier than they had perceived prior to the intervention. The barriers that did not decrease were two structural ones – facilities and public transport. Whilst an NBI is not able to affect structural barriers as easily, (although some of the groups have a budget to supply waterproof clothing that may have prevented visits previously), it is clear that

the experience has influenced what *can* be changed, namely perceptions and psychological barriers. This is not to be underestimated, as indeed the considerable challenge of increasing 'mental accessibility' (De Vreese, *et al*., 2016) and how very deep-seated psychological barriers can be (Morris *et al*., 2011) was acknowledged in the literature review.

In relation to the trend for increased visits at T2 it is likely that these attitudinal shifts towards barriers were responsible for this change in participants' wider lifestyles. This would be consistent with the aforementioned Theory of Planned Behaviour (Chapter Two) on the importance of attitudes to behaviour change (Azjen, 1991. It also accords with our observations (Section 2.6) that show the positive effect participating in an NBI can have on widening access to the wellbeing benefits that nature can offer, particularly for marginalised groups (O'Brien and Morris, 2014; Morris *et al*., 2011). It is clear from these data that AW has been no exception to this. A larger cohort for this measure may have been able to give further insight into demographic variables, as none were significant, nor were there any significant relationships with other psychosocial measures of change. It is also important to bear in mind that, as the attrition analysis showed, those who visit woods more were more likely to continue with the study which may have influenced results. Nonetheless, this gives a clear indication to those seeking to increase greenspace or woodland access about the potential of the programme to achieve this.

As outlined in the literature review, there is little published data on the longer term effect of NBIs on access. From this study, whilst the top three major barriers remain the same, they had continued to decrease, along with other barriers, such as a large decrease in safety concerns. The rise in number of visits was maintained, although there was a non-significant increase in number of barriers by follow-up. As it is non-significant, this may indicate no real change, however it is also possible that a sense of 'can do' at the end of the course may decline with time, suggesting a role for top-up provision to bolster feelings of self-efficacy and encourage maintenance of such lifestyle changes.

4.6 Conclusion

This study set out to report on change in wellbeing and associated psychosocial factors as a result of taking part in the AW NBI and was able to clearly demonstrate positive change on all measures, both within the timeframe of change within the course, and in terms of maintained changes. Findings demonstrated that some of the maintained benefits had continued to increased incrementally. Due to correlational data on the range of factors measured and the regression findings it was able to draw conclusions about the important role of self-esteem and self-efficacy in affecting and maintaining wellbeing change respectively, with potential implications for where NBIs might choose to focus resources. Working in partnership with psychology or behaviour change experts could be beneficial to maximising beneficial outcomes. It also focussed on

woodland use and perception of barriers, where again, positive impact was found, with a reduction in the number of perceived barriers and an increase in the reported frequency of visits. In terms of study strengths, this is one of the few studies that have examined change beyond the intervention's time frame in a reasonably sized cohort of attendees.

With respect to limitations, gathering enough follow up data was challenging given the pan Wales nature of the programme. It was not always possible to attend last sessions, as due to weather and other external factors, they were sometimes arranged at short notice. Developing an online questionnaire helped with getting enough data for study, and 20% of the 137 questionnaires at the end of course and follow up stages were completed online. It would have been worthwhile to have gathered data on those that dropped out of the course to gain better insight into who the course does not work for, but they are a hard to reach group and this was beyond the scope of this study and resource. The heterogeneity of interventions and participant groups presents some limitations in relation to the study, however the diverse range of activity opportunities that AW offer and the number of groups that could be included is also a strength. It is this diversity that allowed for important findings such as the extent to which participants with mental health challenges gain preferentially. Whilst it is clear that the programme works particularly well for this cohort, and that those with no conditions report the least amount of change, in terms of AW provision it is important to remember that maintenance of good wellbeing and prevention of decline are positive outcomes. As with all quantitative studies, mean change can be a blunt instrument and there are of course, exceptions and nuances within these data which can be more subtly explored with complementary qualitative methods.

An interesting observation is that whilst people definitely reported more '*being in nature'* gains than they expected to, comparing what they hoped to gain to their initial expectations, the unique contribution of nature was not fully captured by this quantitative study. This highlights why using both quantitative and qualitative methods in a single study is so invaluable. Herein lies the opportunity to discover the '*diverse perspectives of reality'* and multiple ways of knowing that combining methods can offer (Cresswell, 2016:217). In summary, in line with previous research, findings have demonstrated that NBIs have potential to increase wellbeing and are effective at reaching those less likely to access the natural environment. What this study has additionally shown is that benefits realised can be maintained, especially for participants with mental health challenges. How and why the intervention works will be further determined through the lens of the qualitative data exploring participants' own views about change and maintained change in Chapters Five and Six.

CHAPTER 5 QUALITATIVE STUDY AT END OF COURSE

5.1 Introduction

The primary aim of the qualitative study is to develop an improved understanding of how the Actif Woods Wales (AW) woodland activity programme can affect personal wellbeing and woodland use. Undertaken in parallel, it aimed to find out more about the 'how', the experiential processes of change, in order to contextualise and enable a deeper understanding of the quantitative study outcomes. This chapter outlines the methods used for this study and examines any initial processes of change from the end of course focus groups. From these data, using an inductive approach, an understanding of how participants' wellbeing and woodland access attitudes and behaviour were impacted by the course at this stage is gained. This included exploring what, if anything, was gained by being in a woodland environment.

Rationale

Qualitative research can provide valuable insight into processes, intricacies, and contexts of how people negotiate the issues in question. This can usefully accompany quantitative data, rather than providing representative views. Together, they can add value to understandings of complex research questions providing '*a more panoramic view'* from '*different viewpoints and through diverse research lenses'* (Shorten and Smith, 2017:74). Focus groups were selected to reflect both individual and collective experience. Whilst they may not give the same depth of richness and detail as a one-to-one interview, they enable the group experience to be captured, which was considered to be an important part of the programme. They can be much more challenging than interviews to execute, particularly in ensuring practicalities, such as everyone getting to speak, correct transcription of multiple voices and increased relinquishing of control by the researcher in terms of the topic guide (Bryman, 2015). Nonetheless, they can provide opportunity for groups to make sense of their experience, listening to the views of others and reflecting on their own respectively (Bryman, 2015), a process of '*collective sense making'* (Braun and Clarke, 2013:111).

Advantages pertinent to this study are that they can diffuse power relationships as researcher control is reduced compared to individual interviews (Bryman, 2015; Braun and Clarke, 2013), which makes them highly suitable for marginalised groups. The group environment can create a space where people can be more themselves, which was deemed suitable for a group where mental health challenges like anxiety were prevalent. They also have potential for more 'everydayness' than interviews whereby participants feel less pressure to use correct terminology, for which the term '*high ecological validity'* has been used (Braun and Clarke, 2013: 113).

Focus groups were opened with an invitation to participants to create a drawing based on an open question about how the programme had impacted on them if it had at all. This offered a space to focus in on what had

been pertinent to them about participating, prior to the group discussion that followed. Creative methods, such as photo-voice have been used to increase the level of control by participants, allowing them to define their own narratives (Faucher and Garner, 2014; Wang and Burris, 1997) and indeed, images in research have been referred to as '*richly informative deposits'* (Sontag quoted in Wang and Burris, 1997). This was enhanced by the invitation to 'free-write' a few sentences about the meaning of their drawing for them, based on a technique used in photo-voice by Wang *et al*., (2004). This ensures that interpretations are defined and owned by respondents (Wang and Burris, 1997). In a study by Nizza *et al.,* (2017), participant drawings were combined with interviews in a longitudinal exploration of chronic pain with unemployed women aged 40 – 60. She found that they stimulated deep reflection and facilitated an ability to discuss the changing impact of pain. She also surmised that their use enhanced reflexivity and sense making by participants of their experience. Used longitudinally she observed, it gave participants the opportunity to reflect with both a prospective and retrospective lens, which enabled an ability to review experience with more detachment and conceptualisation of change.

5.2 Methods

Study design

To better understand experiences of wellbeing and woodland use, focus groups were conducted with a sub-set of projects taken from the study areas and participants described in Chapter Three. They covered multi-activity and single activity groups and were carried out at the course end. This time point was chosen in order to understand participants' own version of any impacts or changes in their own words, unlike the quantitative study where a baseline was needed for a change score to be calculated. Participants were asked at week one of the course if they would be interested in taking part. Where possible, focus groups followed quantitative data collection, and participants willing to take part were given a participant information sheet and consent form (Appendices 5.1 and 5.2). Three month follow up focus groups were carried out to ascertain the sustainability of any reported changes and these results are in Chapter Six. Ethical approval for the qualitative study was granted as an integral part of the whole study by the University of Bangor School of Psychology ethics committee (2017-16105) and by the NHS ethics committee (17/WA/0297) in September 2017.

Procedure

Where possible, focus groups took place in the woods as part of an Actif Woods session, following guidelines which can be seen in Appendix 5.3. Woodland mentors and support staff were asked not to be present, or where needed for support, not to participate by contributing verbally. In four of the five groups, participants were asked to draw a picture to reflect on their experience using the question 'In what ways has coming to Actif Woods Wales impacted on you, if it has at all' to provide a short space for individual reflection prior to

the focus group. The pictures themselves were not analysed as data, unless referred to by participant, allowing them to retain ownership of their interpretation. This led into the discussion, for which a topic guide (Appendix 5.3) was used, with open-ended questions pertaining to their personal wellbeing and access to and use of woodlands.

Groups and participants

At the end of course time point, five focus groups took place in three Welsh counties (table 5.1). All groups were weekly and there were three multi-activity groups (2a, 3a and 5a) of 12 – 13 weeks (e.g. bushcraft, foraging, campfire cooking, woodland crafts), a six week 'mindfulness in the woods' group (3a) and an eight week 'coppice products' group (1a). The multi-activity groups had a range of health and social care referral routes, in particular from mental health, addiction recovery and domestic violence support services and the 'coppice products' group was comprised of referrals from a mental health project. Group 3a had a slightly different composition in that it was largely self-referral and made up of three people who were working and one who was retired. Apart from everyday work pressure and stress, participants in this group did not come with the degree of vulnerabilities that other participants did. Group size ranged from three to five and there were 20 people in total (table 5.2), 15 of whom are in the quantitative study (those not in the quantitative study are indicated). Two of the participants were attending two of the groups, so that one woman who took part in a multi-activity group and focus group was also attending the mindfulness group. Another woman was attending two of the multi-activity groups, but they both only took part in one of the focus groups.

Table 5.1: End of course focus groups

Group code	Course type	Length	Referral route
1a	Coppice products	8 wks	Mental Health services
2a	Multi-activity	12 wks	Mixed - mental health, self-referral
3a	Mindfulness	6 wks	Mixed - mostly self-referral
4a	Multi-activity	13 wks	Mixed - mental health and domestic violence services
5a	Multi-activity	12 wks	Mixed - mostly addiction recovery, also youth homelessness

Gender was a reasonably even split and there where were a range of ages, with most people falling into the 45 – 63 years age category. Eight were unemployed, seven did not say or were not asked (administrative error). Two were retired and three (who were all in the mindfulness group) were employed. Six of the twenty had been to university (four of whom were in the mindfulness group), five had been in education until age 19 and four until age 16. Five did not declare or were not asked about their education status. Participants tended to have declared either physical or mental health issues, with only one person reporting both. This categorisation relates to the quantitative study, whereby participants were asked to list their main health

conditions or concerns which were then categorised. Eight either reported no health issues, did not state any or were not asked about their health status.

Table 5.2: End of course focus group participants

Group	Name	Age	Gender	Education (highest level)	Employment	Health condition?
1a	Janet	25-44	Female	Not stated	Not stated	Mental health
1a	Marian	45-64	Female	Secondary school to 16	Unemployed	Physical/mental health
1a	Louise	45-64	Female	Secondary school to 16	Unemployed	Mental health
1a	Jim[a]	45-64	Male	-	-	-
1a	Wayne	25-44	Male	University or higher	Unemployed	Mental health
2a	Roger[a]	45-64	Male	-	-	-
2a	Anna	45-64	Female	University or higher	Retired (illness)	Mental health
2a	Mike[a]	45-64	Male	-	-	-
2a	Gemma	18-24	Female	Secondary school to 18/19	Unemployed	Physical health
3a	Derek	45-64	Male	Uni or higher	Retired	Physical health
3a	Jane	25-44	Female	Uni or higher	Employed	Mental health
3a	Dafydd	45-64	Male	Uni or higher	Employed	Physical health
3a	Sue	45-64	Female	Uni or higher	Employed	None
4a	Dylan[a]	25-44	Male	-	-	-
4a	Angie	25-44	Female	Secondary school to 18/19	Unemployed	None declared
4a	Diana	45-64	Female	Secondary school (ss) to 16	Unemployed	Physical health
5a	Dave	25-44	Male	Between ss and uni	Unemployed	None stated
5a	Arthur[a]	45-64	Male	-	Not stated	None stated
5a	Fiona	18-24	Female	Between ss and uni	Not stated	Mental health
5a	Sarah	45-64	Female	SS to 18/19	Unemployed	Mental health

[a]Indicates those not in the quantitative study
Note: All names are pseudonyms

Analysis

Focus groups were recorded then transcribed verbatim, which, in tandem with conducting them, already gave two layers of immersion in the data. This was an important step in familiarisation, as was taking part in the session before and after the focus group. Qualitative research by nature generates large amounts of rich data, and following Braun and Clark's reflexive methodology, thematic analysis was used to organise and present it. This is principally a method for identifying themes and patterns of meaning across datasets in relation to research questions (Braun and Clark, 2013). An inductive approach was taken, whereby themes were 'data-driven', guided by a theoretical interest in the research questions concerning the impact of the Actif Woods programme on personal wellbeing and woodland use. The approach recognises the active role of the researcher in generating themes, rather than the view that there is 'a truth' that will 'emerge' from the data. As an epistemological stance, this can be conceptualised as relativist, or constructivist, rather than realist or positivist. Braun and Clarke (2013) liken this approach to a sculptor creating a sculpture with the data, rather than an archaeologist seeking to uncover a reality within it.

Transcripts were coded, that is, broken down into small distinct parts and labelled or named. The codes were then organised into initial themes which collated broader patterns of meaning. These were based on for example, recurrence of codes or clustering or similarities and differences in and between transcripts with the research questions in mind. This process was an iterative and reflective one, requiring flexibility, whereby initial themes generated from codes and collated data were reviewed and checked against the data set for fit and overall narrative sense. Following this period of refining which included splitting, combining or discarding of themes, themes were then amalgamated into core and sub-themes with centrally organising concepts consisting of different ideas or aspects. Finally, they were more clearly defined and named prior to being analysed and interpreted in relation to the focus of the study and the wider literature.

One way to conceptualise this is to use a house metaphor whereby a theme is like the wall or roof of a house, made up of individual bricks or tiles, the codes (Braun and Clark, 2013). Quotes from individuals that illustrate key points have been identified and used. They highlight both individual experience common across a majority or a number of people and where views were divergent from the wider group. When quoting participants, '…' has been used to replace repetition of words like 'um' or yeah' and words have been underlined to show particular emphasis by the participant. Thematic analysis is a flexible and reflexive process done by the researcher, however, supervisors and a fellow PhD student looked at the coding and development of themes at different stages to discuss ideas, reflect on assumptions and identify anything that might have been overlooked.

5.3 Results

Three main themes were identified in relation to how the programme had affected participants' personal wellbeing and woodland use at the end of the course. These related to gaining '*personal change'* (theme one), in the context of '*social processes'* (theme two) supported by the container of the natural environment (theme three), '*held by nature'*. These main themes and sub-themes are graphically presented in fig. 5.1 below. Following this, an overview of each theme and sub-theme is presented in Table 5.3, providing a visual representation of their composition. This precedes their further unpacking in the text with examples from the data and analysis in relation to the research questions.

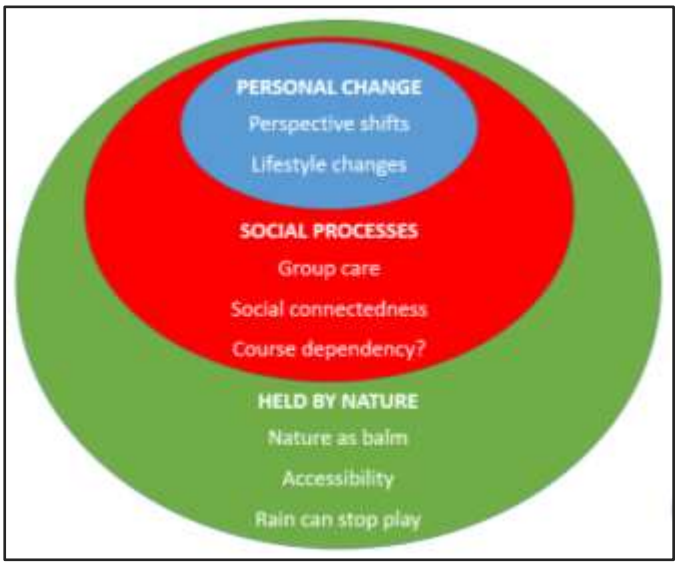


Fig 5.1: Summary diagram of themes

Theme 1: *'Personal change'*

Two themes about personal change were identified, moving from '*perspective shifts'* (1.*i*), both on the world at large and on the self, through to *'lifestyle changes'* (1.*ii*), concerning behavioural changes in relation to the course and more widely.

Theme 1.i *'Perspective shifts'*

A sense of the programme widening perspective for participants was evident, for example, reported outcomes like *"your bubble's got bigger instead of being smaller"* (Janet, 1a) or *"I feel like I'm not in me shell as much"* (Wayne, 1a). In part, this broader outlook and positive re-appraisal of 'life' was connected to skills development on the programme, like Sarah (5a) *"learning how to cook popcorn on the camp fire"* and Roger (2a) *"learning new stuff every time"* which he described as "*useful and eye-opening*". There was a sense of surprise and joyfulness around learning, for example Dave (5a), from an addiction recovery project talked about how "*any kind of growth*" supported his recovery:

> *"Just, actually every week, something different, whether it's through wood-working to fire building to making, I don't know, making little pizzas on open fires, ummmm, woodland management, loads of things about coppicing, just, yeah, every week I've just kind of gone ooh, ooh …Yeah, well you know, you never stop learning and it's been brilliant for me in that sense"*

Table 5.3: Summary of themes and sub-themes

THEME 1: PERSONAL CHANGE	
Theme 1.i 'Perspective Shifts'	**Theme 1.ii 'Lifestyle changes'**
▪ Realise what's out there; wider world view – hope for future; new possibilities; new intentions e.g. for work, voluntary work ▪ Supports MWB/protective against stress ▪ For health and social care referral groups, self-appraise differently – increased feelings of capability, pride, confidence; identity ('feel like some kind of Bear Grylls') ▪ All very connected to learning new things, surprise and joyfulness at learning ▪ For self-referral group, re-connecting/finding self again/getting back to being 'woodsy' after busyness/life-work stress had got in the way	▪ Structure of course/regular slot to get out of bed for/look forward to – eager anticipation ▪ Led to getting out of a rut/'coming out of shell' for participants with mental health challenges ▪ Support through 'darkness of winter' (mental health) ▪ Support for abstinence for recovery group ▪ Catalyst to change. Moving from life being on hold to living ▪ Daily coping skills for stress and emotions through mindfulness course ▪ Beyond programme – everyday changes like now getting bus when wasn't before, a daily walk when not exercising previously

THEME 2: SOCIAL PROCESSES		
Theme 2.i 'Group care'	**Theme 2.ii 'Social Connectedness'**	**Theme 2.iii 'Course dependency?'**
▪ Atmosphere of comfort and ease which meant people could 'be themselves' ▪ Bonding over shared activity/external focus ▪ Feeling part of a group – sensitivity to each others' needs and fluctuating mental states ▪ Sense of being held by peers and by staff ▪ For mental health group, being accepted, not being labelled/no stigma around illness was very normalising – not having to 'put on a front' ▪ This improved coping with negative self-talk	▪ Importance of getting out of house/meeting people for mental health groups, moving out of the 'punishment' of social isolation ▪ Impetus to do this beyond course – new confidence around strangers (esp. for those recovering from domestic violence, addiction) ▪ New way to connect more widely through 'show and tell' of items made, which gave pride and sense of self-worth – something to talk about ▪ Increased self-esteem for those in health and social care referral groups	▪ Sadness/concern at course ending ▪ For more 'well' groups, sense of 'we've got this!'/We've had this help, now off we go ▪ Intentions to 'pay it forward' – volunteering or thinking of friends and people in social circle who would benefit ▪ Plans to meet/continue friendships

THEME 3: HELD BY NATURE		
Theme 3.i 'Nature as Balm'	**Theme 3.ii 'Accessibility'**	**Theme 3.iii 'Rain can stop play'**
▪ Nature affects mood – stabilises/uplifts ▪ Nature as harmless/non-threatening and therefore a place you can be yourself ▪ Sense of belonging – place to put yourself back together ▪ Sensory experience central – uplifting/appreciated ▪ Escape/place to 'get away from it all' ▪ Also a place to 're-charge'/get a fresh perspective ▪ Outdoors unique space – the beauty; common ground; space to walk around if anxious ▪ Easier to engage with mindfulness practice outside ▪ Woods as a special place – primal element of fire; strength and 'care' of trees, their provisioning ▪ Woods link you to 'the old ways' ▪ Lack of separation between humans/trees ▪ Beauty of woods as a religious experience/ like a cathedral/bridge back to faith for one participant	**Three groups…** ▪ **For some,** got 'the very idea' of going to the woods which simply hadn't occurred before ▪ New appraisal of nature as 'something for me' ▪ Surprise at realisation of the benefits it can offer you/'nature's bounty' for health and wellbeing ▪ Moving from feeling un-comfy/scared to feeling comfy in woods/natural spaces; new-found confidence in a formerly alien environment ▪ Excitement at door opening onto new world ▪ **For others,** a re-membering where used to go, or re-connecting with childhood experiences ▪ Remembering how helpful time in nature was ▪ Course gave opportunity to e-prioritise after busyness/anxiety/depression got in the way of woods visits ▪ **Some** attracted to programme as they're 'woodsy' anyway - going regularly and continued to **Looking ahead** ▪ Ideas/intentions for independent visits, noticing of 'woods near me' ▪ Catalyst to actual visits – everyday woods experiences before/on way to work/daily walk ▪ 'Making more' of going now – stopping, lingering, simply being, enjoying knowing more about them – a richer experience	▪ Barriers to independent woods visits were not forthcoming and often framed as those overcome e.g. confidence ▪ Weather split views ▪ Fear of getting lost ▪ One expression of occasional unease due to lack of openness in the woods, but still goes ▪ Strong distaste towards conifer plantations compared to mixed woodland by one group

This demonstrates real insight by participants into how learning (one of the five ways of wellbeing) can support positive wellbeing. Sarah (5a) described how this perspective change worked for her one 'bad day':

> *"I really was glad that I came out that day, instead of staying at home and thinking about negative things…I'm so pleased that I came out that day, but still learnt about different trees as well! … So uh it was, you know, one good day turned into a really positive day"*

This was particularly evident on the 'mindfulness in the woods' course which had an explicit focus on gaining mindfulness skills. The six week programme was modelled on the Mindfulness-Based Stress Reduction Programme and delivered by a trained mindfulness teacher. Experiencing new possibilities for approaching life through shifting and widening perspectives is one of the primary teaching intentions of such a course (McCown *et al*., 2011) and this was indeed realised by participants. For example, *"it makes you realise that all that rushing about what it actually does to your body*" (Jane, 3a) or "*So much of life is dominated by social media and mobile phones, emails, and we forget about things like this*" (James, 3a). James went on to describe a sense of joy at learning how doing one thing at a time with mindful awareness "*just makes it more enjoyable rather than it's a chore".*

A more expansive world view was reported by participants on the programme, which led to a feeling of 'can do' and hope. This was profound for Wayne (1a), unemployed and living with anxiety and depression, who spoke of a renewed confidence in his latent skills set:

> *"you think to yourself, through from coming here, you think to yourself, I've got a future now, I've got a…, I can see myself…I couldn't see any future, d'you know what I mean? Now I can see possibilities in the future for myself"*

When asked to say more about this, he described how coming on the course had inspired an intention to change, looking up and out at the world, rather than his previous more inward facing, self-limiting beliefs:

> *"I feel NOW, like I've got more motivation to sort of, eventually, when I feel ready to get a career… 'cos I ..I've got a tourism qualification you see…So I feel…whereas before this course, I was a bit more reluctant to like to just go and get a tourism job…but now I'd have the motivation, I feel like I <u>could</u> do that, so it's give me that motivation for the future to get a career…and…and get on with me life, and so it…it has helped I think…definitely"*

A shift in perspective in relation to self-appraisal was a thread that ran through the over-arching themes - as a process of personal change, as part of the group process and as part of feeling able to 'be yourself' in the woods. A word I heard often was 'confidence', which was very much part of a more positive self-evaluation or even identity shift, and something described as having grown during the course. This was particularly in

relation to skills gained, which instilled a sense or capability and pride. For Dave (5a) this different feeling of confidence was overflowing and effervescent as he likened himself to *"some kind of Bear Grylls"*:

> *"I think my confidence now, I feel like some kind of Bear Grylls sometimes. Yeah, I think that's uh my ego er needs putting into check (joking). (Mock boasting voice) Let me go and show you what I've learnt kind of thing … So, yeah, I'm more excitable, well, I'm quite excitable anyway."*

The potential for lasting effects was evident as Angie (4a) from a domestic violence project said reflecting back on the course, "*It's finding yourself again, isn't it".* This was also the case for Sue following the mindfulness course, who felt she had got back to being 'woodsy', having become dis-connected from this way of seeing herself. This linked to a wider outcome, a shifted perspective on what makes a 'good life', whereby at the end of the programme, it was viewed as more achievable than thought, "*I think you realise that you don't need much to be happy (laughs) actually, you just need some nice people and food and shelter and community…"* (Anna, 2a).

Theme 1.ii *'Lifestyle changes'*

The second theme under the umbrella of personal change was about how the course had helped people to make lifestyle changes, both changing negative patterns through attending the course, and doing things differently beyond it. The structure of attending a course every week was reported as extremely helpful. For Arthur and Dave (5a), keeping busy was part of how this functioned for them. Being part of a recovery community from addiction, they had a high level of self-awareness and were highly motivated to maintain their abstinence. This gave them an 'eyes wide open' approach to how the course could support them. As Dave describes:

> *"Uh, With kind of addiction, it's kind of like three fold, there's the spiritual, mental AND physical, but it kind of hits all three … because you're out physically doing something, ok it may not be strenuous or anything like that, but, uh and then you're learning to, so you've got the mental side … and then the spiritual side is being out in the woods. I've found that it's, for me, for my recovery it's in my best interest to do something spiritual, something physical and something mental every day, to maintain my abstinence, and Actif Woods can do that, on all three levels"*

Participants in group 1a described how the weekly programme functioned as a regular slot in the diary to look forward to. Living with mental health challenges and mostly unemployed, this was described as the only day each week where there was a reason to get up and away from the television. Janet (1a) gives a sense of this eager anticipation:

> *"To be truthful with you, this Tuesday for the last, I'd say nearly 12 weeks, it's that even that it's only ONE day a week, it's given me routine …I'm up…certain time…I'll have a brew… I don't usually eat*

breakfast in the morning…but I'll have a piece of toast……and I'll get ready and I'm like right well I can't wait…I'm usually there before (the minibus driver)"

The importance of being picked up by a minibus driver for this group on their motivation to attend weekly was very apparent, as Jim said, *"for some people it's a big deal to get up at that time…".* This was validated by the group registers, as this was one of the groups with the highest attendance at 95%, which is often not the case for this client group (Wilson, 2009). Marian from the same group said that it was repeatedly coming each week that had eventually settled her struggle with anxiety related to attending, and how the repetition and routine had made things easier. This was echoed by the group support worker, who later spoke of the benefits for people of building familiarity, despite pressure from funders to put on activities in a range of locations: "*you start to feel a bit more relaxed because you know where you're going, whereas with the other course, you're like every week, well where are we going? What are we gonna be doing?.*

That the programme was described as a reason to get up, regardless of mental state on a certain day, illustrates how it helped people to manage their anxiety and depression. As Mike (2a) says, *"it has certainly given me some routine and I…there's days I wouldn't have got out of bed, but you know, I've got out of bed because of this, so, um, that's been an important thing…".* For Anna (2a), it was more than getting out of a rut, it was a lifeline, a particularly important element of which was doing it in the winter months, *"January, February, March…um having this to come to every week, has kind of got me through the darkness of the winter …".* Lifestyle changes and shifting unhelpful behaviour patterns due to the structure of the programme will be picked up again under the theme of social connection, in relation to people moving out of isolation as data indicating that the course could act as a stepping-stone to re-integration with society is further explored.

The impact on participants' mental health was clear, as they related how coming on the course had been a catalyst to change, moving from life being on hold to living. *"Um…I think it's doing somethi…it's helped… I think being outside in the fresh air doing st-stuff, helps the anxiety and depression…"* (Wayne ,1a) and "*I feel like I've got out of a rut as well…I feel like I'm not in me shell as much…I've come out of myself as well".* It was evident that in addition to lifestyle changes instigated by attending, the programme had led to people doing things differently beyond its bounds. Fiona (5a), a young woman with multiple health issues, credited Actif Woods with a significant change to her developing independence, *"It's helped me a lot yeah. Like before, I never used to go on the bus or anything on my own, but like I've started being able to do it, so it has helped in that sense".* Older participant, Derek (3a), who described himself as fairly inactive previously, related how he had dusted his bike down and now exercised daily, owing to a realisation that gentle physical activity could aid rather than abet his health concerns:

> *"I don't know if that's got to do with the course or what you know, but it's something that I wasn't doing before, and I've um uh I've been walking more as well, er just round the block, um…d'you know, first thing in the morning just to, just to get going and um well so you know, It did highlight, just walking up the hill (on the course), it did highlight how totally unfit I am…I am like…but um and part of it is er 'cos of health problems …er and part of it's because of an unhealthy lifestyle, but um well, that's changed, but it's difficult to say whether it's the course or…or whatever, but I've definitely changed…".*

The 'mindfulness in the woods' course (3a) gave rise to particular habit changes linked to having learnt new coping skills for dealing with everyday stresses and emotions. These had been incorporated into daily life, like Jane describing how a mindful approach had helped her deal with a busy period, "*Maybe it might just be picking up something, or stopping, or just stopping at a view, or anything…but I think that that's definitely helped me".* For Dafydd, a particular benefit was gaining skills to cope with difficult feelings, "*Well definitely it's helped me understand myself better, using techniques to deal with every day stresses…and emotions…".* In addition to learning skills to manage challenge, a specific practice called 'taking in the good' was reported as having taught participants to 'savour' good moments:

> *"I liked uh what (the trainer) was um um saying about taking in the good, taking time to absorb experiences, you know? … And to let them register, and you know because I think a memory, my memory anyway, if I can't remember things, it's usually because I haven't made an effort to remember them… Yeah, d'you know, so making an effort to remember nice things is good"* (Derek, 3a).

This practice was adapted by Derek to lend support during more challenging times: *"Yeah, and then you can recall them you know at um…er at other times, you know, at dark times, do you know what I mean?".*

To summarise this overarching theme of *'personal change'*, there were some profound shifts reported. These were observed by the onlooking support workers in group 1a, who commented on the more outgoing behaviour by the end of the course of some of the members struggling with their mental health. Indeed, in this focus group, three people were moved to tears by the poignancy of relating how the programme had benefitted them, which gives some indication of the depth of the changes and what they had meant to them.

Theme 2: *'Social processes'*

The social context in which personal change took place was a vital part of how the Actif Woods programme worked. Views on this theme of *'social processes'* were placed into three subthemes – the importance of *'group care'* (2.*i*), how the programme supported people with *'social connectedness'* (2.*ii*) and thoughts

expressed around *'course dependency'* (2.*iii*), pertaining to what happens when a short programme like AW ends.

Theme 2.i *'Group care'*

A valued aspect of how the course affected wellbeing was a sense of being held by the group - both by peers and by support staff. Returning to the theme of identity, this afforded people the chance to *"be themselves"*. The ambience of the groups was variously described as *"just so comfortable"* (Marian, 2a) or somewhere with a "*happy atmosphere"* (Roger, 2a). In part, this was about bonding over a shared activity. Roger (2a) articulated the way that this external focus had enabled him to feel relaxed enough to socialise, *"…instead of focussing on the people ourselves, we're focussing on the activity that we're doing, and it's the common ground where we're all sharing".* This sense of how meeting people in a relaxed environment whilst doing something enabled an easy rapport was something that Marian (1a), valued. She described how an introductory walk provided a non-pressurised environment for the collection of strangers that they were at the outset to begin to form into a group, *"…we all just kind of just gelled then…it was just quiet and gentle and we…you find yourself sort of standing next to each other…you know, we all just spoke, yeah…it was very gentle, and very…easy…and relaxed".*

Feeling like part of a group, "Being part of a team, doing stuff" (Angie, 4a) in itself seemed valuable for inspiring confidence and facilitating connection. Additionally, in some of the groups, a real sensitivity to each other's needs was noticeable. Jim (1a) in the mental health group voiced this by saying, *"we now pick up…if somebody's not well"*. Janet from the same group expanded on what this meant to her in terms feeling respected and accepted:

> *"…it's to that time now, where if you know someone's down, you can pick up on the scent, and it's not that they give yer a gibsy slap round the head, it's just like, come on, girl, and they'll talk to you, or, if you don't wanna talk they'll leave you to your own devices…"*.

One of the outcomes of this sensitivity to each other's emotional state and peer support experienced in relation to mental health was the ability to find a different perspective on challenges:

> *"I suffer from depression…anxiety and panic attacks…ummmm…but since I've been on this course, with the peoples that's been on it…ummm…we've bounced off each other. If anybody's had a problem, or they feel a little bit down…there's somebody to say, well listen, this is how it goes, or, they put a different light…on the situation…and give it a different reflex of what you're feeling…so yeah, it's helped me with confidence as well…"*.

In Gemma's case (2a), this was related to feeling that her unique physical needs taken care of, *"I also like the way that people try to make sure that I can be included".* These comments capture the importance of feeling counted and cared for and a real sense of being held by the group.

A relaxed, supportive environment was very much facilitated by the woodland mentors, and in certain groups (1a, 4a), dedicated support staff from referral projects. They were variously described as *"brilliant"* and "*kind"* (Anna, 2a) or "*so amiable"* and *"an incredible leader"* (Janet, 1a). Their "*knowledge"* was appreciated, as was the fact that they are "*very wise women"* (Roger, 2a). Leaders' personal qualities and professionalism were something that people were very aware of and grateful for, noting their role as "*holders of the space"* (Roger, 2a). As Mike (2a) said, *"it has just been a real lovely energy to it…holding…I felt supported".* Feeling understood and non-judged by support workers was reported as important to participants and accepting "*how people are"* week to week was described as integral to creating a supportive environment. For example, "*she's aware that some of us will have different issues on different weeks…and she's, you know, very relaxed and protecting. People's, you know, mental health can vary week to week"* (Janet, 1a).

A lack of hierarchy was considered important, creating an atmosphere of all being in it together with *"no clicks*" (Wayne, 1a). The researcher often heard leaders described as "*friends*", and the importance of a "we're all the same" attitude was evident: "*they just treat everyone the same, and like, they treat everybody with respect, and…and that's what you want off like a SW, that's what you want, and you know, I've never felt so welcomed, and they welcomed me on the course, sorry… (tears up)"* (Wayne, 1a). At many of the sessions, people were involved with getting the fire going, carrying tools to the site and 'tatting down'. Getting involved in this way seemed to really help the group form and reduce reliance on a facilitator, promoting independent skills and a sense of active participation. During one session (5a), all helped pack up and despite being offered a lift back, all chose to walk back the mile or so down the track into the town, including a group member with mobility difficulties, chatting away like a pack.

The supportive environment of the groups enabled people to 'be themselves' and this was observed as particularly the case with Group 1a who all have mental health challenges. For this group, being with people 'in the same boat' gave rise to the sense of the group as a safe space, *"you don't feel like you're on your own with your problems, you know other people have got problems similar to you*" (Wayne); "*There's no judgement is there? No one's judging you"* (Louise); "*not labelled"* (Janet). A place where you do not feel different or have to put on a front was described as a very normalising experience, somewhere where you do not have to hide your mental health challenges, as Marian explains:

> *"They're um…it's like…you know, to talk about um anxiety depression uh you know there's a big taboo isn't there…I'm just not comfortable with it, you know, outside of <u>here</u> really…I <u>wouldn't</u> talk about*

it…I would hate anyone to ask me how I was…because…I, I don't know what to say! But it's just kind of been um acceptable".

The lack of taboo experienced was an important benefit of the sense of group care for this group. This links back to the theme of '*perspective shifts'*, whereby the way participants in this group self-appraised had changed. Moving away from mental health stigma was a beneficial outcome that Janet described from the programme. The mechanism given for her newfound resilience was the support of the group, which enabled her to manage her mental health better and find a steady place in the world from which to meet it: "*It's having…having difficulties that you get labelled for…but when you come to a group…and have the support that you've had from this group…you don't feel alone, and you don't feel labelled…"*. This had led to newfound skills to deal with negative self-talk:

> *"For me, um….it's hard to explain about the self-blame tag* (eyes fill with tears), *but that used to hit me quite a lot (tears) but, now, since I've been doing the course, it does stick on me…but I can get hold of it…and chuck it away…where, months ago, it just wouldn't be one that'd be hitting me, it'd be a whole pack of them…and I'd find it difficult to say whoa, hang on a minute…where now I've got the confidence to say, hang on a minute, I am not to blame……for this situation"*

The changes described as a result of the group care were largely internal ones, but also observed by each other as different external behaviours. This was evident as Janet said to Wayne: "*I can see Wayne that's come a long way from his shell …'cos at first you were very nervous, and like very timid, you wouldn't sorta speak out, but now, it's like, the course, has…not turned the volume up, but give you more of a voice…'.* This links to the next theme of *'social connectedness'.*

Theme 2.ii *'Social connectedness'*

At its simplest, this theme is about connecting more widely outside the course based on programme activities. Sessions for making things were well received and it was evident that creating something that could be given to others was considered by many as moving, a way to connect that gave a sense of pride and self-worth.
For Gemma (2a), showing her family what she had made on the course meant *"they've sort of got an idea of what we were doing…".* Mike (4a), explained how for him, this had given him a new way to socialise:

> *"…you know, I've made things here, and I've given them as gifts to people…and so then you know, I've posted pictures on facebook…and so it's uh…it's…it's… lead to my engaging with other people in a slightly new and different way…it's not huge, but……the gifts have been appreciated and…I'll do them again"*

Particularly for the groups with health and social care referrals there was a strong emphasis placed on meeting people on the course. This was frequently given as a reason for increased confidence and an impetus to get

out more. Sarah (5a) exemplified the positive experience of being out with others and the 'adventure' of getting out with this quote, "*outside and meeting new people, getting out, not being stuck in the house. I'm in recovery, and it's done my wellbeing loads, loads, and I'm doing very well, and this is a wonderful project, that's how I feel about this project, it's very good for my well-being, yes*".

For those with mental health challenges, meeting people and connecting had wider and more profound benefits. Marian (1a) credited the programme with a move out of isolation, *"I think I had become um… … socially isolated…So, to you know, to have the plans to get out on a Tuesday, and to come and mix and to get along with people, and…feel part of a group…and uh yeah, it does make you think, what else is out there…".* Wayne (1a) described what this isolation felt like:

> *"I think like when you're at home on your own and isolate yourself, you feel like you're on your own, you feel like no-one else has got any problems like you and, do you know what I mean, I think, that's the worse thing you can do for depression and anxiety is just stay in the house and just watch TV, Jeremy Kyle and the daytime TV".*

This comment led to a group discussion about how group members would 'punish' themselves by doing this and how Actif Woods was a way out of this damaging and negative cycle. As Wayne (1a) recognised, *"I think you've got to, you've got to like get out, get out and mix with people".* This was a very emotive discussion for the group as they discussed the impact of the course on their motivation and confidence to mix with others, *"…I think that I used to…like really isolate myself 'n that, and I didn't wanna mix with other people…but I think* (Louise leaves in tears with support worker)…*when you do mix with other people actually…it can help the anxiety and depression"* (Wayne, 1a).

Dylan (4a), attending with a mental health support group, expressed a similar sentiment as he explained how the group aspect of the course had helped him, *"I was er very low in confidence…and self-esteem, er thinking oh I can't do this and I can't do that but coming to Actif Woods has really helped me*". When I asked him what it was about the programme that had helped he referred to the social aspect*, "Er, talking to other people, meeting other people and that, er, just enjoying it really"*. This links back to theme of '*lifestyle changes'* and getting out of a rut, whereby realising his capabilities and building social capital were an important part of the change he experienced.

Some benefits were related to being in the safety of a group, yet simultaneously in a public space, affording an opportunity for wider connections. These blurred boundaries allowed for more relaxed encounters at the edges of the group. For example, there was some banter on one course (5a) about a participant (who lived in a recovery project) and her rapport with a regular passer-by/dog walker and whether they were going to go on a date. Angie (4a), from a domestic violence project talks about the impact of the programme on her social

trust beyond the group, leading to her becoming less wary of people: "*Confidence being around strangers, getting back to going out, meeting people, fresh air as well, yeah, yeah".* Diana from the same project attributed attending AW with a new ability to socialise and to speak to people in her community, something she said she would not have bothered to do previously: "*If it hadn't of been for AW I wouldn't have been going to this barbecue tomorrow. I know the barbecue is nothing to do with AW…but it's given me the go to go find and talk to these people, to find out…'*" It is evident that the course was a catalyst to her discovering some of her own resourcefulness: "*Getting out and meeting people for myself, instead of having my ex-partner doing all the talking and me just standing quiet…And people have been talking to me for me, and not because of him*". This she said, allowed her "*To be my own person*".

In summary, making friends on the course helped those with low confidence to make friends and become more confident around strangers. Gaining new skills in socialising meant that people were connecting with others and this had led to changes beyond the course. Participants who had come on the programme with particular needs (mental health, recovery from domestic violence or addiction) have been the focus of these last two themes as this is where social processes were more evident in the data and the changes reported the most profound. Group was important in the others, but it seems apparent that the gains were greatest for the people who stood to gain the most.

Theme 2.iii *'Course dependency?'*

All five courses were finite in nature, ranging from six to thirteen weeks in length, so naturally at the end of the course focus groups, thoughts turned to 'what next'. Therefore, this theme of 'course dependency' concerns participants' feelings about and plans in relation to the group ending, whereby views ranged from concern to concrete plans to take their learning forward. This gave some early indication as to the sustainability of the personal changes described and for who. The course as a catalyst to changed behaviour in terms of countryside access is picked up in theme 3, '*held by nature'*.

Much gratitude was expressed, for the course and for the staff. For some, this immediately led to comments like "*Make the course all year round"* and *"What's coming up next"* (Roger, 2a). Expressions of concern like "*It's a shame it's finishing"* (Angie, 4a) and "*I'm sad to see it finish. I'll miss the friendship of everybody and the going out and the doing the activities"* (Diana, 4a) suggest a dependency on the course to keep the wellbeing benefits going. For Group 3a (the mindfulness course), there was sadness expressed about the course ending, but in the context of a tentative "*But we can do that now, can't we? Ourselves"* (Sue, 3a) expressed in relation to mindfulness practice. For this self-referral group without the same support needs, there was a feeling of having been inspired expressed. Jane, as she realised that after initially feeling daunted about the group ending demonstrated a sense of 'can do': "*At the end of the day it's only yourself that you've got anyway"*. For these participants, thoughts about the course end referred more to having re-connected

with their 'tool-box', like their mindfulness practice, as Jane (3a) said, *"it didn't, it didn't feel scary, because in a way I have had the help to kind of go back to it now".*

On some of the groups, friendships were formed that may extend after the end of the course. This included a couple forming on one of the courses (4a), who left the last session walking hand in hand through the woods. As Janet (1a) explained,

> *"…see, because we were all individuals when we actually come on the course, but now, we've made each other as a friend, not just in what we've been doing, but also, you know, hopefully we'll be friends in the future".*

For groups 1a and 5a there was real pride at what they had learnt and a desire to 'pay it forward'. At its simplest, this was a feeling that 'there should be more things like this' as an alternative to medication for anxiety and depression, for example: "*I think it would help people better than putting them on tablets and things"* (Wayne, 1a). In Janet's case (1a), it was about recognising how far she had come and wanting to share that by volunteering on future courses: *'…when new people sorta come to the group, it's not like we can chaperone them, but we can understand their first day, how nervous they will be, and how maybe they feel so fragile".* This extended into plans to take the skills they had learnt back to their recovery community for Arthur and Dave (5a), with an exuberant sense from Dave of *"I wanna teach you all!*". In particular for Dave, this related to a clear understanding of how beneficial the course had been for his wellbeing, as he reported feeling upskilled and bursting with confidence. This suggested a more lasting change outside the project and a 'DIY' approach to carrying learning forward with independent skills gained: "*Well, myself and Arthur and I have taken it upon ourselves to uh make a uh shave horse, so we can kind of continue to do green woodworking where we live. Um, and <u>if</u> people want to learn, then we'll help".*

Theme 3: Held by nature

An essential part of the personal changes and social connectedness that people experienced was entwined with the environmental context in which the programmes took place, as people reported feeling 'held by nature' (theme 3). Views on this centred on three main areas – a framing of the healing properties of *'nature as balm'* (3.*i*), a new or revived noticing of nature which affected *'accessibility'* (3.*ii*) and diverse perspectives on barriers to accessing nature, *'Rain can stop play'* (3.*iii*).

Theme 3.i: *'Nature as balm'*

The theme of 'nature as balm' centres on how nature affected mood, the centrality of the sensory experience and how these factors could lead to a sense of 'getting away from it all'. The way in which the 'outdoors-ness' was an essential part of the programme is discussed, as well as the qualities unique to woodlands that participants found special, and the effect of these on their self-appraisal.

Regarding reflections on how nature affected mood, views were twofold. Firstly, words like settling, soothing, harmonising, relaxing, and appreciative were often used. As Jim (1a) said, *"I think if you're comfortable in the woodland it sort of settles you..."*. The movement of the trees was described as having a "calming effect" (Dylan, 4a), and asked how being in the woods made him feel, he said "*It makes me feel great, relaxed, er, just good"*. A contrasting view was finding the woods a stimulating environment that was exciting, and one that could give you a sense of awe. This is expressed here by Jane (3a) in response to seeing the first green of the spring leaves beginning to show: *"that just used to blow me away every time I saw it"*. Perhaps some of this can be attributed to the diversity and lack of uniformity in the natural environment, as Janet (1a) said, "*there's not one place that looks the same".*

The way that participants' emotional state could change to a more positive one on being exposed to nature was evident, *"…and being out in the natural environment, amongst the trees, just gives you that sense of…belonging, or…just relaxing, you know, bringing yourself, putting yourself back together, you know, if you've had a bad day for example, it really does help"* (Dafydd, 3a). This capacity to shift frame of mind positioned nature as having balm like qualities with the capacity to smooth away difficulty, and create a lift in affect, "*And then if anything it just changes the day into a positive experience, you know, the greenery around, the trees, it's lovely"* (Sarah, 5a).

The 'how' of this is hinted at in the quotes above, but to explore further, certainly one component was attributed to the clean air, *"breathing in the fresh air instead of all the cars, the petrol. It's more healthy"* (Angie, 4a). The wider context of this is increasingly pertinent as air pollution has rapidly become a major health crisis. Sometimes, a more 'biophilia' type reasoning was given, concerning our supposed innate connection to the natural world*: "This kind of realisation that just being in nature or approximate to it is … good for my soul"* Mike (2a). For Janet (1a), she felt that the perceived 'harmony' of nature levelled out her mental health *"…but yer, it's exciting, because nature, in itself, is a harmony, to feeling down and depressed , because it just sort of, I don't know, it takes that…anxious…ness…and you feeling low, or …shitty with yourself, if you get what I mean…".*

A related aspect of this theme was the importance of the sensory experience as a mechanism for how nature made people feel good, for example "*It's lovely to hear the bird song and the trees rustling" (Diana, 4a) or "…there's nothing like the smell of a fire"* (Angie, 4a). The way that the sights, sounds and smells connected participants to the seasons was appreciated and the changing seasonality across the temporal period of the course was picked up on in all five groups. One factor related to how this put them in touch with noticing the time of year and the ensuing changes, for example, "*And the trees, when they're changing colour they're amazing"* (Jane, 3a).

The sensory experience is described as uplifting. Reflecting on days when he said he would not otherwise have got out of bed, Mike (2a) said, *"…so just just to be in birdsong and the fresh air".* It was clearly a tonic at the time, but also something that had retrospective benefits, whereby thinking back to the experience could lift mood. Jane (3a), described how a moment of appreciating spring colours could support her through more challenging times, "*And I've often thought of that colour just every now and then and it makes me smile"*. Partly, this is about noticing, (one of the five ways of wellbeing), which came with an almost childlike joy in discovering a new place. Tuning in to and noticing the senses provides a present moment experience, and so a mental break occurs from negative thinking patterns associated with anxiety and depression. This lift in mood and engaging with the present moment through the senses that was experienced could lead to a holiday feeling, where being in nature was variously framed as an escape, a break, freedom or an opportunity to get away from it all:

> *"…d'you know what I mean and you feel like you're on holiday being here and it's like..being abroad on holiday sort of feeling and it makes you feel good…so it's that sort of scenario where you're away from it all…on holiday, that's how I feel when I'm here, and…you know, do you know what I mean? And it's a nice feeling, you know what I mean…" (Wayne, 1a)*

Clearly, there are wellbeing benefits to this at the moment of contact, this temporarily being able to be "*away from things"* and "*turn off"* (Jim, 1a). However, reflecting on what this might mean longer term is interesting, for example, whether it is then a jolt for people to go back into the maelstrom or the challenges of their lives. Certainly, it sets up a binary 'here' and 'there' type appreciation of nature. This was evident from Roger's comment, "*When I'm here…I forget the rest of the world…And it's very very peaceful"* (2a). Anna provided insight into what 'out there' or 'other than nature' looked like to her, as she commented, *"I don't really want to be living a commercialised consuming life, I want to live something that's more in tune with nature, and I think that's become quite strong through doing this*"(2a). It was also evident that it was not just running away, but also an opportunity to go back 'there' refreshed and potentially more resilient to the challenges of daily life, as Janet (1a) says, "*You're re-charging your batteries"*.

Emphasis was placed on how these wellbeing benefits would not have been realised indoors. The beauty of the environment was noted here and part of the being 'away from it all':

> *"I mean you can do courses anywhere can't you, but they're gonna be in a building, and it's just, you know, a concrete jungle isn't it. So to come here, and it's just open and beautiful and the air is different, you know you just look around and you don't see any buildings and it's just beauty…" (Marian, 1a)*

"Just being outside" was what made it one of the best groups that participants of 5a had been part of. This was about it feeling like "*common ground"* for Angie (4a). For those with mental health challenges, it was

more than this, it was what made participating in a group feel possible. As Angie (4a) explained, "*being in the fresh air…there's more room as well, and if you feel a bit anxious you can just walk around in the woods as well".* This was echoed by Jim (1a), who related how he hated doing things indoors but that "*you can relax more outside than you can inside*" and Dave (5a) who described feeling "*more comfortable"* outside. The feeling of space it seemed, created a bigger container which enabled a personal opening where they would have felt "*shy"* (Angie, 4a) or "*a bit nervous"* (Diana, 4a) indoors.

On the 'mindfulness in the woods' course**,** outdoors as a place where it was easier to engage with practices was something that was of unexpected value. Jane explained how, despite having followed a formal mindfulness programme previously which she found extremely useful, it was difficult to use her practice in stressful situations where "*her mind won't stop"*. Here, nature provided a pathway for her, *"by doing what we've done on this course, I think it's more innate in me, the sort of thing that works for me is to go for a walk".* In this way, practicing mindfulness outside enabled her to find a way to use her practice to manage challenge. Thus, she is getting a 'double dose' of benefits of both nature and of mindfulness. This was evident in the group when Dafydd described the soothing qualities of nature and their ability to *"put you back together"*, explaining that the techniques they were shown on the course "*obviously added to that feeling"*. However, it was not just the mindfulness group who benefitted in this way. Although it was not a taught part of the course, for the other groups, re-connecting with mindfulness practice and techniques they had learnt in the past was something that naturally arose as a result of being in the natural environment. Jim from the mental health group (1a) explained how: *"I'd say being in nature it's quite easy to be mindful in nature, because you've got tactile stuff that you can concentrate on…even just looking at how things are growing at this time of year...stopping and looking at the buds and everything".* The sensory environment of the woods and the relaxed feelings that people experienced enabled them to re-connect with their prior learning and overcome the challenge of bringing techniques into their daily lives:

> *"…I've done a mindfulness course a couple of years ago, and I thought, it was very good, but I didn't find it easy to practice this mindfulness…I got all the information of how to do it and all, but I kind of…now and again, I'd think, oh, I've been doing my mindfulness, but it's not something I found easy, but coming here and since coming here I've found that I'm able to practice" (Marian, 1a).*

For one person, the programme just needed to be outdoors, "*in the vaguely wild elements"* (Mike, 2a). Mostly however, the woodland environment in particular was viewed as an integral and essential part of the course. For example, the trees provide a screen and a sense of spaciousness, complimenting the feeling of social connection through a shared activity. Being able to transform the space by having a fire as a focal point, and perhaps a more 'primal' element was cited as important, as Gemma (2a) said: "*Well you can't really do a fire in the town"*. Woods were highlighted as uniquely sensory environments, "*you don't hear the birds singing*

on the beach, do you?" (Dylan, 4a). The provisioning qualities of woodlands were also seen as important part of the experience. In a discussion relating to there being '*something about trees'*, Steve said, *"Well they give so much, don't they? They give to the world like nuts…berries…".* This led to a sense that the woods are a place where you could be self-sufficient, "*I'd be able to survive in the woods me"* (Dave, 5a) or "*I think um it's something uh about the woods, that we've perhaps evolved from it, like a foraging group, so you've got all you need in the woods"* (Arthur, 5a). This relates to learning skills on the course, developing the 'old ways' and a feeling of woods as a natural place to be, even an enhanced sense of resilience as somewhere where you could survive, be taken care of. Trees themselves were seen as a source of fortitude, with a view that there is "*something about the strength of trees"* expressed (Anna, 2a). They were also depicted as a caring presence, contributing to a relaxed space, even anthropomorphised (1a):

> *Louise: You don't have to perform for the trees do you*
>
> *(General laughter)*
>
> *Janet: They might well perform for us!*

Furthermore the woodland space was experienced as a space where you did not have to put on a front, leading to a more easy relationship with yourself, for example *"you can be yourself in the fresh air"* (4a) or "*I think it's nice being in the woods, because uh, you can be yourself, you don't have to conform or act a certain way, you know. When you're in…or in the workplace, you have to sort of conform or act a certain way, you can just be yourself, so I like that"* (Louise, 1a). Additionally, woods were described as harmless and non-threatening, perhaps compared to 'life' and nature was thought of as a place that '*doesn't hurt'*.

For Diana (4a), her experience of nature on the programme was a bridge back to her faith. Moved by the potency of the experience, touching her cross and crying with emotion, she spoke about the beauty of "*the midges dancing in the sunlight"* and how she saw it as "*all God's creations"*, "*to think he created all of this for us"*. Connecting back to the theme of identity, she credited the course and the experience of being in the woods with this, saying, "*I'd lost my faith and I've found it again now"*. This will no doubt be a protective factor in her wellbeing as she recovers from the damaging impacts of having lived with domestic violence, not least, the social support of attending religious events in her community, for which she attributed AW as a catalyst.

Theme 3.ii *'Accessibility'*

A critical question is the extent to which nature becomes part of the everyday lives of participants following the experience of an NBI like AW. Having experienced a wealth of wellbeing benefits as part of the programme, the first part of this theme examines the different ways that woods or nature had either come on to or come back on to people's radars. The second part gives essential insights into how the programme

affects firstly intentions, and secondly behaviour regarding independent woodland access, including how use changes.

In terms of visiting intentions, there were two main groupings, those for whom nature came onto their radar for the first time, and those for whom nature had come back onto their radar, often due to a *re*-membering and connecting with childhood experiences. For the first grouping, it was apparent that woodlands had been newly planted in their awareness as a result of the course. As Marian (1a) said, despite not having been back independently yet, "*certainly it's opened my eyes to what's out there…".* This was often expressed with some surprise at the *"realisation that it makes you feel good"* (Anna, 2a). The sense of awe and being amazed discussed in theme 3.*i.* ('*perspective shifts'*) linked here to a new awareness of the possibilities that woodlands could offer as spaces for taking care of wellbeing. As Anna (2a) explained, *'……and I think you just realise just how much is there, just in nature… and yeah, it's amazing…'*. In this way, the programme provided an opportunity to discover something that just had not occurred to them before, *"I hadn't realised how much I do really like being in the woods"* (Jane, 3a).

To some extent, the focus groups may have played a role in enhancing the likelihood of visits as people reflected on woods near them and catalysed intentions to go. Indeed, the conversation sometimes got down to the detail of the where and how of the woods on their doorstep. For example, Mike (2a) said, *"I noticed a woodland on top of 'Drury Road' just by the 'chapel' and I thought ah I must explore that".* He explained his intention to go on a guided walk to visit it and how the course had increased the likelihood of him doing this. This came with a sense of 'ooh, I might try that' as the pitfalls and virtues of various woodlands were discussed. For example, Derek (3a) expressed considering a visit to a woodland near him that that he had thought of as a place of anti-social behaviour. However, having been told that it had been cleaned up he said, *"Oh I'll go there and have another look. You never know…".*

Often, this process of woodlands coming on to participants' radars was linked to a shifting perception of the space and whether or not it was something for them. Dave's experience (5a) was that he initially felt quite uncomfortable and self-conscious being outdoors in public, *"You know for the first couple of weeks I was kind of, this is a bit weird"* but he described how that changed over the programme, "*Well, just, when you see people walking by and they're just kind of being inquisitive and you might, well, I dunno, that's been kind of forgotten about".* He reflected on his newfound comfort somewhere that felt quite alien previously, *"Yeah, it's given me a lot more confidence in an environment that I wasn't confident in before".* His change was quite considerable in that nature is now very much on his radar as a regular conservation volunteer and self-confessed lover of the outdoors, *"… I just feel much more comfortable being outside. I'd be able to survive in the woods me, (in joking tone)"*. For Wayne (1a), the impact of this reached beyond the woods to the rest of

his life, "*it's opened my eyes, and I thought to myself, I'd never wanna do things outside, I'd've never wanted to like I'd never wanna try gardening myself, but I would try that now".*

In Angie's case (4a), this shift in perception was due to overcoming a fear of woods, *"I used to find them really scary, but…there's nothing to be afraid of is there?".* Like Dave (5a), she described seeing nature as a place for her now, which she linked to feeling differently about herself. When I asked if she would do anything differently now that the course had ended, she talked about *"Going out more…having confidence to walk through the woods by yourself"*. When I asked her if she would have gone to the woods on her own prior to the course, it was evident that increased confidence in herself had extended to her visiting intentions, "*No. I'd be too scared to walk through the woods by myself, but now, I've just got more confidence".*

For the second grouping in this theme, nature was brought back onto the radar of the participants. For Group 3a, this was more often about the programme had enabled them to prioritise something which by and large, they knew 'worked' for them as a coping strategy. For example, giving Sue the opportunity to re-connect with what she describes as essentially *'me'*, remembering that *"you can just forget how much pleasure and support you get from an environment that suit's you..".* As she said, she had always "*been a woods person*", and described going back to the woods as feeling like a home-coming, a place of safety and a relief:

> *"…the last couple of years have been particularly hectic, and busy, um, a long protracted house move, that didn't happen for months and months, but I just kinda…I felt, there was nothing to stop me from going, doing what I used to do, but I just felt trapped in a bubble somehow, and then I moved to 'Llanfynin', and then I moved away for 2 months, and it was whilst I was away I saw the advert for the course, and I thought (clicks fingers), that's what I need to do! That'll get be right back in it, and it did, the first session, I thought ahhh, and it was like coming home kindathing, it was such a lovely thing"*

In Dylan's case (4a), it was not 'busy-ness' that had stopped him accessing woods, but his anxiety and depression:

> *"So I always used to be out in the fresh air, running and that in the woods, but since I've suffered with er depression and mental health and that er, I was bad, and that's why I'm here, now, and coming back to the woods has helped me with me confidence and it's helped me with me depression and anxiety"*

The course connected him back to a time when he used to run in the woods every day, a healthier self, but he reported having got out of the habit. AW restored his confidence and there was evidence that it may function as a catalyst to beginning to exercise again. When I asked if there was anything that would stop him going back to the woods, he said, *"Not now no. I've got me confidence and that back. The only thing that*

would stop me before is my depression, yeah". He went on to state that if the weather was favourable, he might go back for a walk and see the waterfall he used to swim in after a run. This shows how poor mental health had affected the ability to exercise of someone who was very fit before, and the potential for AW to intercept a viscous circle where motivation to do the things that help is low.

Dafydd (3a), reflecting on a woods near him that he used to go to as a child, reported that they were back on his radar, re-connecting to childhood pleasure in the woods: *"I've just realised, I haven't been there for years, but you know, when I was in school, I used to do cross country running in those woods, but you know, and um, you know I think I'll go there quite soon you know".* Diana (4a), rebuilding her life after domestic violence, made this comment following a discussion about finding yourself again through the course, demonstrating how it had provided a connection to childhood memories and (pre-abuse) happier times:

> *D: It reminds me of my childhood when you used to go camping with the group from school. The activities, I've really enjoyed it, going back to my childhood*
>
> *Resercher: Ok…it reminds you of that*
>
> *D: Yeah…happy times*

A less recurrent observation included a third grouping who came to the course because they loved the woods and were already active visitors. This included Roger (2a) who had lived in a tent nearly 30 years and was going to the woods anyway, or Arthur (5a) who said, "*when I first come on it I wasn't sure about AWW, I just wanted to do summat outside, I love being outside"*. In summary, the largest wellbeing gains were described by those who had never been 'outdoor types', and the program seems certainly successful at attracting and creating change for those people. However, mixing with those who are very much at ease in the outdoors perhaps help to create an atmosphere of safety and comfort in the environment.

The second part of this theme looks at where intentions (such as those described above) became actions beyond the framework of the course. One example is how the course had been a catalyst for purchases aimed at going back to the woods independently – a bivvy bag for sleeping out in the woods (Sue, 3a) and a silky saw for conservation tasks similar to those carried out on the course (Jim, 1a). Both items were declared with some excitement at the new possibilities they offered. Other behaviour changes ranged from regular visits, thus that visiting woods and exercising had become part of daily routines, to using woods in a different way to before. These ensuing visits were met with pleasant surprise, as Jim (1a) says, *"I would go there and think, oh yeah, why didn't I do it sooner?"*. This realisation is illustrated by Derek (3a) as he talks about how much he enjoyed the course:

"…at the end (of the quantitative study questionnaire) it said, you know, what are the reasons why you wouldn't go to the woods, it said major, minor or not a reason…and I ticked all not a reason…and I was thinking to myself, well, why don't you go to the woods then, Derek? (laughs)…And so um at the end it asked um you know, other, so I put down um well I didn't think it would be so enjoyable".

Despite health concerns, this realisation had led to two independent visits to woods on his doorstep and an expressed intention to make it part of his daily routine, getting a bike he had bought some time ago but had not used out and walking more, "*round the block in the morning just to get going*". This is someone who described themselves as having really stopped moving, but for whom beginning to move more in the context of the program had gained the confidence to enact this in his wider life. This was also the case for Jane (3a), who had become an 'incidental' user (Keniger *et al*., 2013), cycling through the woods on her way to work, and for Sue (3a), "*Oh I go every other day, to the woods near my house*". Like the other self-referral people on the mindfulness course, it had helped her to prioritise wellbeing behaviours in a busy, stressful life.

It was also apparent that changes had occurred in the way that time was spent in the woods following the programme. For people on the mindfulness course, the skills cultivated had led to them being there in a different way, more deliberately savouring the experience, and finding it easier to practice mindfulness there. In the other groups, Jim (1a) talked about *"making more of it now"*, saying that he *"…will actually stop now and just sit in the woods while the dogs go, and just let them…just sit there in the woods, doesn't matter how dirty you get".* This was met with emphatic agreement from the rest of the group who attributed this to *"all the knowledge that we've gained from being here"* (Marian, 1a) and "being able to recognise your trees and your leaves…" (Janet, 1a). Having one eye out for what practical conservation work was needed was also discussed. As these excerpts suggest, the NBI experience had led to a deeper understanding of the woodland habitat, a new-found comfort and a sense of feeling at home there.

Theme 3.iii *'Rain can stop play'*

Amidst the end of course excitement about and sense of love for the woods expressed, a question about what might stop people going independently was met with a clear response of 'no' or 'nothing'. Barriers overcome, like confidence or fear that emerged during the discussions have already been reported, as have some of the changed attitudes and behaviours about woods in relation to them coming on to people's radars. What might influence visiting behaviour more negatively required some teasing out, so this third theme represents those scarcer and diverse views.

The only factor that was more universal was the weather, and this was presented as something that would influence *when* visits would take place, rather than if. Even so, views were split. One view was about safety

concerns when the weather is more extreme, for example, fear of lightning or branches falling,*"And when we have those big winds as well, the trees that were coming down"* (Jane, 3a) or *"It's not a good place to be (in a storm)"* (Sue, 3a). A second view related to simple preference where a visit seemed like a more enticing prospect in good weather, *"…so I'll probably go again, yeah, yeah…now that the nice weather's here"* (Dylan, 4a). Those who disagreed felt that rain did not stop play, like *"it's good to be out, even with the weather not being good"* (Sarah, 5a) or *"I like the rain"* (Marian,1a). The AW programme goes ahead in all weathers bar the most extreme. In rainy conditions, a tarpaulin is rigged up as a shelter and a fire is lit, so participants certainly have the experience, or at least the invitation of being out in the elements during the course. Indeed, the value to mental health of going out during the '*darkness of winter'* was referred to earlier.

Woodland management was mentioned by Gemma (2a) who has specific physical needs and talked about the need for clearance in the woods near her. She said that it had a lot of trees down, limiting her access, but physical access was not mentioned otherwise. This relates to a similar point made by Derek (3a) about a lack of active management making the woods nearest to him unappealing, *"I walked through it once…not impressed. Not with that one, no. It's just, I don't know, it just looks uncared for that one, you know, a bit, rubbishy".* This is something he attributed to location, *"Yeah, well, it's right in the middle of a huge housing estate isn't it really…and school"*, suggesting a preference for a more remote environment. However, a similarly located woods in a different area had been discussed by the group as a place that they had begun using since the course. The habits of other users make an obvious difference here, for example, a woods regularly used by families or dog walkers was preferential to one where actual or perceived anti-social behaviour took place.

Interestingly, the type of woods made a difference, with conifer plantations being dismissed in the mindfulness group as "*just crops"* (Derek, 3a) and markedly less appealing. They were referred to as having a different 'feel', *"but like plantations are different aren't they, totally different"* (Derek, 3a) or *"I wouldn't go to a pine wood with my partner because he would do nothing but complain (laughs) and then it would never be a joy because he <u>hates</u> pine trees"* (Jane, 3a).

Predominantly, the barriers discussed were mental barriers, with participants having a clear sense of their own control over them. As Jim (1a) explained, "*The only thing that would stop me is myself. Other than that I do, I go to the woods every day".* A feeling of unease in relation to being alone in the woods was also mentioned by Dafydd (3a) who said that whilst it did not stop him, it sometimes made him a little uneasy:

> *D: It can make you feel a bit isolated maybe sometimes*
>
> *Researcher: In the woods?*

D: Yeah (silence) *It doesn't, I don't think it scares me, but maybe it's just if you tend to walk on your own, you tend to listen to different sounds maybe, and it can be, I don't' know…*

Researcher: Yeah, in a different way to other countryside like habitats?

D: Yes. Yes. Yeah. Yes. In the open maybe you feel a bit safer, that's maybe not the right word.

Researcher: Because of the visibility?

D: Yeah, I think so, yeah

Further insight into potential barriers was gained by both Diana and Angie (4a), both of who mentioned being scared about getting lost, *"because…the paths look similar"* and a self-identified *"lack of…navigational skills"* meaning that *"I'd have to have somebody with me to show me a few times"* (Diana).

5.4 Discussion

This study provides an in-depth qualitative account of the AW participant experience at course end, developing an improved understanding of how wellbeing and woodland use can be affected by an NBI, building on some of the demonstrable findings obtained quantitatively. Firstly, our intent was to find out whether and how personal wellbeing was affected, particularly initial processes of change over the course of the programme. Finding out more about what, if anything was gained by the NBI being located in a woodland environment was part of this. Secondly, a key question was how woodland use was affected in terms of psychosocial factors such as attitudes and behaviour. In tandem with the positive findings of the previous quantitative chapters, views were placed into three main themes or levels, '*personal change'*, '*social processes*' and environmental ('*held by nature'*) giving detailed insight into how the programme worked at a more individual level.

Personal change

On a personal level, the data showed how wellbeing was affected by changes in perspective, such as more positive ways of self-appraising and a broader perspective on the world. This wove through the three themes, whereby feeling safe and non-judged in a group also contributed, as did a new 'nature-y' or 'woodsy' self-identity. These data provide an understanding of how gains in the measures of self-esteem and self-efficacy in particular in the quantitative study came about. In his study on the cultural values of woods, Tabbush (2008:6) suggests that our "*cultural relationship with woods may be so deep that it constitutes or strongly contributes to a sense of identity*" on account of particular knowledges of the stories of local forests. Whilst acknowledging that it this not automatically the case for everyone, AW gave people the opportunity to experience this, either by connecting or re-connecting to this environment. This matters because a positive self-identity has personal wellbeing benefits. In the Theory of Planned Behaviour model of behaviour change a central tenent is the *belief* you can change (Azjen, 1991), to which a more positive self-appraisal contributes.

Findings resonate with similar studies, for example offenders participating in nature schemes who were able to (re-build) a sense of self-worth and an improved physical identity, possibly even affecting reconviction rates (Carter, 2007). For young people, woods as a setting for mountain biking enabled them to feel different and to identify with being active and outdoorsy (King, 2010). These shifts towards more positive identity and self-appraisal that have been observed in this and other studies are thus important from the perspective of supporting positive behaviour changes.

Corroborating the increases seen in the behavioural measures of days of exercise and woodland visits in the T2 quantitative study, findings under the '*lifestyle changes'* theme showed how these shifts in self perspective were accompanied by concrete behavioural changes. Data gave insight into how changed actions supportive to health and wellbeing had been initiated, like getting out of the house, getting out of a rut through the routine of the course, becoming more social and developing new coping skills for stressful times. Lifestyle changes in relation to woodland use, catalysed by the opportunity and exposure of AW were also evident, resulting in new visiting behaviour such as building woods time into a commute. In turn, this increased time in nature, which reciprocally supported PWB. Building on the TPB model for understanding behaviour, the 'COM-B' system recognises the vital role of opportunity, whereby *'capability, opportunity and motivation interact to generate behaviour that in turn influences these components'* (Michie *et al*., 2011:4). This framework is useful in understanding how AW affects behaviour change. The opportunity of the programme provides access to an unfamiliar or forgotten habitat that can enable certain behaviours, the motivation to act is offered by the all important routine and structure, and the capability is developed through new skills and learning providing the ability for new behaviours to be enacted.

Whilst not aimed at changing particular behaviours per se, it is clear that the AW intervention does just this, demonstrating the contribution that NBIs can make. As outlined in Section 2.1, behaviours are integral to how an individual manages their health and wellbeing. Groups with particular needs, like those with mental health issues or in recovery described particularly profound lifestyle changes, where their behaviours had previously been damaging to their PWB, such as inactivity or being in a rut of not getting up or leaving the house. This was also found by Bragg and Atkins' (2016) review of nature-based interventions for mental health care, which identified higher levels of adaptive behaviours and lower levels of maladaptive behaviours across a range of studies. As the 'Wellbeing for All' study found (O'Brien and Morris, 2014), interventions can provide a sense of purpose to those unemployed due to mental ill health. This ties in with eudemonic definitions of wellbeing, whereby it was clear that the programme provided meaning and value. Although AW is not paid employment, this resonates with findings about how one day of work a week can significantly boost mental health and life satisfaction, bringing psychological benefits such as self-esteem and social inclusion (Kamerade *et al.,* 2019). Interestingly, as for the quantitative data, different course lengths did not seem to make a difference to this,

rather it was the regularity of the weekly structure that was reported as important. However, it is possible that longer course lengths allowed relationships to build more, increasing social capital.

Social processes

As also seen in the qualitative data described here, Chapter Four had described a significant positive gain on the quantitative measure of social trust at T2. Illuminating the narratives behind this, data attributed to the '*social processes'* theme showed how the social aspect of the course, connecting with others and the experience of group was integral to the PWB benefits, particularly for those with mental health issues who had previously been very isolated. The experience of doing something together outside allowed people to relax enough to feel alright about opening up and connecting with others. Similar results were found from a study by Forest Research on peri-urban woodlands (O'Brien *et al.,* 2012), where participants reported that taking part in a short, shared activity made it easier to be sociable with strangers than in day to day life. On the AW programme, the woodland space was reported as providing a unique social space, promoting feelings of relaxation and thus acting as a conduit for social relations and connectedness. Most notably for participants reporting mental health challenges, results show how the programme worked because of several attributes of outdoor space. This included feeling less pressured due to being able to walk around to manage anxiety and shyness, or simply feeling more relaxed and comfortable and not feeling the need to perform or play a role. There was evidence that the woods functioned as a liminal space, feeling the comfort and safety of the group, and from this being able to engage in chance encounters with a wider public, a stepping stone to being more social. Here, the value of the natural environment as a 'bumping place' for encountering others, as referred to in the literature review is evident (Bagnall et *al*., 2017). As described by Bell *et al*., these impromptu meetings outdoors can be opportunities to make a *'positive but undemanding human connection'* (2015:62).

The importance of group support in targeted interventions was recognised by Forest Research in their synthesis study 'Wellbeing for all?' (O'Brien and Morris, 2014), stating that the sense of group could remove barriers to woodland access for those with concerns about visiting alone or who are simply less familiar with the environment. As outlined in Section 2.1, social interaction and social relationships can positively impact PWB and obtaining social support is known to be an important moderator of the stress experience (Thoits, 1995). Social capital is proven to be important for self-reported health (Poortinga, 2006), whilst conversely, social isolation is proven to be detrimental to mental health (WHO, 2016[b]; Mcmanus *et al*., 2016; Griffin, 2010) and loneliness a risk factor for morbidity and mortality (Cacioppo *et al*., 2014). The fact that someone might have a lot of friends and connections, but feel lonely was outlined in Section 2.1., and although the depth of friendships made on the programme is difficult to ascertain, moving out of isolation and making connections is an important first step. Therefore, providing an opportunity for social connectivity may well

be preventative and protective for both physical and mental health, resulting in better wellbeing outcomes. Whilst some groups were just mental health referrals, others were more mixed. Although one of the mental health only groups described real benefit from being with others with similar challenges, one of the mixed groups described the value of mixing outside your usual social group in terms of developing your social network.

An interesting finding from this study, outlined in the '*nature as balm'* theme, was that a feeling of support could come from trees as well as people, evident in comments such as '*not being judged by the trees'* or the way that woods or nature was experienced as a supportive space. This is a view championed historically by the romantic poets, who would often write of nature as something that we are not separate from, sometimes personifying it (Reynolds, 1909). Indeed, these more than human interactions with nature were referred to in the literature review where the 'relational assemblages' of human-nature interactions were acknowledged (Bell, 2015), as was the active role that nature can play in promoting healing (Lea, 2007). Whilst recognising the critiques and that being in nature can be multiple and contradictory, a 'less separate from' or biophilia type perspective by participants was certainly evident with comments about how we used to live in closer relation with trees. These kind of beliefs, in line with literature which identifies a more active agency of non-humans that goes beyond them simply being passive objects (Stuckey, 2010; Cloke and Jones, 2020; Tsing, 2012) seemed to inform wellbeing benefits, allowing participants to feel cared for by nature.

Held by Nature

It was clear more broadly from the data in this theme that, in addition to the structure of the course and the social processes, nature/the woods was a crucial and integral part of the PWB benefits and the processes of change experienced. Here, the question of what nature added and how this 'balm' like effect worked is considered and contextualised. One aspect that was very evident in the data was the affective qualities of nature, whereby on an emotional level, it was described as a supportive place that lifts your mood**.** That being in nature makes us feel good is not a new finding, indeed in Fiona Reynold's 'The Fight for Beauty' (2016) she describes how beauty lifts our hearts and our spirits and makes us feel better. Both in tandem with and beyond this aesthetic emphasis, the more active agency of trees that goes beyond them simply being passive objects for humans to view was described above. However, these ways that nature helps us manage our emotions for wellbeing, have been said to be often overlooked (Richardson, 2019). Invariably, emotions are vital in shaping our experience of the world, and the ability to self-regulate them is important for managing mood, and so for good mental health and wellbeing. Certainly, people in crisis may be struggling to manage their emotions at all.

Some of the reported impact on affect can be attributed to the sensory experiences that participants described so vividly. The sensory factor has been identified as important in other woodland based projects, providing a sense of peace and restfulness, reported as being particularly beneficial for older and retired people, women and disabled respondents (O'Brien and Morris, 2013). This embodied, present moment experience**,** even momentarily, has potential to provide a break from anxious or ruminative thoughts associated with anxiety or depression respectively. Whilst the 'mindfulness in the woods' focus group was related to a particular course, which was aimed at teaching people to be in the present moment more deliberately, engaging with mindfulness was highlighted as important by other groups too. As the data in 3.i. shows, outside, participants discovered a newfound ability to use mindfulness techniques that they had learnt previously but not used, as well as the course affecting the *way* that people spent time in the woods under theme 3.ii, '*making more of it'* and '*lingering more'*. Both a natural human capacity, and something that can be trained, mindfulness is a technique that has many proven benefits for health and wellbeing (Kabat-Zinn, 2013; Segal *et al*., 2013; The Mindfulness Initiative, 2019). Being in nature appeared to act as a conduit to this, the course providing time to stop and 'just be', away from pressure of things to do. It was possible that the relaxed feelings of being in the woods supported this, in the same way that this was reported to make connecting socially easier. A review of mindfulness practice in woods and forests found evidence of the outcomes of mindfulness practice in outdoor settings to be very limited (Ambrose-Oji, 2013), however this was predominantly due to a lack of robust studies. Whilst there is strong evidence on psychosocial benefits of both time in nature and of mindfulness, it could be assumed that the combination (the aforementioned 'double dose') would have considerable potential, which seemed to be in evidence here.

As outlined in the literature review, there is a growing body of research on 'nature connection', that associates feeling more connected with higher wellbeing (Sandifer *et al*., 2015) and better mental health (Capaldi *et al.,* 2015). In line with this, it is apparent from the data that the AW experience represented a level of access to the natural environment that went beyond passing through. Comments from participants about how it helped them to find themselves or find their faith across the themes illustrate how AW provided an opportunity for this stronger connection. It is also evident, as described above, that this depth of engagement profoundly impacted on their mental health. It is difficult to imagine this level of immersion and resultant benefits, particularly for those previously not familiar with being in the natural environment, without the support and structure of a nature-based intervention.

It was apparent that a break from the norm was an important part of the mental wellbeing benefits. As described, these balm-like qualities (affective, sensory, mindful, connected) contributed to a holiday feeling, a sense of escape and freedom. This is in line with other studies, where feelings of escape and freedom (O'Brien, 2004) or getting away from everyday life (Ward Thompson *et al.,* 2007; O'Brien and Forster, 2017)

were found meaningful. That people gain marked benefit from nature as an escape aligns with longstanding theories highlighted in the literature review on its therapeutic value such as attention restoration and stress recovery theories (Kaplan and Kaplan, 1989; Hartig *et al*., 1996). From a wellbeing perspective, it is worth considering whether or not framing nature as an escape, as something separate from society, is problematic, in that it could constitute running away from or avoiding difficulty or challenge (avoidant coping). It would appear not from this data, and that a 'dose' can promote the formation of a healthier sense of self and new positive behaviours which support participants to find new tools to manage their own wellbeing beyond the momentary. This is also evident in other studies, for example, for disabled participants, time out in the woods helped them to cope with sometimes restricted lives (O'Brien *et al*. 2012) or for those with mental health problems it helped them cope with the stress of discrimination (Burns *et al*., 2008). Experiences such as these and those reported in this study can support participants to 'go back' to whatever they feel they are escaping from more resourced.

Additionally, as the reflection on what makes 'a good life' in theme 3.ii shows, time out can support a process of re-prioritisation and a realisation about what is supportive. In this sense, a programme like Actif Woods can be an opportunity or a catalyst for people to sift, prioritise and gain better understanding of what it is that gives their life meaning and perhaps take steps towards that. In the language of the eudemonic tradition outlined in the literature review, this encompasses that which gives life a sense of purpose, core to psychological wellbeing (Ryff, 1989; Ryan and Deci, 2001). How outdoor experience can give an opportunity to reflect on life and a sense of perspective was also observed by participants in a study on the coast as a therapeutic landscape, which suggested that such experiences align with "*the deepest stage of contemplation in attention restoration theory"* (Bell *et al*., 2015:62).

Drawing together the above aspects on how participants felt 'held by nature' (emotion regulation, sensory awareness, being more mindful, increased nature connection, feeling of escape, space to re-prioritise), stress and coping theory provides a useful explanation of how NBIs supports PWB. The theory explains how a person is less stressed when they feel that the demands they perceive are placed on them can be met by their perceived resources. This perception and thoughts about events and how they are able to deal with them can affect how they respond to internal and external stressors (Lazarus and Folkman, 1984). This appears to be what is happening to participants - through AW they are increasing their resources, both discovering the natural environment and increasing their social capital. Thus, coupled with changes in their self-appraisal they have newfound ways to manage feelings of anxiety and stress, both cognitively and behaviourally. As a result, their ability to manage their physical and mental health challenges both on a day to basis and at times when demands rise, with something that is easily accessible to them, is improved. In this way AW is protective for health and wellbeing supporting participants to self-manage. This links to the idea of nature as something

that could be prescribed to reduce stress and other difficulties which will be further discussed in the concluding chapter.

Woodland use

A key question of this study has been to what extent AW can affect woodland use, examining any change in attitudes, behavioural intentions and actual behaviours and how these aspects inter-relate. As the previous chapter on the quantitative data showed, the frequency of woodland visits increased and the number and strength of barriers decreased. These qualitative data provided the personal stories to corroborate and illuminate the reasons behind these changes. There were several impacts reported on participants' access behaviour which included those who newly realised what was available to them in the natural environment, where there was a feeling of woods coming on to their radar, a noticing of the woods on their doorsteps, and a sense of the course having awoken new possibilities. This showed how this group, and those who had lost touch but are now going more regularly, were newly resourced to take the opportunities woodlands have to offer, increasing access to the natural environment as a place for '*therapeutic encounter'* (Muirhead in Atkinson *et al.,* 2012:141). Data in themes 3.ii showed how the NBI created an opportunity for this encounter, not least for participants who did not previously feel comfortable in the woodland habitat. This aligns with the office workers in Hitching's (2013) study who lacked the 'very idea' of spending time in nature, without which there is no starting point. Subsequently, data in 3.ii shows how mental barriers were removed so that fears decreased and confidence increased. How meanings are attached to place was discussed in 2.i (Schwanen and Atkinson, 2016; Atkinson et *al.,* 2012; Bell *et al*., 2015) and indeed, the results showed how meanings given to the woodland space by participants changed as they gained knowledge and a deeper sense that it is 'for them', breaking down access barriers and strengthening feelings of nature connection.

As Bell (2014) points out, there can be a 'greenspace turning point' in adulthood that can affect visiting behaviour, and whilst childhood experiences are important, current nature experiences can still lead to high levels of nature connection (Cleary *et al*., 2020). It was obvious from the focus group data that a programme like AW had potential to act as a turnaround experience in adulthood for those who lacked childhood experience (like Dave feeling newly at ease in the woods or Angie overcoming her fear). It also seems it can reverse interruption, providing a 'greenspace *re*-turning point', re-connecting participants with childhood memories, and often, happier times (like Sue whose busyness had got in the way, or Dylan whose depression had prevented visits). The importance of childhood memories for enhancing the value of a place and of childhood experiences for predicting adult visiting behaviour was highlighted in Section 2.6 (Ward Thompson, 2008), but busy lives, stress and poor mental health, can interrupt this. Thus, we see how an NBI can support this kind of transition, by providing positive adult experiences and newfound or re-discovered comfort in nature.

Methods reflection

From a collective sense making perspective, the focus groups worked well and there were several examples of participants bouncing off each other in the way that hearing someone else verbalising their experience helps you understand your own. This was evident from 'I agree with that' and 'Yes! What she said!' type comments, sometimes validating each other, sometimes recognising or re-evaluating their own experience, in the light of their peers. They are recognised as spaces where people can talk in depth on sensitive issues (Braun and Clarke, 2013) and the tears of realisation at how beneficial the course had been were evidence that this took place. In fact, the focus groups seemed to have a therapeutic value as people looked back and solidified thoughts on what the impact on their wellbeing had been.

For this study, conducting the focus groups *in situ* gave immediacy to participants' observations, but was not without challenges by way of distractions. Indeed, in a paper the researcher contributed to (Foley *et al*., 2019) *in situ* and mobile methodologies, whilst often seen as risky compared to more controlled environments, are commended for producing new knowledge and understanding of how health and wellbeing can unfold and accrete in and through place. The drawings participants were asked to do at the beginning of the focus group helped to gather attention, providing a subtle route to help people make sense of their experience. This meant that when it came to speaking into the group, they had had time to reflect on what the programme had meant to them, which both stimulated and deepened conversations. Time set aside to draw in silence at the beginning of the focus group became a curious and reflective space, changing the atmosphere from scattered and slightly chaotic to calm. A disadvantage of focus groups is that they can drift (Braun and Clarke, 2013), for example into general chit chat, but the use of drawings helped to guide the conversation back towards the research questions. Good quality data which answered the research questions well was obtained. The process was commented on positively by one mental health support worker in response to how revealing stopping to ask people how an experience impacts on their wellbeing can be. Being caught up in delivery, she observed how if questions to promote reflection are not asked, awareness of having changed or moved from a negative to a more positive position may not be fully registered.

5.4 Conclusion

In conclusion, these end of course focus group data corroborate and provide understanding of the processes behind the positive numerical changes seen in the quantitative study in considerable depth. They have shown how the AW NBI profoundly affected PWB, positively changing the way that participants think and feel about themselves, bringing about behavioural changes supportive to healthier lifestyles and preventative for a range of physical and mental health conditions. How the programme offered a space to connect with others was demonstrated, of particular value to those reporting mental health conditions or recovering from

addiction, and especially potent for those previously socially isolated. Insight was gained into how the 'balm' like qualities of nature increased participants' resources, better enabling them to cope with life's demands, supporting them with managing stress, emotion regulation and anxiety and depression. The 'mindfulness in the woods' course in particular increased people's resources to deal with more day to day stressors.

In relation to woodland use, psychological barriers, such as feeling awkward or out of place in the woods, feeling afraid or lacking in confidence were reported as having diminished. Data showed how the programme functioned as a 'turnaround' nature experience for those who had not had prior exposure, and an opportunity to re-connect for those who had lost touch with the habit of spending time outdoors. It also changed the way that people spent time in the woods, with more lingering and stronger feelings of connection, including feeling supported and protected by the trees.

The three main themes ('*personal change'*, '*social connectedness'* and '*nature as balm'*) are separate but closely woven together and very much interacting, providing reciprocal benefit. Lifestyle changes are simultaneously personal and social, influenced by environmental factors as behaviour shifts and morphs, in the container of the natural environment as a space for wellbeing. Whilst behaviour change and increased nature connection are not programme aims, both outcomes occur, contributing to the improvement of PWB. Therefore, the role that NBIs such as this can play in meeting national policy goals such as those in 'A healthier Wales' (Welsh Government, 2018) for citizens to lead happier, healthier lives should be amplified. It is also clear that NBIs such as this can play a vital role in widening access to the countryside for wellbeing, meeting ambitions of a range of land management agencies.

Looking forward, there were hints at longer term, more embedded shifts. The course had clearly acted as a mechanism for changes supportive to a healthier lifestyle and improved wellbeing like a new daily walk or a newfound ability to use the bus. It is also possible that reports of socially connecting on the course and beyond supported a move out of isolation longer term. How lasting the changes might be and whether new behaviours become habitual and automatic or not is often the great unknown following the end of the course for participants, course providers and funders alike. The next chapter presents the three month follow up focus group data and is about whether change is maintained or not, which will be further triangulated with the quantitative data in the final discussion chapter.

CHAPTER 6 QUALITATIVE STUDY AT FOLLOW UP

6.1 Aims and objectives

As outlined earlier, few studies have been able to follow up participants of a nature-based intervention to examine whether any changes experienced have endured or otherwise. Here, the core research questions of how participants' wellbeing and their woodland access attitudes and behaviour were impacted by the course are examined qualitatively several months following course end. Building on the T3 quantitative data presented in Chapter Four, this data enables a deeper understanding of and insight into the maintenance of change.

6.2 Methods

Rationale

Longitudinal designs are more commonly associated with quantitative research, with qualitative studies more usually being cross-sectional (Grossoehme & Lipstein, 2016; Lewis, 2007). Within longitudinal qualitative research (LQR), interviews are the most frequently used method (Grossoehme & Lipstein, 2016; Corden and Millar, 2007), and the use of focus groups is much less usual. The benefits of focus groups per se was outlined in Chapter Five. The unique contribution of LQR is that it allows an exploration of processes of change over time (Corden & Millar, 2007), providing depth, insight and direction that may not be evident at one time point (Grossoehme & Lipstein, 2016). Grey *et al.,* (2017:904) who used Longitudinal Focus Group (LFG) design to explore lived experiences of fuel poverty in relation to an energy-efficiency intervention, stressed how *"LFGs facilitate open group discussion and dynamics to ensure flexibility throughout, in order to explore the broader experiences of recipients of an intervention at different stages of the process*". Thus, in this study, a LQR approach can provide a rich understanding of how any benefits or change as a result of taking part in AW have, or equally valuably, have not been integrated or embedded into lifestyles of participants, in the wider context of any changes in their personal lives. Reflecting on implications for policy, Corden and Millar (2007) highlight how LQR can support understanding of which factors are important for the determination of choices and behaviour. Therefore, despite the intrinsic challenges of LFGs, referred to in the subsequent study design section, the overarching benefits in an arena where there is so little understanding of the post-NBI experience, mean that it is extremely worthwhile.

Study design

As the second phase of a longitudinal study, the methods and procedure for the follow up focus groups (T3) are the same as for the end of course focus groups (T2), as outlined in Chapter Five. The same participants were invited to return three months after the end of course focus group, and the same guide questions were

used (Appendix 5.3), albeit with a focus on whether and how any change has been sustained. These focus groups took place at the same time as the collection of the follow up quantitative data and ranged from 13 minutes to 25 minutes in length. As for the quantitative research, the intention of the three month time gap between data collection points was intended to leave enough time for more immediate impacts of the course to have subsided on a week to week basis.

Groups and participants

Although the intention was, as far as possible, to have the same participant groups as at T2, this was challenging logistically once the courses had ended. Table 6.1 below gives an overview of the four groups that participated at T3. Unfortunately, one group, 2a, a 12 week multi-activity programme with a mix of self and mental health referrals, was lost despite several attempts to meet, due to a range of extenuating circumstances, such as an extreme weather event and staffing changes. Table 6.2 below gives the breakdown of each group, showing that across the four groups, nine of the original 20 participants were retained. Seven were lost (e.g. due to not being present on the day of the follow up activity), and four were gained. Where possible, characteristics of the sample were ascertained from individuals' respective quantitative data. Participants' mental health challenges included work stress, low mood, depression, anxiety, panic attacks and psychosis. Physical health challenges included peripheral arterial disease, high blood pressure, depression and asthma. The mindfulness group, as at T2, had a slightly different composition to the others which were comprised of health and social care referrals, in that the three participants were self-referrals, two were employed and all were educated to university level or higher. Despite work stress and physical health issues, they tended to be a 'well' group in terms of their self-reported mental health.

Analysis

Following methods outlined in Chapter Five, focus groups were transcribed and coding was done by hand, rather than by using a software package. As Lewis (2007:551) reminds us, there is "*no single established procedure for analysing qualitative data, and the approaches are as varied as the traditions, disciplines, methodologies and schools within which qualitative research takes place*". This is no less true of LQR, and data analysis aims to explore diversity, deviance, negative or atypical cases and alternative perspectives between the different time points (Lewis, 2007). The inductive themes from the end of course focus groups were used deductively to structure the analysis and purposively search for the presence or absence of change over time at this stage. A detailed summative account of these themes can be referred back to in Table 5.3 in the preceding chapter. Following the completion of each follow up focus group, early response initial coding was done inductively which was later looked at through the lens of convergence or divergence to T2 themes (box 6.1). Some LQR researchers have used a *'trajectory approach',* suitable for exploring *'how experiences or processes unfold over time'* (Grossoehme and Lipstein, 2016:5), more commonly with interview data. In this

case, because a focus group is more about how the group interprets the experience, within person change was not explicitly examined, although of course a researcher cannot nor would want to 'switch off' what is known already known about a person from an earlier focus group. As for Chapter Five, a sample of transcript and coding to theme was corroborated by a project supervisor in much the same way as outliers are searched for in quantitative data. This process, despite a few anomalies which were re-evaluated, found the work to be consistent, rigorous and methodical with a good analytic fit between data and coding.

Table 6.1: Follow up focus groups

Group code	Course type	Length	Referral route
1b	Coppice products	8 wks	Mental health services
3b	Mindfulness	6 wks	Mixed - mostly self-referral
4b	Multi-activity	13 wks	Mixed - mental health and domestic violence services
5b	Multi-activity	12 wks	Mixed - mostly addiction recovery, also youth homelessness

Table 6.2: Follow up focus group participants

Group	Name	Age	Gender	Education (highest level)	Employment	Health condition
1b	Janet	25-44	Female	Not stated	Not stated	Mental health
1b	Louise	45-64	Female	Secondary school (ss) to 16	Unemployed	Mental health
1b	Ralph[b]	45-64	Male	Uni or higher	Unemployed	Mental health
1b	Mandy[b]	45 - 64	Female	Secondary School to 16	Unemployed	Mental health
3b	Derek	45-64	Male	Uni or higher	Retired	Physical health
3b	Jane	25-44	Female	Uni or higher	Employed	Mental health
3b	Dafydd	45-64	Male	Uni or higher	Employed	Physical health
4b	Diana	45-64	Female	Secondary school to 16	Unemployed	Physical health
4b	Emrys[b]	65 - 74	Male	Secondary School to 16	Retired	Mental health
4b	Cath[ab]	25 - 44	Female	-	-	Mental health
5b	Dave	25-44	Male	Between ss and uni	Unemployed	None stated
5b	Sarah	45-64	Female	Ss to 18/19	Unemployed	Mental health
5b	Fiona	18-24	Female	Between ss and uni	Not stated	Mental health

[a]Indicates those not in the quantitative study
[b]Indicates those not in the T2 focus group

6.3 Results

As explained above, the themes from the end of course (T2) data will provide the platform from which to explore maintenance of change or otherwise several months on (T3). An 'at a glance' summary of these themes is presented below (box 6.1). Each theme and sub-theme in the narrative below begins with a brief summary of the T2 findings.

Box 6.1: Summary of themes from end of course focus groups

Theme 1: '*Personal change'*
Theme 1.i: *'Perspective Shifts'*
Theme 1.ii*: 'Lifestyle changes'*
Theme 2: *'Social processes'*
Theme 2.i: *'Group care'*
Theme 2.ii: *'Social Connectedness'*
Theme 2.*iii: 'Course dependency?'*
Theme 3: '*Held by Nature'*
Theme 3.i*: 'Nature as Balm'*
Theme 3.ii: *'Accessibility'*
Theme 3.iii: *'Rain can stop play'*

Theme 1: *'Personal change'*

This first theme of '*personal change'* related to the individual and any impacts of the AW intervention on them. This firstly pertained to how the way people thought and felt about themselves and the world around them changed ('*perspective shifts'*) and secondly to how these shifts had followed through to behaviours, ('*lifestyle changes')*. Maintained change here looked at maintenance or growth of identified impacts, such as continued confidence and new actions such as walking or volunteering.

Theme 1.i: *'Perspective Shifts'*

The T2 data suggested that those with health and social care needs in particular, reported self-appraising more positively with increased feelings of capability and confidence. A more expansive world view had led to hope for the future, and intentions were expressed about going back to work or getting involved with voluntary work. For the predominantly working participants in Group 3a it was more about re-connecting with what was helpful after busy-ness or life/work stress had got in the way of this.

At this stage, two primary components of the theme were about giving yourself permission to prioritise wellbeing, and how changes in self-appraisal had become embedded. Firstly, it was in reflecting back that a realisation around *permission* was noticed, that is, permission to allow time and space for wellbeing activities in one's life. For example, Derek (3b) described how "*…coming on a course to relax and connect…with nature, sort of validates that action*". He shared how life can easily become about *"trying to achieve things, or you know uh tick things off the list or whatever",* however, he explained that *"when you come on a course that says well, your your job is to do nothing…for a while and just take in the good…and um you know, and relax, and appreciate things more, and connect with things more. That gives me maybe permission to do that, eh, you know?".* Similarly, Janet (1b) realised as she reflected just how important it had been to prioritise herself

and how the course routine had been a trigger to taking better care of her wellbeing. Both reflections suggest that allowing time for these positive changes might previously have felt indulgent:

> "*I didn't believe in what me mum said to me at the beginning of the year, cos me n me mum had a bit of a fall out, because, I look after everybody else and I don't look after meself, and her point was, take some time out for yourself, <u>just for you</u>, on a Tuesday, nobody else's day bar <u>your</u> day"*

There were repeated examples of how a more positive view of the self had become more embedded following the programme. This was certainly the case for Sarah (5b), recovering from addiction, who described feeling very differently about herself now, to the extent that:

> "*I'm a totally different person. I am more confident, um, I'm still getting there, but um, slowly but surely with myself, but it has helped immensely, coming out, whether it's in the rain sitting by the warm fire, now for instance, it's just appreciative, uh of meeting familiar faces, it's really nice, um yeah it's been good for myself, yes".*

For Janet from the mental health group (1b), it was also evident that a less critical view of herself had become more familiar, *"Cos the self-blame tag with me still sticks on me every now and again, but now it's only every now and again, It's not every day like I had it".* As Diana (4b), looked back, she attributed a shift in self-perception to the experience of getting out each week even when depressed to having improved her mental health, "*I want to say thank you to AW. It's helped with my confidence. And also I think it's lifted some of the depression that I have been having".*

Beyond the everyday, Fiona (5b), a young woman with physical health challenges, explained how remembering her success in completing the programme had since supported her at more difficult times. Here, she demonstrates how this had enabled her to work with blocks to supporting her own wellbeing:

> *"The opportunity to meet new people, kind of, it kind of helps give you, sometimes you know when you're having a bad day, and you do stuff, or you know, you feel like oh you know what I can't do this and then you think back to what you've been doing and you think well how many days I've had where I've thought I can't do it and I have done it".*

As might be expected with focus groups, participants bore witness to and validated the changes that they had seen in each other. The easy rapport in the following piece of dialogue from group 5b demonstrates this:

> *Dave: (To Fiona) Your confidence has grown, do you know what I mean. I can't believe you were supposed to be this shy timid won't leave the house kind of person, but*
> *Fiona: (Laughs) Now I'm a gobby little sh*t*

Dave: Yeah, yeah (laughter) Yeah, isn't it? It's always the quiet ones at the start that (laughter) you know, you're thinking you'll be the loudest by the end

Fiona: You'd better watch out

Of note is that in terms of maintaining wellbeing benefits, a contrasting experience was reported by Louise (1b). She expressed feelings of frustration and disappointment with herself at this stage, saying "*I'm one of those that needs a kick"*. In the next linked theme of '*lifestyle changes*', it can be seen that these largely positive shifts supported people into action, whilst Louise's rather different trajectory is further explored under the '*course dependency*' theme.

Theme 1.ii*:'Lifestyle changes'*

For those reporting mental health challenges, the importance of the structure and routine of the AW programme was a key element of this theme in the T2 focus group data, where help to get "*out of a rut*" was much talked about. It had helped those in recovery from substance use dependency to support their abstinence. For both these groups, it had been a catalyst to wider change, with seemingly simple but powerful everyday lifestyle shifts supportive to positive wellbeing being made (such as daily walks, or being able to use a bus). For the mindfulness group, the reported improvements were in coping skills for stress and emotions in their daily lives. At T3, in examining whether intentions had become actions, or if changes had sustained, a range of largely positive experiences were reported. Whilst at T2, conversations were more focussed on '*perspective shifts*', at T3 they leaned much more towards wider '*lifestyle changes'*. This theme predominantly details stories of how participants, independently of the programme, had pushed themselves outside their comfort zones, and how they had managed and sustained their previously reported changes.

Here, two participants describe the importance of skills acquisition. Cath (4b), who lives with mental health challenges, referred to making food on the course as literally having been a '*survival skill*', as she explained: "*Um cos I struggle with cooking so, its learning how to cook in the woods, it's brilliant you know".* Ralph (1b), described how he had moved from seeing himself as a clumsy to a competent person, having successfully made something on the course that he had since used (a mallet). Using this experience of something he had never done before, he was able to overcome a fear of "*using my initiative to try something new*". This is a good example of how a perspective shift had led to a lifestyle/behaviour change:

Ralph: ummm, so, that was quite confidence building in itself and I've kind of carried that on into my life now, you know, 'cos, you know, if I'm helping someone with the garden or something, I don't need to say you know, shall I do this or shall I do that, I'll just go ahead and do it, you know, so…

Researcher: It's sort of given you the skills to have a go

Ralph: Yeah, yeah. You think, well what's the worst that can happen?

For Fiona (5b), a young woman with physical health problems, who had talked at the T2 focus group about being housebound prior to AW, it seemed that positive changes described then had not only stuck, but proliferated:

> *"I don't know, it's just given me like, before, I started coming I didn't even used to come here by myself (without support worker) and I've started coming here by myself now, and like, and about like three or four weeks ago now, I had to go somewhere and I was really like…confident in being able to go somewhere, whereas before I'd be like, nah, I'm not going, I can't do it on my own".*

It was evident that the barriers she perceived around going out had shifted and that it had become normalised, allowing her to appreciate it with reduced anxiety. She expressed a joyful sense of discovering new pleasure in life, an embracing of 'doing' things:

> *"Because I'm able to go out more and enjoy it more and just be relaxed, you know, without having to have that though of oh my god, am I going to be able to do this, just being able to do it without having second thoughts, which is massive actually."*

Whilst discussion of mental health benefits was much more prevalent, participants also related accounts of regular physical activity, from weekly badminton to daily walks. Resultant physical health benefits were less evident, albeit with a few exceptions. One of these was Derek (3b), an older participant, who had referred to taking a daily walk at the end of the course as a total change, having been introduced to moving around outdoors and it feeling ok through the programme. His earlier reported perspective shift on fears around exercise had been maintained, saying: *"You know, my leg still hurts, but I've got circulation problems…but…I just walk through it, it's a good pain apparently".* Despite experiencing pain due to circulation problems, he is grateful of the health benefits, "*Gets me body going. Makes me go to the toilet when I get back (laughs)"*. He outlined initially having to stop three times, *"But now I just walk right round, so that's, I think that's progress"*. Indeed it appeared to have become quite habitual, "*So I start the day with a walk now. Nowadays I get up, cup of coffee and then have a walk around the block*".

Two participants recounted the vital role that their recently acquired dogs had played in supporting and maintaining positive lifestyle changes beyond the programme, simultaneously increasing their physical activity levels and improving their mental health. The openness of AW to allowing dogs had made a real difference to them both. Cath (4b), gave an account of just how important it had been for her, not least because *"It's so lovely to…have some purpose. So, every day now I go for a walk, three times a day"* as *"I was isolating myself at home before"*. This not only gets her out of the house and means that sees her neighbours more, but she also credits '*Beanie*' with having kept her alive:

> *K: …its really good that I've got him now, so…he probably saved my life, so…yeah*

Researcher: He saved your life?

K: Yeah…yeah, because that day I was having a really bad day, I was suicidal, so…you know, Its got me through that, so…I wouldn't have met the dog without him, without this place

Sarah's (5b) story was similar, regarding the importance of both having the responsibility for her pet, and the incentive to get out regularly. This she says, has been key to her maintaining her abstinence, "*So I'm out for two hours a day which is something which I was not doing before, which I really, really enjoy".*

Maintained lifestyle changes that the participants from the 'mindfulness in the woods' group (3b) reported as beneficial included Dafydd who described consciously giving himself a daily moment of 'tech' free time, "*You start trying to have time without the phone and the ipad or whatever, and just having that, just maybe reflect on the day or something*", recognising that "*because life's so busy, you know, and social media does tend to you know….you get hooked don't you*". In Jane's case, her use of the short practices outdoors that she spoke of at the course end had continued and supported her through some difficult times: "*And I've had a massively manic few weeks and I think without just having those little snippets…I wouldn't have made it to the end of it you know (laughs)".* These accounts represent important tools for managing their day to day work stress, not only increasing resources to prevent build up, but also doing so at time of increased challenge. Two aspects of managing lifestyles that had become more active were raised by the mental health group (1b). Ralph spoke about the need to choose carefully when planning how to allocate his time: "*I think you've just got to do something you enjoy rather than doing something out of a sense of obligation because I've been down that road in the past and it doesn't work (laughs)".* Mandy's point related to avoiding doing too much: "*I don't wannoo, throw me self into everything all at once…cos I wanna be able to enjoy what I'm doing, and then when I feel that the time's right then I'll bring something else…"*. Both views show a positive self-awareness and agency around managing change.

Connected to this was a recognition that to maintain lifestyle changes and their wellbeing benefits, you have to work at it. This was particularly evident with the mindfulness group in relation to maintaining practices (no doubt because 'home practice' and maintenance beyond the course are part of the programme). As Dafydd said, "*I'm trying to use the different techniques that we've been shown to relax*", noticing that "*when I try to use them I feel better, you know*". The commitment required to maintain change was also referred to in relation to getting outside: "*Well, um, I'm making an effort to get out more into nature*", (Derek, 3b). In fact, Derek referred to how his daily walk and mindfulness practice are part of a range of activities he does, referring to them as "*part of the rest of the junk that I do (laughs)".*

As for the previous sub-theme the opposite was the case for Louise (1b), whereby the wider lifestyle changes others had maintained and augmented had not happened for her. Without the routine and structure of the

course she described having become socially isolated again, and in comparing herself to the 'success' of the others in her group she was visibly distressed. She attributed this difference to her age: *"I just still find it very difficult, as old as I am…to change…".* However, conversely for Derek, a similar age, it was being retired that he felt gave him the time and space to engage in activities that supported his wellbeing, saying, "*Yeah well I've got plenty of time, I don't work do I".*

Theme 2: *'Social processes'*

This theme teases out the social processes or mechanisms that seem to have contributed to the impacts detailed above. At T3, as the groups have disbanded and come together for a one-off session, '*group care'* refers to looking back at what was gained from the group experience, and any lasting effects of this on how people 'think and feel'. '*Social connectedness'* looks at how people had gone on to interact and relate beyond the course, and how it has affected what they 'do'. Finally, '*course dependency'* reports the experience of Louise for who changes experienced at the end of the course had not persisted, as well as a new aspect of barriers and enablers to forming new groups.

Theme 2.i*: 'Group care'*

The T2 data for this theme related to AW courses creating an atmosphere of comfort and ease, and the importance of a space where people could be themselves and bond over shared activity. Feeling part of a group was key, where sensitivity to each other's needs and a sense of being 'held' by each other and by staff was of great importance. For the mental health group in particular, who had shared a sense of fragility and vulnerability, not feeling stigmatised or having to hide their illness was referred to as having had real benefits such as reducing negative self-talk.

At T3, as the 'group' as provided by AW had ended, the loss of this theme from the data might have been expected. However, conversations in relation to 'group care' were forthcoming, with participants reminiscing about how good the programme had been and the gains they had experienced. For the mental health group, who had been a very close-knit group with high attendance throughout, this focussed on re-iterating what a cohesive group it had been and just how valuable they had found the social support. Comments that reflected back such as *"if you're anxious about things, no-one's sort of laughing at you or anything"* (Louise, 1b), "*I wouldn't have to…hide the fact that I felt down"* (Janet, 1b) or "*it was non-judgemental"* (Ralph, 1b) really exemplify this.

This experience of having been in a group, in particular, of being accepted and not judged by the group staff and each other whilst on the course had clearly had a sustained impact on how people self-appraised. As shown below, this had not only stuck, but developed for Janet (1b):

> *"You get spoken to the way that you'd like to be treated…not being spoken down to, and that gives yer a lot of confidence, if people have got confidence within you, that sort of gives you that little bit of a boost and a pat on the back to say, well if someone else can see that in me…I can sort of see that a little bit more in me than what I did"*

At the earlier timepoint Janet had referred to how the stigma free space on the course had helped her. It appeared that this had supported an upward trajectory in her new-found confidence: *"If I hadn't of had these lot, in the start of the year, to be truthful, with everyone, I don't think I'd of competed and beat a lot of the shit that I've actually faced, if you get what I mean".*

This theme of '*group care'* was not particularly salient for group 3b (the six week mindfulness programme) at either time point. As described, most of the group are employed and the one retired member reported an active life with many interests. It would seem that this group of self-referrers had existing support networks and structures in place, whereas for the health and social care referral groups, the positive connections had made a profound difference to their lives. For all but Louise (1b), AW appeared to have had stood them in good stead for moving on with feelings of readiness to connect more widely, which leads on to the next sub-theme.

Theme 2.ii: *'Social Connectedness'*

At T2, getting out of the house and moving out of isolation were central to this theme of '*social connectedness*', particularly for the more vulnerable participants. The routine and structure the course offered had been key to this, as had finding a new way to connect more widely, based on pride and a sense of self-worth in relation to the programme. Whether and how this connectedness endured beyond the programme will now be considered, firstly, with a closer focus on what this meant to those recovering from addiction, and secondly, the particular quality of social connectedness in the outdoor space.

Across the health and social care referral groups some of the social ties formed in the group had held. Demonstrating tendrils of the sense of '*group care'* so evident in the programme, Cath said to Diana (4b) *"You wouldn't have met me if it wasn't for the woods would you?"* or Janet's, "*I've met a lot of good friends and good people*". In the case of Sarah and Fiona (5b), this extended to a potentially deeper friendship, lending each other support with 'life admin':

> *"It's helped my confidence as well in meeting people I find that, you know, meeting Fiona, we went into town one day didn't we? And she was helping me, I was filling in my council forms, moving on, and er, she came with me, and it was just really great to have that company and so that was good, so yeah"*

For Dave (recovering from addiction), comparing the picture he drew at the end of course stage to his follow up session picture, he encapsulated a transformation in self-perspective that he attributed to having connected with the group over shared activities:

> *"And being able to share a different experience, umm, and just seeing, instead of my head being on fire, we're sat round a fire and uh, just kind of being, enjoying kind of friendships, and being connected, um is kind of like, uh, what I kind of like roughly drew, um, yeah and it's just it's really nice, it's another kind of avenue, of kind of being able to share experiences, and, and kind of new experiences with new people, ummm, and it's really helped my kind of recovery as well"*

Excepting Louise's trajectory, there were many examples of how the sense of group experienced on the course had supported participants to do other things. One example was Ralph (1b) who said, "*I think it helped with learning social skills…in a way, because you work in a group of people that you've never met before*". Janet, from the same group concurred, demonstrating how her increased resources had helped to broaden her social network: "*It gives you more tools doesn't it to help you actually help you work and volunteer, like Ralph does with the volunteer stuff erm and it also gives you that confidence*". For Dave (5b), recovering from addiction, amidst sadness that the programme had finished was an appreciation of enduring positive changes, such as a deepening friendship:

> *"Yeah it's a shame that the course has kinda ended but uh even someone else on the course I live with (in a recovery project), our relationship has changed, by having an activity outside of the house, um, there's a different kind of respect there, and we've shared a different experience to, um, so that's kind of strengthened, there's more empathy around our situation I think"* (Dave, 5b).

The forming or joining of new groups was a new aspect that was central to this theme at T3. Dave recounted how he and Arthur (from the T2 focus group) now attend regular sessions at a local environmental centre (this being one aimed at the general public rather than at those in need of social/health support) where they were expanding on skills learnt on the AW programme. Having spoken about the importance of keeping busy to his recovery at T2, the following quote shows how the course had been a bridge to finding new structure and routine:

> *Researcher: Do you think you'll carry on any of the like the wood stuff, last time you were talking about a shave horse* (a workbench used for green woodworking)
>
> *D: Well, I've been going up to uh, I've been going up to 'Oakways' (local outdoor environmental centre)…we've carried on making our shave horse for the uh for 'Spinfield Recovery Project', so myself and Arthur* (from the T2 focus group), *who's not um with us today, but, um yeah, we've been*

up there and met, uh, a gentleman who kind of runs a course on a Sunday, yeah, so we've got a new recruit called 'James', he's, so the three of us are working on our first shave horse

At T2, he and Arthur had talked about wanting to make a 'shave horse' for others in the supported community they live in. The quote shows how intentions had become actions as they had taken learning from the programme and shared it more widely:

"…it's been the inspiration for me and Arthur wanting to set up a big tarped area at the back with the shave horse so we can kind of go out there and whittle away or yeah, shave away, um, even when, you know, it's really bad weather, so, that's sort of going to be an asset to the recovery community as well"

Moreover, as in the '*personal change*' theme, positive shifts in subjective self-evaluation had shaped behaviour going forward, here enabling new connections. For example, Dave (5b) talked about how information and skills gained on the course had given him something to talk about and to be proud of knowing in wider circles, saying "*Mmm, I've managed to impress my friends with my knowledge of woodland things*" or "*I've done a few festivals and things like that. So just even being able to start campfires and cook on campfires*". He spoke at length about how having assimilated this "…*little bit of knowledge*" had helped his confidence grow, supporting his integration into different social circles. This was evident as he described others reflecting back positively to him, asking "*well, how how do you know that…what what where did you learn that?".* In a feedback loop of thinking, feeling and doing, it is evident that this pleasure at being able to share his newfound learning with new connections had impacted positively on him, further confirming a more positive self-image:

"*Yeah and again I think uh I used to have really kinda low self-confidence. I didn't think that I was very good or very knowledgeable about anything and just assumed that whatever I know, I assume that everyone else knows".*

Expanding on this feedback loop, how it felt to get on with people that you would not normally interact with on the programme, "*or even be wary of"* was reflected on by Fiona (5b). To the agreement of the group, she described how being part of it had made her feel good:

"You get that nice feeling as well at the end of it cos like you, well I didn't like that person, but then actually, it turns out they're gonna be your best friend (group laughter)…like you don't like a certain person there, but you end up being best friends with them anyway cos you're doing the same thing as them and it's kindalike ah…might as well make friends here"

For her, this had been a catalyst to widening her social network further, and the quote below exemplifies her being newly proactive about doing this with others beyond her immediate circle:

> *"Yeah, with just people in general, whether it be my nextdoor neighbour or my best friend, but whoever. Yeah, whoever is about and I'll be like 'fancy going out?' And I'll be like, yeah, we'll go to the woods for a bit, yeah, yeah"*

The theme of '*social connectedness'* had particular resonance for those in recovery. Both Dave and Sarah (5b) showed how the course had helped them to meet new people, supportive to their abstinence. For Dave it was "…*opportunities to kinda uh go down different avenues or go to different places, and visit new places um, yeah, it's been really good for that".* Here, he demonstrates his awareness of how this could help him progress:

> *"Well it's given me it's kind of, it's uh in recovery for me it's been important to keep connections up, uh and gain new connections with people, um, and I suppose this is the way, in the real world as well, if you want to be successful in business you need to network with people and, and that's how you can sort of kind of, it's not what you know it's who you know, in many circumstances"*

For Sarah, at an earlier stage of her recovery journey, simply having "*some good experiences with people as oppose to negative ones*" as part of a safe group had fed into a perspective shift on social trust. This had led to new connections in the world at large:

> *"It's given me more confidence getting out, um, meeting people, uh…Its just, like she says, it's not as scary as we actually think before we do get out, because, there can be some horrible people out there, and I think we, when we've been, myself anyway, have been, met some horrible people, you tend to shy away, you know, to protect ourselves…but with AW it has been, it's a good thing to get out, and it's not all so bad, get out in the open, meet new people, see woods, and just appreciate the beauty of it all"*

Recognising the cumulative effect that this could have on her wellbeing, she said *"So yeah, so it can change your day. Just one good day can change your week, and your memory board, yeah".*

The role of the natural environment will be considered in more depth under the '*held by nature'* theme, however, one aspect at this stage related particularly to '*social connectedness'* beyond the programme. Participants from two very different groups raised the ease of relating to others in an outdoor space and how it affected the quality of the interaction. Data from 3b revealed not feeling the need to talk outside, which everyone in the group contributed to and concurred with. This was framed as a relief, whereby the sensory

experience took the pressure off talking. As Dafydd said, indoors, "*you feel maybe more compelled to talk*". Jane illustrated this further, sharing a pleasure at spending quiet time with her husband in nature:

> *"Yeah…Its* (sighs) *sometimes when you're in a room or you're with people, no matter what the situation is, you always feel compelled to talk, but I don't think you do feel like that in nature do you? I think its ok to sort of, I know I can walk with my partner and we'll have walked for about 10 minutes and haven't spoken…but it it's comfortable just because we're taking in the sounds…or watching the dog, and it's very very comfortable"*

It is the calming and relaxed environment that nature provides that was attributed to enhancing social connectedness in group 5b too, but here because it allowed conversation to flow more freely. In Cath's words, "*It makes you more relaxed, so you know, you're more likely to be social and make new friends".* When the researcher inquired further as to what it was about the woodland environment (in response to an earlier comment), she responded, "*Ummm, I think it's like you're not being watched by anyone, or, you know, nobody can hear what you're doing. It's just very chilled out, you're out in the woods, aren't you, you know, you haven't got shops, you know, noise, traffic"*. In this case it is evident that privacy was also a factor, making connection feel easier, particularly one that is more open and freer. This was expanded on by Diana as the conversation continued:

> "*I went to a café yesterday, with a friend, and um I felt I couldn't talk with this friend because I thought people were listening in and what we were talking about was private between us…and um but if we'd come to somewhere like this we could obviously talk…if we'd come to the woods we could talk freely and relax and calmly. And it's lovely to be in the woods, next to nature, looking at the trees, and then the conversation just flows".*

Theme 2.iii: *'Course dependency?'*

At T2, this theme pertained to sadness and concern at the course ending for some. For others it related to plans to meet and continue friendships, and for the mindfulness group, any disappointment around endings came with a sense of being grateful for the opportunity and a readiness to go forward independently. As described under '*social connectedness'*, many of the intentions to meet had gone ahead and at T3, rather than feeling dependent on the course, gratitude for and recognition of the wellbeing benefits of the course were central to the theme. As at T2, this was coupled with a desire to share gains made with others, with perhaps a more crystallised perception of what those gains were afforded by a retrospective view. Louise's (1b) counter experience in having struggled to move on after the course is explored, as is a new sub theme of barriers and enablers to independent activity to support wellbeing.

Whether benefits had continued or not, at T3 participants still felt strongly about wanting to share what they had gained, for example, "*being able to give other people the advice that you've received…*" (Fiona, 5b) or "*…it would be nice if um, these courses run more often, if not for myself, I'd love to be able to tag along, but for others to uh enjoy as well*" (Louise, 1b). A need to actually experience the programme to discover how it could help you was identified: "*I think that's an important message to get out about the benefits really, because I think, you know, I didn't realise the benefits, you know…you know, and of course now I realise it does have huge benefits*" (Dafydd, 3b) or *"you will be quite surprised what a walk in nature actually does for your mind, for everything" (*Janet, 1b).

As Sarah (5b) reflected back, a recognition of the benefits gained came with a sense of acceptance that it was over: *"It's changed me but it's very sad that it's finishing…yes, it should continue…but there we go, that's life isn't it?".* In her case, she had the safety net and ongoing support of a recovery community to fall back on post-course. With the mental health group (1b), for three of the four, the course had been a catalyst for the kind of changes detailed above, like a better sense of self, increased physical activity and a proliferation of social connections. However, when Louise (1b) from this group said "*I wish it could've carried on*" she was expressing something more than a fond looking back. For her, without the course, although daily visits to woods had continued she had returned to being socially isolated:

> *"…you know, you enrol on something, so you, um, so it was really good for me at the time. At the moment I think I've just gone a bit sort of downhill and uh I'm not sort of getting myself out as much and that's not a reflection on that, that was really good for me…"*

From her tearful confession that she had floundered since the group disbanded, insight is gained into the experience for someone whose mental wellbeing had reverted after the programme end: *"It's a bit like when you're in work and you know you've got to get up and get out…whereas you know, when you're not, and you don't have to, it's easy to stay in your room".* Whilst the intervention had resulted in new 'doings' ('*lifestyle changes'*) with others, this had ceased along with the course for her as she relapsed to a prior inactive state. More dependent on the course for the social networks than the others, it is likely that had it continued, she would have continued attending and benefitting from the structure and routine that had been so supportive to her. Whether she would have eventually got to a point where she could have continued independently is an unknown.

A new aspect of the theme of '*course dependency'* at T3 relates to barriers and facilitators to post-programme independent activity and the forming of new groups. One factor discussed was location and the appreciation for having had a course *"on our doorstep*" (Jane, 3b). This was seen as something particularly pertinent to the rural area in which the course took place, meaning "*…that there's more people, local people, getting involved*".

As she says, to agreement from the others, distance can be a prohibitive factor: *"We've always had to travel, even if its 'Oldport', but going to 'Oldport' at the end of a long* day…*travelling there in two hours, travelling back, it's a little bit daunting and that does put me off*". Derek (3b) adds: "*Yeah, especially when you've spent two hours relaxing and then you've got to get in the car".* A further facilitator to maintaining positive lifestyle changes was the importance and value of regular follow up activities:

> *"I think you kind of need things like this every now and again. That's why I came on the course <u>really</u>, it was just that I was doing practice for a while, and then something would happen and I'd stop doing it…you know, <u>re</u>-connecting, you feel like you really need to keep doing that…because otherwise it's impossible to carry on on your own" (Jane, 3b)*

As Derek (3b) said in relation to a conversation about the importance of regular supportive activities, "*I try and build things into my calendar*". Ralph (1b) described how some of the programmes offer a link to follow up support: "*...it's like called 'Opal' project and it's like a programme of uh, doing a different type of voluntary work each week…and the idea is if you do something which you enjoy, you can maybe resume that on a regular basis…after the course has finished".*

Theme 3: *'Held by Nature'*

The final theme '*held by nature'* is re-visited here, which regards perceptions of the distinct role played by the natural environment in generating the wellbeing impacts described above. Firstly, to see whether and to what extent nature was still considered or was functioning as a *'balm'* to reduce suffering and increase wellbeing, and secondly, how and if nature/woods were being used without the support of AW, in relation to the '*accessibility'* sub-theme. The third and final sub-theme explores how barriers to woodland access ('*rain can stop play'*) had changed by follow up.

Theme 3.i: *'Nature as Balm'*

The ways in which the qualities or characteristics of natural places were perceived as underpinning the health and wellbeing impacts reported at T2 was multi-faceted, and particularly related to improved mental wellbeing. These included a positive effect on mood and nature being framed as a place to escape to or refresh in, to which the sensory experience was central. It was also reported that for some, they felt that the woods were a unique place which allowed these benefits to occur in a way that an indoor space would not have. There was a strong sense of relational effects, in that woods and trees in particular were seen as providing strength, care and sometimes, experiences that felt spiritual in their nature, or involved nature being personified. At T3, how participants continued to use or draw on nature as a kind of balm was considered.

As seen in the data related to previous themes, reflections and reminiscence were prevalent, and looking back on the course, memories of the benefits of nature experienced by the group had not lost their potency.

The ongoing framing of '*nature as balm'* was explicit, as Cath (4b) said in relation to her mental health challenges: "*it helps, like I said, you know, grounding yourself with the trees and everything, and the wildlife around you*". This tonic like effect of having a mental break was unpacked by Louise (1b) as she reminisced about how "*at peace*" and "*relaxed*" she had felt:

> *"Ummm, the environment was heavenly for me, it was just my perfect environment, I loved it…I really felt at peace, like, momentarily while I was there, it was just like, being away from things that go on in your head…Things that physically go on and mentally at home, or, it just does something for me, I just loved being amongst trees, and fields and wildlife, so, it was fantastic for me, I enjoyed it".*

Being reminded of happy childhood memories came up again, as Jane (3b) said, "*And I also think I used to spend so much of my time in the woods when I was a child*". Whilst it cannot be assumed that positive childhood experiences of nature are universal, it seemed that reminiscing about happy childhood memories functioned as part of the 'medicine'. Here, the healing qualities seemed enhanced through remembering and connecting to a former state of fun or peacefulness:

> *"Because we had the woods right at the back of our house and that would just be, that was my play area, my den…I was the champion tree climber on the estate. I don't know I think maybe you get a bit of all that coming back as well"* (Louise, 3b)

The 'balm' like qualities of nature had clearly endured beyond end of course enthusiasm, and aside from looking back, it was apparent that some of these wellbeing benefits were still being realised independently. It was noticeable that Louise (1b), described earlier as having struggled with social isolation and as experiencing declining mental health since the course ended, continued to benefit from a feeling of being connected to and cared for by trees on her regular walks. Several months post-course, trees were still personified as something that she could take comfort or derive support from:

> *Louise: And the leaves dancing, sometimes they look like they're doing a high five. Is it the horse chestnut?*
> *Janet: Yes!*
> *Ralph: Oh yeah, yeah!*
> *Louise: It's kind of like they're doing that (gestures and laughs). I'm hoping no-one sees me (laughs), I hug the odd tree, again hoping no-ones around. There probably is somebody, I always say that, don't I?*
> *Researcher: They might even join in (laughs).*
> *Louise: Or I pat them, yeah*

There was much talk of feelings of peace experienced in nature, and the sensory experience of the woods was still a live thread of discussion across the groups, for example, remembering that "*we had so much of that when we were on this course*", like the visual feast of "*the sun coming in through the branches – awwwww. That's just fantastic*" (Jane, 3b). As the excerpt from 1b below shows, people had continued to draw on these benefits independently, which were perhaps better understood retrospectively:

> *Janet: It…it makes me feel better in meself, and it clears the cobwebs. If I'm feeling shitty in the morning and I walk down to me Mum's, I'll go through the woods, because I like listening …it's the <u>birds</u>*
>
> *Ralph: Yeah, yeah, yeah*
>
> *Janet: It's the nature, it's the <u>smell</u> of the woods. Sometimes you can walk past one part and you can smell the fresh garlic coming up, but you can just smell a hint of it, or then you'll go a little bit further down the lane, and I know this might sound horrible when you say it, but you can smell like that mouldy, dampy smell, but it's not the mouldy, dampy smell that you get in the house if you get what I mean, it's like that natural earthy smell"*

Outside remained positioned as 'better' than inside, and the all-encompassing nature of the woods were seen as integral to this: "*because it's all around you*" (Jane, 3b) or "*It's all around you, yeah*" (Dafydd, 3b). Dafydd identified, "*you know you can go for a walk anywhere can't you, you can walk down the high street or whatever…but going the woods just gives you that different feeling really. You feel that you are more connected to nature may be".* Due to these 'balm' like qualities, outside was still seen as a superior and easier place to practice mindfulness by the 'mindfulness in the woods' group: "*I feel you get more of a release*" (Dafydd, 3b) or "*I think…it's <u>totally</u> different doing it in the woods*" (Jane, 3b). Jane went into depth about how it felt more accessible outside, explaining that it had: *"taken the formality out of other ways that I've done mindfulness before*". This had helped her to practice more often, thus maintaining a coping mechanism that despite past indoor mindfulness courses, she had found difficult to keep up previously. This integration into her daily life, as detailed above, is something that helped her with stress management:

> *"it's made it a lot more accessible, a lot more…you don't have to think about finding a quiet space in a building somewhere, getting yourself seated, taking your audio things with you or whatever...you can literally switch into it, quite instant, which I think is really good"*

As at T2, although this was particularly related to the mindfulness group, it was also raised in other groups. The heightened sensory awareness in the woods seemed to give rise to an increased ability to be in the moment, alleviating the rumination of depression or the racing thoughts of anxiety, affording a more embodied and less cognitive experience. For example, Cath says quite explicitly: "*So…being in the woods,*

basically I think it's good for mindfulness". Confirming benefits identified by the T2 data, she explained how this supported her mental health, here realised by engaging with the present moment through the sensory experience:

> "*I think with mindfulness, it works with what what you're surrounded with, so, when you have mental health problems, when you have, uuummm, issues, and you see the wood burning, it distracts you from your mental health problems, so the surrounding, the birds singing, and being in the woods itself, helps your mind, distracts you from your thoughts*

This sensitivity to noticing and appreciating detail, particularly of natural transitions was a live discussion at T2, and came up again at T3, echoing positive feelings about the woods:

> *Louise: And the woods smells, they <u>change</u> with the weather don't they?*
> *Janet: Yeah*
> *Louise: Like when you've had a long spell of rain, (corrects self) sun, and it rains*
> *Janet: Dry*
> *Louise: and you're like, oh, I can't wait to go in and smell the woods*
> *Ralph: Like when the dappled sunshine comes through the leaves*
> *Janet: Yeah yeah…you can see it on the water flickering*

Indeed, these ongoing transitions of the natural world were given as a reason for their soothing and beneficial effects. *"the only constant out here is change, d'you know what I mean. The woodland never stops, if you come here every week it looks it looks different you know, so, um, you know, whereas a room will stay the same*" (Dave, 5b) or "*Like that saying a change is as good as a rest, and it's good, and I I feel that it's healthy, especially being out and AW has been <u>good</u> for me"* (Sarah, 5b).

Theme 3.ii: *'Accessibility'*

From the T2 focus group data, three typologies were identified, those who 'got' the 'very idea' of going to the woods (outside the AW course), those who were re-connecting with earlier positive experiences, and those who were going anyway. All groups had expressed intentions to explore local woods, and some regular visits were occurring. 'Making more' of going through being more mindful in the woods was also reported. At T3, how participants' perceptions and practices of using the woods independently had developed is shown in relation to whether increased or different habits of accessibility had been maintained. There were many examples of regular woodland use becoming embedded, from a re-visiting of 'old haunts', or in the case of the mindfulness group, regular use of the woods where the course took place for running or walking. It seemed that familiarity with a place through the programme had resulted in repeat visits, as Jane (3b) said:

"I suppose I'd forgotten how fantastic it is…it's just beautiful…And there's trees here like nowhere else, isn't there? So I suppose the course had meant that definitely I've connected to here more".

Sometimes, regular visits were directly attributed to the programme: "*I've definitely visited the woods more since*", (Jane, 3b) and some less so "*Well I do (*visit the woods more*), but it's kind of coincidental really because uh um, my mum's got a dog…and uh you know we go there once or twice a day to take the dog for a walk*" (Ralph, 1b). The opposite was also true, as in the unique case of Mandy from the mental health group. Whilst everyone else in her focus group described daily access, she said that she had not been back since the course as she had been too busy with other things (e.g. badminton). In fact, she said quite openly, "*To be honest with you, I've just not thought about it*".

During the T2 focus groups, 'making more' of going to the woods since the programme and being more mindful there was part of this theme. At follow up, this change in behaviour was reported to have been maintained by all the groups. This included feeling more connected because of the sensory engagement, *"You know it's the touching and the…taking it all in…rather than just going for a walk…it's got a bit more meaningfulness in it, well for me anyway"* (Dafydd, 3b). It also included seeing and using the woods differently: "*it's been much more enjoyable…you can take stock. I walk slower through the woods that I used to"* (Dave, 5b); *"You just tend to, you know, have a quick walk through them but now I would take more time"* (Dafydd, 3b). This had resulted in a shift in the value attached to woodland, appraising it in a different way. Jane, who described herself as outdoorsy, reports how she no longer took the natural environment for granted: *"So you can sometimes get a bit complacent with things around you can't you when you're out like that, but you think you've got that little reminder of just stopping for a minute… and just taking it all in"* (Jane, 3b). Dave, who had spoken at T2 of how woods were not an environment he felt comfortable in, showed how the way he now sees and engages with woods had changed. Here, he newly describes them as a place to linger, rather than a thoroughfare, enhancing his enjoyment of them:

> *"But I'm now just kind of approaching it from a different angle, but um yeah, just being able to walk through the woods as well in in a different way, cos I'm, I do mindfulness every week, and um, It's changed my kind of perspective on HOW to walk through the woods…and appreciate the woodland a little bit more, rather than just seeing it as something that's in the way, and it's, you know it can actually be a destination not just be a place to get through" (Dave, 5b).*

Additionally, interpretation such as guided walks, leaflets or maps about walks were seen as adding value to subsequent use, enhancing the experience of spending time in the natural world. Jane (3b) described how an event by a conservation body had enriched her experience: "*And we had somebody from park who came and did a talk to the group (a work group)…and he was telling us about the trees…so I've learnt about the area,*

and the fact that the lake had been set up as a boating lake for people". There was a sense of enjoyment at finding out more about the stories of local woods, adding to sense of place and connection to it as stories were shared: "*It's quite a historic woods as well…and there's a little lump in the middle of it and when the tide used to come up it would cover the whole of the land there…if people didn't make it back they'd have to stay on the top of that rock, the tide wouldn't let them would it*" (Jane, 3b).

Theme 3.iii: *'Rain can stop play'*

At T2, this theme was about the fears, barriers and perceptions that blocked the generation of, or opportunities for, the beneficial 'balm' like impacts of woodlands outlined above. Feelings about barriers to woodland use were not forthcoming, and were largely framed as barriers overcome, like a lack of confidence, or changed attitudes to woods. A fear of getting lost was expressed by one participant, as was occasional unease due to the lack of openness by another. The general attitude at T3 was very similar, where a question about barriers was initially met with a resounding 'no' by the groups. Indeed, under the previous themes, there are many examples of participants continuing to or newly and differently accessing daily nature, demonstrating reduced barriers or greater resilience to them. As Dafydd (3b) said, "*I think you know, before I came, I didn't realise the benefits*".

It was clear that for more vulnerable participants, shifts in perspective on psychological barriers (from seeing woods as scary to seeing them as nice) had held and supported the maintenance of new access behaviours. This was particularly evident as Fiona (5b) referred to the picture she had drawn, also a good example of how the pictures deepened conversations and gave this quieter and less forthcoming group member an anchor whilst speaking:

> *F: And the water, because it's like a lake, you know, being able to get out, and it shows the outdoors, how different it looks now to what it did a while ago*
> *Researcher: What the outdoors looks different?*
> *F: Yeah, like in my eyes, yeah, you know, it looked scary before I started all this, you know scary people, you're like eeeeww don't look at me, you know. I wasn't able to go on a bus by myself, but now I'm just like, yeah, I can do it now. Yeah. It doesn't look scary…It looks nice*

After some thought, a couple of limiting factors emerged in a few of the groups. Cath (4b) spoke about how her mental health stopped her at times, saying "*Well, no, nothing would put me off, it's just that with mental health problems, you have really bad days…and some days you can't go out*". She went on to relate how other people could be protective against this, saying that: *"being known, being with friends makes a difference*". In the same group, Diana re-iterated a fear of getting lost that she had expressed at T2. This was not an issue for the others in her group who described daily visits, and in fact tried to encourage her: "*I think the more you*

do it, the more you would want to do it. It's getting used, into a routine of doing it maybe" (Cath, 4b). Diana explained that her fear was due to the enduring impact of a previous negative experience: "*I went to, we had an outing to 'Blueville' and I lost the party, and um, they didn't, they didn't find me until the end of the day*". She also talked about an upcoming sporting event where she had similar fears, showing that this was not a nature or woodland specific barrier. Like Cath, she described how company could mitigate this barrier: *"Um, but um if I had somebody to go with me who know the way I'd be happy to go".* Whilst she reported having been to the woods once or twice with her support worker and enjoyed it, finding people she said is not easy: *"If I could find people who knew the area I'd be happy to go with them. But its lack of um people who have that kind of interest".*

6.4 Discussion

In parallel with the outcomes of the longitudinal quantitative study, these data addressed the need for a better understanding of the sustainability of wellbeing benefits through the provision of fixed-term programmes like AW. This focus group study explored experiences of whether and how new attitudes and behaviours in relation to woodland use were supported longer term at individual and group level. Substantiating and providing a fuller picture of the quantitative outcomes, we learnt that the factors supporting wellbeing such as the beneficial wider perspective gained over the course had indeed held, as had the positive behaviour changes. Much of the material in the T3 focus groups reinforced the themes drawn out at T2 on the change processes experienced as a result of the course. This was partly through reminiscing and retrospectively acknowledging the importance of the experience, as well as talking about current benefits, that is, attitudes and behaviours that had been maintained independently. Whilst mental wellbeing gains in the quantitative data had held and augmented, this was much more marked in the qualitative data whereby for all but one participant, a range of changes were reported to have become embedded. As the data showed, social connections were particularly important in themselves, having broadened beyond the programme and as an enabler for maintaining wellbeing benefits. For all participants, the perception of the 'balm' like qualities of nature had sustained, as had diminished views of barriers, which had led to more and different use of woodlands.

Maintenance of wellbeing benefits

Findings corroborated the maintenance of wellbeing benefits identified in the quantitative study, and of particular note were parallels with the continued upward trajectory of the construct of self-efficacy in Chapter Four as measured by the Generalised Self-Efficacy Scale. These lived examples of people's experiences give insight and understanding into its importance as a predictor of maintaining wellbeing gains. Together, these data demonstrate how success achieved during the programme can breed further success. As the '*perspective*

shifts' theme data showed, most participants had retained a more positive view of the self, which encompassed being less self-critical, and success in completing the course had given confidence to face new challenges. There was a sense that life had become more enjoyable and less effortful and anxiety inducing. In fact, most participants reported feeling completely different about themselves now and the role that being part of the AW group had played in supporting these shifts was widely recognised. Consequently, lifestyle changes had proliferated and become habitual as comfort zones had been moved out of and new things tried. New skills or practices ('*changing lifestyle'*), were deeply intertwined with mental changes and improved confidence ('*perspective shifts'*). The longitudinal perspective was important in providing an opportunity to recognise explicitly just how entangled these two sides of the coin are. New thinking (e.g. confidence) had clearly led to new doing (e.g. trying new things). Similarly, new doing (e.g. making things) had clearly led to new thinking (i.e. confidence).

From a theoretical perspective, maintenance of behavioural changes is different to instigation. Whilst the Com-B system of capability, opportunity and motivation referred to in the previous chapter was helpful in understanding processes involved in change initiation, this study is about how changes endured beyond the opportunity provided by the programme. Here, as highlighted by Schwarzer in the staged Health Action Process Approach or HAPA model (Schwarzer (2008), at the maintenance stage, the role of self-efficacy is key. This model, which considers *continuation* of new health behaviours as well as their adoption, centralises this belief in the capability to carry out a particular action, without which, its continuation will fail. Thus, the increased feelings of confidence so evident in the '*perspective shifts'* theme clearly showed how these feelings of capability and self-agency had led to more lasting positive actions. This included newly going places alone, conservation volunteering, daily walks or commutes through the woods, use of stress management techniques or taking a moment of tech free time, and a reduction of behaviours that compromised PWB, such as socially isolating or being physically inactive. As participant narratives revealed, changes came with more self-regulation, like giving yourself permission to prioritise actions supportive to wellbeing, or not doing too much.

Linking back to the Stress and Coping theory referred to in Chapter Five (Lazarus and Folkman, 1984), these gains in confidence and feelings of self-efficacy increased participants' coping resources. Indeed, perception of their resources to manage particularly demanding times had augmented and been very protective, such as the use of short mindfulness practices to support a 'manically busy time' and how confidence at completing the course had supported a growth in social capital.

Social processes support maintenance of wellbeing benefits

For those with health and social care needs, the social aspect of the course was an instrumental part of the wellbeing benefits experienced at T2 as evidenced by both the qualitative data and the numerical increase in

social trust. In the T3 quantitative data, gains in this measure had held with no significant decrease, although there was a slight, non-significant downward trajectory. As the T3 qualitative data presented in this chapter shows however, social processes were reported to be particularly influential to the maintenance of wellbeing gain at T3. This included how the sense of '*group care'* so vital at T2 had supported enduring perspective shifts. The sense of being cared for and the establishment of connections on the course seemed to have evoked a sense of valency and the power to go forward and make new connections, further growing participants' resources in terms of social capital. As outlined in the literature review and the Chapter Five discussion, social isolation can have a very detrimental impact on health and wellbeing and social connections can be a protective resource. These results showed how the course had been a catalyst to a sustained move out of isolation for some of the most vulnerable and previously isolated participants. Networks had widened for others, with new groups joined and many examples of proactive socialising with others, instigated by the experience of meeting people they would not normally have interacted with on the course.

As described earlier (Chapters Two and Five), it is the strength or quality rather than the number of social relationships that is particularly important for happiness (Diener and Seligman, 2002). This can be defined as social support, promoting feelings of confidence, being able to manage things, or emotional support in terms of feelings of not coping alone and having someone to share fears with (McDowell, 2010). Indeed the results at follow up abounded with evidence of continued and deepening friendships, doing things together and supporting each other beyond just connecting. As observed, this had particular resonance for those in recovery from addiction. In order to maintain abstinence, supportive social connections are vital to the development of a 'recovery identity' rather than an 'addiction identity' (Buckingham *et al.*, 2013). Indeed, building supportive friendships and relationships can help a person develop 'recovery capital' (Granfield and Cloud, 1999), that is, the resources to support them in building a healthy and fulfilling life beyond addiction.

At T2, woods as a unique space was explored under the '*nature as balm'* theme, whereby participants noted an ease of connection both over the common ground of activity, and in a more spacious environment. At T3 it was evident that this new or renewed interpretation and outlook had been maintained and that the natural environment had continued to work across the groups as a place to socialise without pressure, enabling a different kind of connecting. Linking back to the importance of better quality friendships, it is apparent that factors like finding the woods a more private space where you can be more open, or somewhere it feels acceptable to spend quiet time with others are supportive to the development of deeper friendships. That time spent in woodlands can benefit social processes is not a new or surprising finding. How woods can provide a space for the development of new networks and friendships through organised activities was highlighted in the aforementioned 'Wellbeing for all?' evidence synthesis (O'Brien and Morris, 2014). Indeed, the unique qualities of woods as a space for socialising was identified by Tabbush (2008) in a study on bringing

different faith groups together, where their perceived neutrality promoted a feeling of being able to talk freely. As reviewed in Chapter Two, other NBI studies have identified *potential* for social connections made on programmes to act as a 'halfway house' between isolation venturing out (Wilson, 2009). However the follow up data collection point of this study was able to demonstrate how for most, connections were maintained and augmented beyond the course.

Barriers and facilitators to maintaining wellbeing benefits

As a factor affecting the success of positive change maintenance supportive to wellbeing beyond the course, the above discussion shows how vital '*social connectedness'* was to this. Reflecting on what best prepares participants for programmes ending, one session I visited for a T3 focus group (5b) had been set up and was very much being led by the participants (this involved rigging up a tarp, lighting a fire, cooking soup on the fire, organising tools for a conservation task). The woodland mentor was in the background and 'one of the gang' and there was a real sense of participants owning the space. This was of a marked difference to visiting groups at their inception where everyone tends to be wary and uncertain of each other and awaiting direction from the person 'in charge'. Whilst not data from the group, this observation highlights the journey from dependence to independence that some groups took. This group in particular had reported using skills learnt on the course beyond its life as well as integrating with other groups and starting a new one. Perhaps this is the ultimate mark of success for an NBI, for the workers who set it up at the beginning to have rendered themselves obsolete by the end. Whilst this would not work with every group, it is clear that a focus on promoting independence and upskilling participants can in some cases, promote self-sustaining confidence and self-efficacy.

The above discussion is pertinent to social prescribing where a link worker plays a short term bridging role between health and social care and community, supporting more capable people to develop skills so that they can join new groups and make new social ties (Polley *et al.,* 2017). This is highlighted by Bragg and Atkins' review, where associated projects can be somewhere for people to move on to from green care interventions, supporting them to maintain improved wellbeing and "*to progress further by choosing to incorporate nature-based activities and healthier behaviours into their everyday lives, thus creating a habit for life"* (Bragg and Atkins, 2016:22). It was apparent that that most people were connected enough to continue friendships independently following the course, but the results also showed that this did not work for everyone. For one participant, low feelings of self-efficacy and self-agency meant that she did not feel resourced enough to continue by herself and connections she had made did not continue without the support of the course. Paying attention to question of how those most vulnerable and at risk should be catered for so that they do not slip through the net (and the good work of the external and their internal investment is not lost) is crucial. Indeed, more vulnerable people may need more sustained support bridging to other activities or ongoing support. A

barrier in this participant's case was the short term nature of the project and resource constraints which mean that staff do not have time to catch up with participants once they have left. In fact, the mental health support worker for this group reported that whilst they hope to start a post-project mentoring programme, currently they get so many people through their doors that they often have no idea what happens to people once a programme ends. Very often, in order to meet funding requirements, the remit tends to be that new participants must be sought and new interventions imagined. This has been an ongoing issue for AW and was particularly live at the time of the data collection with a new strand of 'Active Inclusion' funding they had received. This dilemma places services such as this in impossible situations, where they must meet targets in order to secure funding to survive at all.

It also raises the question of what the role is for an NBI like AW to provide opportunities to touch base or provide support beyond the structure of a programme as a matter of course and the funding implications of such provision. At the follow up data collection session, others with whom 'Louise' had connected with and formed a bond with on the course saw that she was struggling, swopped numbers and made plans to meet. Thus, a 1 – 2hr follow up session could be the difference between someone slipping through the net and not, enhancing the possibility of sustainable outcomes. Whilst Louise's story demonstrates the challenges presented by short term funding for the most vulnerable, Schwarzer (2008) highlights the importance of relapse prevention strategies for *all* in successfully maintaining newly adopted health behaviours, vital he says to stabilising them. Indeed, getting people back together for the focus group seemed to have some therapeutic value, participants who had lost touch re-connected, wellbeing gains were reflected on and consolidated in their minds. This is an interesting finding and a case for more longitudinal qualitative research.

Maintenance of change after an intervention is a key challenge and one well worth addressing. Many intervention studies are limited in the timeframe they follow up change over. The implications for services here are clearly identified, with a need for follow ups or top-ups as routine practice. On a practical level, it can be time consuming for the woodland mentor to ring round everyone and organise a session so resources for this do need to be funded to ensure their integration. Building in periodic check in sessions could be incorporated into funding applications and programme planning to avoid people slipping through the net and to support the maintenance of wellbeing gains. This kind of ongoing support tends to be offered by some of the organisations that AW partner with, rather than directly by them. For the 'mindfulness in the woods' group of self-referrers, the importance of follow on and regular support for practice was well understood and discussed and they appeared to be well able to access or come up with their own maintenance strategies. Here, the focus was on practical issues such as the proximity of course and the importance of local provision in a rural area so that new networks can subsequently be formed or tapped into, combatting rural isolation and lack of access to services.

Maintenance of changes in attitudes and behaviour in relation to woodlands

A key research question at T3 was whether wellbeing benefits from the natural environment were still being realised and whether changes in attitudes and behaviour in relation to woodlands had held. As outlined in Chapter Two, whilst previous studies examining access have shown promise for the potential of programme impacts, there has been a recognised evidence gap about whether they resulted in actual visits (O'Brien and Snowdon, 2007; Wilson, 2009). The Active Woods England project with non-users found that a desire to return and increased confidence to do so was expressed in their post-activity focus groups (Morris and O'Brien, 2011), and an intervention with families reported carers feeling more confident and suggested that it might act as a springboard to going back (Goodenough, 2015). Building on this evidence, the current study has demonstrated that there was indeed a sustained positive change in countryside access behaviour following the NBI.

Tying in with the numerical data on woodland visits, which showed that the significant increase in visits at T2 had held at T3, the focus group data gave a richer picture of the processes behind this positive result. It was clear from the way that seeing woods differently, valuing them more, visiting more often and finding time there more meaningful now was described, that diminished perceptions of psychological barriers had held. That AW could act as an adult greenspace turning or *re*-turning point was muted in the preceding chapter, and the present data showed that this had been a sustained change, evident in comments such as how nature looks different now and is less scary. Having accessed woods repeatedly as part of a group had facilitated attitudinal and behavioural shifts that were subsequently maintained without the group. From a practical perspective, the importance of a canine companion for incentivising visits beyond the course was also apparent, in line with data on visiting habits outlined in Chapter Two (Natural England, 2017). One barrier that was more persistent for one participant was a fear of getting lost, and perhaps there is a role for AW here in terms of developing self-efficacy and skills in this area.

A clear appreciation of the benefits of spending time in nature was still very much in place across the groups identified at T2 (those who had never or were not regularly accessing nature prior to the course and those who had lost touch), with many examples of daily visits and regular use. As the data showed, there was still a strong perception of nature as having balm like qualities supportive to wellbeing, strengthening this theme. The results show how at this follow up stage, reminiscences about the course were woven together with experiences that were both contemporary and drawn from participants' personal histories, particularly childhood. Woods as a unique place to socialise in a more meaningful way was discussed above and how nature enables a different kind of social connection is an example of just how enmeshed the themes can be. The concept of nature as an active participant in enhancing wellbeing discussed at T2 was one that had endured. Here, now the course and all it provided had ended, this natural support as a coping resource had

taken on an elevated importance, particularly for the participant who was lacking in social resources who described hugging and 'high five-ing' trees on her walks.

Participants had maintained 'making more' of time in nature, behaving differently by being more mindful there, or walking through more slowly. This could be aligned with a Japanese forest therapy style approach outlined in Chapter Two (Jin *et al*., 2010), taking in the woods through the senses and seeing nature more as a place to 'hang out' than simply pass through. Following on from the discussion in the preceding chapter about how time in the woods had led to being more mindful sometimes feeling more inclined to actively use formerly learnt mindfulness practices, it was clear that these benefits (e.g. increased noticing, 'just being', engaging with the sensory experience) had also been sustained.

At T2, benefits of being mindful outside were reported and the benefits of mindfulness for wellbeing were outlined. This was the case for the 'mindfulness in the woods' course who had found added value in nature. All reported surprise at finding it easier to engage with practices outside whether this was their first exposure to mindfulness training or they were experienced practitioners. At T3, this seemed to have led to use of it as a more 'at hand' resource. This demonstrates how an embedded personal change had been taken wider as benefits of using mindfulness in the workplace benefits were reported, like taking a pause in nature before starting work. In the other groups, an unintentional engaging outdoors was reported whereby those who had previously trained in mindfulness but who had not engaged with it before reported connecting with it quite naturally in a way they had not before. There were also those who had not had any mindfulness training but became mindful quite naturally in the woods. This raises the question of how being in nature supports the increased ability to be in the moment that was reported. This could simply be that being in the woods allows people to reset and relax enough to become more mindful. Certainly engaging with the senses seemed to come naturally there which appeared to be a key part of the process. They also seemed to be experienced as less cluttered or complex places with less outside world distractors, where the senses could re-engage as the attention is less easily captured by day to day concerns. Thus it was clear that in relation to mindfulness, nature lent a hand, supporting the character and content of the wellbeing benefits. Reciprocally, being more mindful in nature also offered a different way of being in the natural environment, augmenting a sense of peace and relaxation.

Critique

This focus group study was unique in being able to meet a gap in the field for long term research on natural environment, health and wellbeing. It was able to successfully demonstrate predominantly lasting positive change to both wellbeing benefits and woodland use as a result of the AW programme. Both Corden and Millar (2007) and Lewis (2007) have commented on how experiences and feelings in longitudinal qualitative research might be re-interpreted explicitly or implicitly, and how this might be conscious or unconscious for

the participant. Indeed in this study, there was a tendency to want to reflect back on the course rather than describing how things are now. Whilst this could be seen as a challenge, it actually strengthened the themes identified at T2 and demonstrated how entwined participants' historic experiences are with their present day thoughts, feelings and actions. Reflecting on reflexivity, whilst trajectory analysis was not explicitly done, naturally, existing knowledge of a participant through a first focus group affects the lens through which what is said is seen by the researcher.

On a practical level, getting the groups back together was a challenge and one that is well recognised in the field of long term qualitative research (Grey *et al.,* 2017). The gender and age balance of the groups shifted slightly and naturally there will have been subtle changes in relationships and group rapport. Different group compositions affect data, meaning that what is said in front of, or in response to a particular group of respondents will differ. Equally, new information may have come to light as events are re-membered or re-framed. One observation was how members new in at T3, had a stronger tendency to refer back to the programme rather than discussing the present, having not participated in the previous group. However, as far as possible, consistency was maintained in the groups to minimise changes to the dynamic.

There were a few working challenges that could be attributed to the fact that it was a large study that took place over a long period of time involving multiple participants and support agencies. Despite regular briefings and the researcher attending staff meetings to explain the study, inevitably there were staffing and project changes over the data collection period. Due to the way that AW operate, partnering with a range of health and social care organisations, it was not always known which projects or support staff would be in attendance on a given day. Despite a widespread positive orientation to the study there were a few isolated cases where project staff from partner projects dissuaded participants who may otherwise have joined, saying for example 'you don't want to do it, do you'. Naturally, this affected the group composition, but was understood to be due to feelings of protectiveness towards clients. A further challenge was that as the groups were follow up sessions, staff had often not seen participants for some time and at times there were some of the territory of the research questions was covered in pre-amble chats with staff. To minimise this, the researcher communicated the role of the focus group and the wider context of the study to all staff present to raise awareness and understanding.

Although there was just a month gap before the follow up focus group on one course due to practicalities, data gave a good insight into how participants had taken learning into the wider environment of their lives. Sessions were relatively short in length, but as the results show, they were revelatory, and participants spoke very openly and 'from the heart' providing in depth understandings in relation to the research questions. As for the T2 focus groups, the researcher had attended the whole session so that participants felt comfortable

and trust was built, rather than arriving and immediately asking participants to talk about what were often very personal experiences.

One factor of note was language, for example in 3b, all participants were first language Welsh, but due to a lack of fluency by the researcher, the session was conducted in English. This did not appear to limit people in talking openly about their feelings and experiences however. Inevitably, the weather on the day of the focus group will have had an effect on how positive or negative people might feel. Group 5b was conducted in wet conditions under a tarpaulin with a fire and field notes for other groups recorded everything from a 'notably cooler day, autumnal feel. Had rained all day yesterday' to 'rainy, stormy night with named storm forecast for next day' to 3b, the last group being conducted in the middle of a heat wave. As mentioned in Chapter Five, use of drawings, helped with distractions and deepened reflections where used. As these results show, on a few occasions they helped participants to reflect back to their T2 picture and encapsulate their own experience of change.

6.5 Conclusion

Exploring the retrospective accounts of gains, and the maintenance of change (or not), the follow up focus group data has been crucial to our understanding of what happens next for people, substantiating and providing a deeper understanding of the findings of the quantitative study. Results showed how positive personal (perspective shifts and lifestyle changes), social (increased connectedness) and environmental (a feeling of being supported by nature, with changed access behaviours and attitudes) changes had become embedded. It demonstrated that courses such as AW engender changes that can be maintained, leading to further augmentation of resources to support positive personal wellbeing on which there is a paucity of research. Insight was gained into how these benefits go far beyond the physical, and how this works for more vulnerable adults. Where this was not the case, the data gave a good understanding of the processes involved and what might be needed. Of course, what is salient and meaningful from the AW experience at the point in time of the focus group may be more or less meaningful in the context of what happens next in people's lives. As Miller (2007:531) reminds us "*All longitudinal qualitative research of necessity has a starting point and a finishing point, but this window of observation may not be able to pick up all the relevant change*".

Whilst many participants clearly had sufficient resources to put their own strategies in place to maintain wellbeing benefits, it is recommended that NBIs support this process of upskilling where possible, for example, encouraging participants to get involved in and lead activities or parts of activities as programmes progress. The therapeutic value of the focus groups for both embedding wellbeing benefits and solidifying social connections is also an important implication. Factoring in to planning the playing of an active role in

bridging to other local provision as well as putting on periodic follow up activities for groups is advised in order to embed new practices and identify participants who may need extra support.

Additionally, if conservation organisations are serious about widening access it is apparent that there is a role for them to provide social opportunities such as group walks or quieter activities in woodlands. Whilst projects such as Park Runs are hugely successful at encouraging people into the natural environment, studies such as this show the value of quiet time in nature with others. This could be in line with wider provision of Forest School for adult type activities such as the Actif Woods programmes, investigating potential for the provision of Japanese Forest Therapy type centres or mindfulness in nature activities.

CHAPTER 7 DISCUSSION

7.1 Introduction

Personal wellbeing, a subjective assessment of how people feel about their own lives, is complex and has many influences. Better wellbeing is associated with longevity (Steptoe *et al*., 2015) and there are strong associations with both physical (Appleby, 2016) and mental health (Tessier *et al.,* 2017). Lifestyle-related illnesses are a major cause of mortality and the health and wellbeing benefits of contact with nature are well documented (Hartig *et al.,* 2014). In recent years, the role that nature-based interventions can play in encouraging access to greenspace and improving wellbeing has been increasingly recognised, particularly for marginalised communities (WHO, 2017[a]). Research that examines whether and how impacts are maintained beyond such interventions is an acknowledged gap in knowledge and understanding (Thompson-Coon *et al.,* 2011; Husk *et al*., 2016) hence there is a critical need to investigate this.

The overarching aims of the study reported in this thesis were to gain an improved understanding of how a woodland based initiative for adults could impact personal wellbeing and woodland use over time. Examining what personal wellbeing and related impacts were experienced and how and whether different sub-groups of participants derived different impacts, as well as examining the role of social processes were key objectives. In terms of woodland use, how engagement with and attitudes towards them changed was explored. Responding to a key gap in the literature, the extent to which any benefits to personal wellbeing or changes in woodland use were sustained longer term was a crucial part of the study.

Complementing each other, the qualitative data gave detailed insights into processes of change identified in the quantitative study. The quantitative cross-sectional study of the larger cohort at baseline showed that AW are appropriately targeting those in need of intervention as the cohort had below average scores on a range of wellbeing and related measures (Chapter Three). Quantitative findings on end of course and maintained change demonstrated success in improving mental wellbeing with significant increases across all of the psychosocial measures assessed (mental wellbeing, physical activity, social trust, self-reported health, self-efficacy and self-esteem) and a trend for increased woodland use (Chapter Four). Whilst personal wellbeing changes were the greatest for those who started out with lower wellbeing and those with mental health challenges benefitted the most, data showed how the programme functioned as a preventative measure for others too, increasing their coping resources. In tandem, the focus group data concurred with these findings and gave an in depth understanding of how their instigation (Chapter Five) and maintenance (Chapter Six) were realised. These results further illuminated what the quantitative data revealed about the vital role of social processes and revealed how crucial, alongside the structure and support of such programmes, the group and social connections were for those with health and social care needs. For all

groups, what nature added and how being in woodlands supported processes of change, was particularly demonstrated by the qualitative data. In addition, these findings showed how the NBI functioned as an adult greenspace turning or re-turning point, diminishing psychological barriers to access and changing patterns of use, thus that time in woodlands became part of daily life as participants reported 'making more' of going.

This final chapter will review, integrate and discuss key findings in their wider context and critique the study, identifying practical and policy implications. The structure will flow in relation to the research questions (below) regarding personal wellbeing and social processes, also considering the overarching question of what a 'dose' of nature might look like. Finally, questions in relation to wider access to and engagement with woodlands will be discussed prior to the important issue of the embedding of reported changes:

- What personal wellbeing impacts were experienced and what were the key influencers?
- What role did social processes play?
- Did different sub-groups of participants derive different impacts?
- How did engagement with and attitudes towards woodlands change?
- Were any benefits to personal wellbeing or changes in woodland use sustained over time?

7.2 Personal wellbeing

What personal wellbeing benefits are experienced and what were the key influencers? Early change

At the outset of the study, the question of whether AW can affect wellbeing was posed, to which the answer offered by the data is a resounding yes. The quantitative data for a reasonably sized sample showed small but highly significant upward shifts on MWB and significant positive change was also found on a range of influencing factors. The parallel qualitative data in Chapter Five concurred with these results, adding depth to understanding how these changes took place, showing positive shifts in self-evaluation and wider lifestyle changes. These improvements in health and wellbeing outcomes are in line with review studies of nature-based interventions (Bragg and Atkins, 2016; Shanahan *et al*., 2019). The fact that positive change not only occurred but later stabilised, affirmed by both the quantitative and the qualitative approaches has been a key finding.

Returning to the eudemonic definition of PWB posed at the outset of the study, the reasons we want to be alive (Gawande, 2014), it is clear that a nature-based intervention can enhance this considerably, and in a sustained way. Atkinson (2011) warns that measuring subjective wellbeing can be oversimplified (particularly in popular interpretations) as 'happy talk', where it is too conflated with happiness and advocates the need to take into account a sense of flourishing over a reasonable duration of time. In Chapter Two, a broader definition that included the capacity for people to feel that their lives are going well despite their physical and mental health problems was discussed (McDowell, 2010). According to the focus group data, it was evidently

possible to feel a whole lot better about your life following the NBI. The qualitative data provided a good understanding and many examples of this, as participants described not just a new contentment with their lives, having integrated many positive changes but it also a sense that it had given their lives more meaning. The way that the programme acted as a conduit to being in nature, finding it more meaningful, spending time differently there and feeling held by it were all central to this will be discussed under the section on woodland use below.

Self-esteem

An important finding of this study was ascertaining the importance of self-esteem as a predictor of wellbeing change, highlighting its role as a factor to promote in order to bolster wellbeing improvement. The quantitative data showed how positive change on this construct was particularly meaningful, given that participants' mean score was well below the midpoint prior to the intervention. Other studies have similarly shown that green exercise can benefit self-esteem (Barton and Pretty, 2010; Pretty *et al.,* 2007). Coupled with the qualitative data the study gave good insight into the reasons behind this change, showing how confidence improved, due to feeling supported or learning new skills for example, and how respondents self-appraised more positively. This is a good example of the 'panoramic view' (Shorten and Smith, 2017) that using combined approaches was able to give. Psychological theories of self-esteem hinge on how worthy an individual feels about themselves (Neff, 2011). This work contributes to understandings on how connecting or re-connecting with nature in a supportive environment can bolster these feelings of self-worthiness as processes of how people self-identify shifts and morphs such that they assimilate the natural environment into how they self-perceive. Self-identity is an important part of the self-concept (Rosenberg, 1965) and how the NBI affected this was outlined in Chapter Five, for example giving a wider perspective on life, and an identity aligned with feeling '*woodsy*' or '*outdoorsy'*. As an overall evaluation of how a person feels about their self-worth (Rosenberg, 1965), the strong relationship of self-esteem with positive wellbeing and good mental health has already been highlighted (Chapter Four). Whilst this is not new it aligns with and supports thinking on the role of nature for positive wellbeing, for example by Atkinson, Fuller and Painter (2012).

Physical activity

In this study, significant positive gain was reported on the physical activity measure. As discussed in Chapter Two, physical activity can be really important in preventing a range of lifestyle related diseases (WHO, 2013; Lee *et al*., 2012) and improving mental health and psychological wellbeing (Fox *et al*., 2000), so positive change here is of real benefit. Other NBI projects have also reported positive change in relation to physical activity, such as the Nature4Health programme (Mersey Forest, 2016[a]) and the Branching Out Programmes (Wilson, 2009). However, physical activity was not prominent in the 'what have you gained' question in comparison to being in nature or social gains. Additionally, in the qualitative study, although it was not

referred to as a central benefit in the way that mental health gains were, it was often mentioned incidentally, for example through stories of re-prioritising time for walks, especially in the woods. Therefore, it seems that whilst beneficial changes took place in relation to activity, it was being 'in nature' and being 'in society' that participants felt affected their wellbeing more.

NBIs such as AW can be particularly beneficial for those at the lower extremes of wellness, and this can easily be missed by more generalist population level statistics. The T1 baseline data showed a mean score that suggested a reasonably fit cohort, however mean scores do not of course reflect the experience of individuals at these extremes. As the T2 qualitative study showed, for one person, starting a daily walk was quite a behaviour change, and several other participants had reported barely leaving their homes prior to the programme. For someone previously inactive, the question about how many days in the past seven days they had engaged in activity that increased their heart and breathing rate, or that made them sweat a bit would not have captured what a large and beneficial change just leaving the house was for them. The amount of activity varies hugely amongst the programmes and in fact for some, a 15 min uphill walk on a woodland track from the centre might not have fit the physical activity question description, but for some, this was a vital step to moving out of inactivity, a leading risk factor mortality (WHO, 2017[b]). As previously discussed, those with mental ill health are less likely to be physically active Therefore, the results are particularly noteworthy for those previously inactive due to mental health or physical health concerns, adding to this bank of knowledge and additionally showing that for those with mental health challenges, this can be a sustained change.

These positive and significant changes evident in the quantitative data and the reported lifestyle changes from the qualitative study should not be underestimated, given how compromised some focus group participants' lives were described as prior to AW and what we know from the baseline data about how below par some were on a range of measures prior to the course. Behaviours that compromise health such as physical inactivity are difficult to change (Gardner and Lally, 2013; Schwarzer, 2008). The key role of social processes in influencing change is now discussed.

What role do social processes play?

Positive social interaction can positively influence PWB (Bruine de Bruin *et al*., 2019), therefore what role social processes played in the wellbeing of our study participants was a key research question. Social trust levels measured in the quantitative study showed significant gains demonstrating this vital aspect of the programme. The measure "*refers to an individual's beliefs about the general trustworthiness of others and it is part of a person's worldview regarding the benevolence of other human beings"* (Justwan *et al*., 2018:1). This makes it an important influencer of the quality of existing relationships and the formation of new ones. Additionally, whilst not broken down 'feeling close to other people' is integral to the MWB measure which

positively improved. Although social benefits were not a main driver for signing up to study participation (identified by the 'what do you hope to gain' question), these data made it clear that something beneficial had happened in terms of participants' relationships with others. As the qualitative data showed, the programme experience had made it easier to connect with others. Taking the results from both studies together, good awareness was gained into the importance of social processes on an NBI, providing multiple narratives which gave an understanding of what was behind the social trust scale increase. These data really showed how personal change such as aforementioned shifts in self-perspective enabled new connections, which were an important part of the personal wellbeing gains. Particularly for participants with health and social care needs, the social element of the course was integral to their improved wellbeing, supporting a move out of isolation for some and supporting others to maintain their abstinence. As outlined in Chapter Five, the sense of group care had led to increases in confidence and 'feeling ok' in the world due to feeling safe and non-stigmatised. The qualitative data in both Chapters Five and Six showed how participants increased connections and developed supportive relationships, the importance of the quality over the quantity of connections having been discussed in Chapter Five, as were the damaging effects of isolation.

It is easy to see the powerful potential of moving out of isolation and into group on the programme, given the narratives of some participants about how insular their lives had been prior to the course. The importance of social interaction is often highlighted as important in NBI studies (O'Brien and Snowdon, 2009; The Mersey Forest, 2016[a]) and the need to better understand how social dynamics work within a nature-based context has been highlighted (Meyer and Arndt, 2014). The social trust question and the MWB measure alone could not have reflected the role of the woods in facilitating these benefits in the way that combining them with the focus group data did. This role was described in some depth in Chapter Five, that is, how being in the woods and a sense of spaciousness in nature supported the social processes, through promoting feelings of relaxation and feeling less judged in that environment. This was described as making it easier to connect with others, enabling these social gains. The trees even provided a parallel element of non-human support, in the form of feelings of strength and protection, for example.

In a critique of wellbeing measurement, Atkinson (2011) raised concerns that it may be linked too closely to what she described as an 'individual lifestyle model'. Indeed, the criticism that psychological models can be overly focussed on the individual (Foo, 2015) was discussed in the literature review. Countering this, in a study on volunteering in nature, O'Brien pointed out that paying attention to social capital alongside wellbeing can usefully highlight the potential of projects to provide benefits beyond the subjective experience. Without losing sight of valuable therapeutic gains for individuals "*a more communal concept*" can be encompassed which considers the wider development of inter-personal "*reciprocity, networks and trust*" (O'Brien, 2011:72). This subsequently has impacts for groups and communities beyond the individual.

The importance of the role that social processes played in supporting wellbeing gains is not surprising as, for self-esteem in particular, a favourable or unfavourable image of the self is strongly governed by what others think. The social responses of others are important to shaping our own self-appraisal (Rosenberg, 1989). Interacting with others not only affects a person's view of themselves, but observing others teaches people how to act in our communities, and in turn, these attitudes influence behaviours (Cooley, 1983 in O'Brien, 2011). Social well-being is an important part of personal wellbeing and affects people's ability to form supportive relationships. The basic idea linking social trust to wellbeing is that increased social capital, measured by social trust, can increase the resources individuals have, supporting them to "*weather storms*" (Helliwell *et al*., 2016:16).

Do different sub-groups of participants derive different impacts?

Sub-group data is important to ascertain whether different participant groups differ in the impacts experienced and to support informed decisions about who to target in any subsequent interventions. AW is quite unique in working with such a wide range of participants, a result of their working model of partnership working with a varied range of organisations. As identified in Chapter Three, this enhances their ability to access hard to reach groups. This working model also provided an important opportunity for the study to compare group differences. In the quantitative study, the data was skewed towards those with mental health challenges gaining more, not least because they had the lowest scores on all measures at baseline, particularly if they had concurrent physical health challenges. As the data showed, there were some individuals with very low initial scores who made large gains. Complimenting this finding, it was also evident from the focus group data that those with mental health groups had made particularly profound changes supportive to their wellbeing, like moving out of prior social isolation and inactivity.

Other studies have also found greater restorative benefits for those with poorer mental health (Stewart and O'Brien, 2010). As outlined in Chapter Two, nature has repeatedly been found to be beneficial to good mental health (Bratman *et al.,* 2019; Gascon *et al*., 2015; Bowler *et al*., 2010; Hartig, 2014). Most studies on NBIs work with one participant group, and those working with mental health groups have found positive results on a range of mental health and wellbeing indicators, like the aforementioned Branching Out study for clinical populations (Wilson, 2009). Even a smart phone app-based wellbeing intervention where participants were asked to notice good things about urban nature found significant improvements for those defined as having a common mental health problem. These changes were attributed to increased nature connectedness and positive affect. This was one study that did follow up with participants and found that at one-month, improvements were sustained (McEwan *et al*., 2019).

Since the literature review presented in Chapter Two was undertaken several recent review studies published have sought to identify why NBIs are particularly beneficial for mental health. Bloomfield (2017) identifies

that the benefit to mental health is due to mental wellbeing increases, impacting a range of factors (affect and cognition, mood, attention, anger, fatigue and sadness), whilst Shanahan *et al.,* (2019) focus on their role in facilitating behavioural changes that promote physical, mental and social health and wellbeing. A 'Wetlands for Wellbeing' study in partnership with a community mental wellbeing service (Maund *et al.*, 2019) found that time at the wetland site facilitated relaxation and stress reduction and provided a sense of escape from everyday environments.

As suggested (Chapter Four), one factor contributing to these gains in this study could be that some participants with mental health challenges, particularly if they were attending as part of a wider group, had extra support which could have enhanced outcomes. Whilst the quantitative data highlighted that those reporting mental health issues gained preferentially, the focus group data gave multiple understandings of how these processes of change happened through the three main themes of '*personal change'* (encompassing beneficial '*perspective shifts'* and '*lifestyle changes'*) and the '*social processes'* described above. The third theme of '*held by nature'* showed how a project like AW can be a conduit to realising a range of benefits from the natural environment such as emotion regulation, increased sensory awareness, being more mindful, feeling more connected to nature, feelings of escape and freedom and an opportunity to re-prioritise. These aspects contributed and aligned with well-known theories of attention restoration and stress recovery as outlined in the Chapter Five discussion. Taken together, the three themes led to participants increasing their resources and ability to cope with life's demands (internal and external stressors) in line with stress and coping theory (Lazarus and Folkman, 1984).

In summary, the findings of this study are consistent with the literature on how nature supports good mental health and how successful NBIs are at improving health and wellbeing for those with mental health issues. Complimenting this work, it augments these findings with a clear sense of how wider lifestyle changes came about, such as the way that participation in AW diminished psychological barriers to using woods during and after the NBI. Both these findings from the studies will be discussed in subsequent sections. The data on how benefits for all groups were maintained is a useful and necessary addition.

Should particular sub-groups be targeted?

Mental health problems are a leading cause of the overall disease burden globally (Forouzanfar *et al*., 2016), and mortality has been found to be significantly higher among those with mental disorders than the comparison population worldwide (Walker *et al.,* 2015). Given compelling drivers such as these and the existing collaborations of AW with these groups, the question of whether NBI provision should target mental health groups is a pertinent one. Whilst older people did not gain preferentially, it could equally be argued that they are a priority due to loneliness or physical inactivity or that younger people should be a priority due to physical inactivity, obesity and the importance of embedding good behaviours for future generations.

Increasing access for those from a wide range of other under-represented groups is also something that the project has developed and it would be a shame to compromise this, for example for low income participants, knowing that having a nutritious meal as part of the session was really important, as well as learning how to cook cheaply.

The almost 50/50 breakdown of participants in the larger study also shows how good the courses are for attracting men, which again, are a worthwhile target group. Whilst particular interventions such as 'men's sheds' aim to engage men, they are often under-represented in therapeutic ventures, yet are extremely over-represented in the national suicide rate, for example accounting for three-quarters of UK deaths by suicide in 2018 (ONS, 2019). These competing priorities aside, maintenance of good wellbeing and prevention of decline is important too, including for those with mental health challenges who may currently be well. As Chapters Four and Five show, the mindfulness group of self-referrers gained or dusted down preventative resources, increasing their coping ability for future demands. In conclusion, despite the fact that those with mental health challenges gained preferentially, as do those with lower scores at the outset, there are valid reasons for maintaining the current practice of working with a range of groups.

7.3 Considering the 'dose'

The concept of dose and the idea of nature as something that can be prescribed is a topical one. What a successful 'dose' might include was discussed in the literature review, and spending two hours a week in nature has since been associated with being more likely to report good health and higher psychological wellbeing (White *et al.,* 2019). With considerable resource implications, the quantitative study results seemed to show that benefits were not significantly increased by doing a longer course or doing particular things on it, but more simply from connecting with others in nature. These findings raise intriguing questions regarding what an NBI should look like. This next section will explore where the quantitative and qualitative results converged or diverged, and what implications these findings have for considering length and course content. Considering where, that is, the role that the woodland habitat played will also be discussed before critiquing the utility of taking a dose approach.

Considering the 'dose': duration and frequency

As seen in the quantitative data presented in Chapter Four, with the caveat that the quartiles were small, there were no significant differences between the varying course lengths, thus it appeared that programme length was not of prime importance and that small engagements could make a difference. As discussed, this reflects findings of other studies on the length of activities in relation to positive mood effects (Morita *et al*., 2007) and mental health benefits (Pretty *et al.*, 2007). In fact, a parallel piece of work using the AW study data for a Social Return on Investment found shorter courses to be more beneficial in terms of PWB and related

measures (Hartfiel *et al.,* in preparation). Indeed, corroborating that a longer exposure time is not necessarily essential, a phenomenological study with 15 adult participants found that even one short experience with nature could change the way people see themselves and relate to others. They refer to this personal transformation in nature as a 'peak transformative experience' (Naor and Mayseless, 2017). This raises the question of whether constant recruiting of new participants on shorter programmes would be better than longer or more ongoing provision.

Taken together with the focus group data however, another perspective was gained. The ephemerality of the seasons over the course of a three month programme was often referred to as beneficial by participants, who made observations about cycles of growth, loss and change in the woods. It is possible that an enhanced appreciation of the transitions in nature over time helps people to manage challenges in their lives, seeing them in perspective, as temporary. In addition, it is difficult to imagine the development of the sense of group and the resultant social processes and social capital gains described above in a much shorter course, particularly for more vulnerable participants. Indeed, Chapter Six includes data from one participant who had relapsed into social isolation and depression, suggesting that a short one-off programme may not work for everyone, and stressing the value of follow up sessions to avoid losing accumulated benefits. In fact, when Shanahan et *al.,* (2016) examined associations between the duration, frequency and intensity of exposure to nature and health in an urban population they showed that longer visits to green spaces were associated with lower rates of depression.

Many nature and health studies examine results of one-off visits, however Shanahan *et al*., (2016) also found links between more frequent visits and greater social cohesion and that higher levels of physical activity were associated with both duration and frequency of greenspace visits. Our quantitative study did not compare weekly to fortnightly courses, however in the qualitative study, the routine of going every week over a period of time was reported as being very important to getting out of a rut and breaking negative cycles aligning with research on how regular patterns of new behaviours are needed in order for them to become established (Lally *et al.,* 2009; Gardner, 2013). As suggested (Chapter Four), it is advised to continue monitoring and comparing data on course length to better understand these interesting findings. The range of courses that AW offer provide a unique opportunity to learn more about this, as might a systematic review, subject to their being sufficient studies to compare.

Considering the 'dose': course content

Some studies examining health and wellbeing in the natural environment have found that the type of activity was not important (Morita *et al*., 2007; Pretty *et al.,* 2007). As the sample programme sheets in Appendix 1.1 show, the content of AW programmes is very flexible and can really vary in order to take maximum advantage of skills sets of teachers locally and adaption to the group. Whist participants may be offered a say in what

sessions made up a multi-activity programme, whether they were offered a multi-activity, mindfulness or coppice products programme was related to what was on offer locally to them. The larger quantitative study suggested that it did not matter which they did, although the sample sizes were very uneven. The qualitative data seemed to corroborate this however, where key themes related to personal changes, the importance of group and nature rather than being about particular activities. This is in accordance with the perspective of Bragg and Atkins (2016) who, in their review of NBIs identified the ethos as being as important as the activities themselves. They found that benefits appeared to be derived from the combination of the three key elements - the natural environment, meaningful activities and the social context.

Whilst not activity specific, qualitative data from all the groups in the present study did however provide a view on the importance of enjoying quiet time in nature and the mental health benefits of this. This points to the fact that green health is not simply about exercise or 'doing', but also about 'being' in nature, aligning with the psychological part of health and wellbeing as well as the purely physical or functional part. This for example, was particularly related to the sensory experience of being in the woods and to feeling more mindful there. Mindfulness in nature was often mentioned in the focus groups and clearly, as discussed in Chapter Six, this aspect, taught or naturally arising was supportive to mental wellbeing. When the linked SROI study looked at the *percentage* of participants reporting improvement in MWB, self-efficacy, social trust and physical activity, results were higher for 6-week mindfulness in the woods programmes than for 8-week or 12-week multi-activity programmes (Hartfiel *et al.,* in preparation). It is important to bear in mind that the mindfulness groups had people with less chronic mental health issues as they were pre-dominantly self-referral as compared to other groups which partnered with health and social care referral agencies.

These findings would seem to contradict the studies mentioned at the beginning of this section, that it matters not what you do in nature. Perhaps a study by Fraser *et al.,* (2019) comparing walking and golf can help to interpret them. Here, the type of green exercise was found to make a difference whereby more favourable psychological responses (such as better performance in a working memory test) were experienced from walking. From a linked qualitative study, they concluded that attention restoration type benefits are diminished when greater levels of directed attention are needed for the activity itself. Parallels can be drawn here with the body of work on nature connection where increased connection is associated with greater wellbeing (Sandifer *et al*., 2015). Whilst nature connection was not a construct that was measured in this study, comments in the qualitative research certainly demonstrate what might be constituted a stronger connection to the natural world. Following on from this, stronger nature connection is known to be associated with increased pro-environmental behaviour (Martin *et al*., 2020), so it would be interesting to know if it is also associated with positive behavioural changes for health and wellbeing, such as increased physical activity.

In terms of implications for AW and other NBI providers in the light of this, following the pathways to nature connection (Lumber *et al.,* 2017) outlined in Chapter Two could be beneficial. In addition, given the value attached to mindfulness by participants in the qualitative study it could be wise to consider further dedicated 'mindfulness in the woods' courses by trained teachers, as well as training current staff to bring shorter mindfulness practices into existing courses to further incorporate 'just being' time with 'doing' time. Many of the courses observed already do this very well, for example having 'sit spots' (quiet time in nature), a moment of silence prior to or after an activity, or bring in mindfulness teachers to run particular sessions. In terms of wider implications, recognising that woods mean different things to different people, it would seem pertinent for conservation organisations to focus further attention on promoting calmer activities in addition to promoting more active engagement in forest spaces such as facilities for mountain biking in order to maximise their health and wellbeing benefits. As outlined in Chapter Two, forests are well recognised for therapeutic benefits in Japan where activities (like Shinrin Yoku/forest bathing) are more established (Hansen *et al*., 2017).

Considering the 'dose': ascertaining the role of the woodland habitat

Linked to how long for and what the dose should consist of is the extent to which the habitat matters, AW being a woodland based programme. In the literature review, the way that much research does not distinguish between habitat types was noted. Other studies have called for more research on the unique qualities of woodlands and trees compared to other greenspaces, for example, for fostering social interaction, having found that participants often do not distinguish either (Stewart and O'Brien, 2010). To some extent, this was echoed in the present qualitative results, whereby often participants referred to just being outside, or in nature. Without a control in a contrasting habitat, it is not possible to wholly attribute any benefits specifically to woods, however the data gave some useful insights.

As Appendix 1.2 shows, there was a broad range of woodland types used for the programmes, and as the qualitative chapters showed, there was something special about interactions with trees (for example the definite preference expressed for broadleaved woodland compared to conifer plantations in Chapter Five) that really made a difference to the experience. Many of the wellbeing benefits were unique to the woodland space, for example, where nature was referred to as an active participant, this was particularly in relation to trees and their non-human agency. They were appreciated for their particular qualities such as provisioning or more attitudinal ones such as their strength. These data showed how woods provided distinct benefits for social interaction like privacy for conversation, or space to walk off and be alone if feeling anxious. As the data showed, attitudes to woodlands changed in relation to the woods themselves and what they could offer partly due to the essential qualities of place itself, and what trees can offer in a biophilia style. This was also due to the positive experiences that people had there, gaining an understanding of how to be safe there, developing positive connections in different spaces, as people developed different perspectives and confidences. These

findings present an interesting lens on whether a suitable dose might go beyond being activity or exposure related (i.e. duration and frequency) and could be habitat or habitat quality related (i.e. forest characteristics; species; 'naturalness'). Indeed, the subsequent section (Section 7.4) explores how engagement with and attitudes towards woodlands changed as a result of the NBI.

Critique of 'dose' approach

From an NBI perspective, knowledge and understanding on how long courses should be and awareness of any elements that are particularly helpful is vital from a planning and resourcing perspective and to help optimise benefits. It is also important to bear in mind constructive criticism of a 'nature for health' prescriptions approach which has been described as overly simplistic in that attempts to specify or quantify dose can be reductionist and run the risk of excluding the many and varied ways that nature is accessed (Bell *et al*., 2018). Recognising the intrinsic value of NBIs for promotion of good wellbeing and prevention of ill health, rather than subscribing to a limited model of health that is about treating existing illness must not be lost or side-lined. However, whilst acknowledging these valuable critiques of the dose concept and keeping in mind the need for flexibility, the data from this study suggests that 'nature on prescription' type interventions can break down barriers that have inhibited engagement with green spaces. This can lead to the creation of new opportunities, confidence and making (a newly socialised) nature part of the day-to-day. In fact, a prescription/dose approach could be the mechanism by which NBIs are mainstreamed and recognised for the health and social care services they provide so that they can be properly funded and their potential maximised. This was the view of a report by Natural England on the role of NBIs in social prescribing for mental health which explored the use of social prescriptions as a model to get them mainstreamed into health and social care (Bragg and Leck, 2017). The heterogeneity of how social prescribing is unfolding in Wales and the UK is both a strength and a challenge. As outlined by Husk *et al.,* (2019), services need to be locally responsive, however the range of activity that the term embraces means that local provision and pathways and their efficacy can vary very broadly. Certainly, social prescribing is likely to play a key role in signposting people to projects such as AW and an important implication of the study is that NBIs make links with local provision as it unfolds and develops in order to reach those in need.

7.4 Questions of access

A rather stubborn pattern of certain groups being under-represented in visitor figures for natural landscapes was observed in the literature review, particularly those from lower socio-economic groups, with a disability, from non-white ethnic groups or older people (Natural England, 2017[b]). As not everyone is gaining *access* to greenspace, this pathway to wellbeing is being received disproportionately. Coupled with the fact that these same groups, such as low income groups, have worse health (Public Health Wales, 2016) and knowing that greenspace may be disproportionately beneficial for them (Wheeler *et al*., 2015), conservation organisations

are increasingly keen to diversify their visitor base (Glover, 2019). With this in mind, a critical question was whether and how an NBI could change patterns of engagement for under-represented groups. Whilst it is known that structured interventions can be useful tools for breaking down barriers to access (O'Brien and Morris, 2014) and other studies have usefully highlighted their *potential* for changing behaviours (Goodenough, 2015; Wilson, 2009), this study clearly evidenced wider independent use of woods following the NBI. This was evident both during the course and afterwards and the qualitative studies gave good insight into how.

As outlined in Chapter Three, the study found that 17% of our sample had *never* visited the woods prior to them starting the course, and that a further 30% reported going only between one and four times a year. It was also evident from the employment and education figures that AW are meeting the wider challenge of engaging with lower socio-economic status groups thus extending the benefits of time in nature to a wider audience. The baseline study also showed that the cohort had lower than average health and wellbeing scores. This suggests that the programme has successfully recruited people who stand to gain if their access habits can be changed by participating, providing an opportunity for an under-represented group.

Increased use and diminished barriers

It was clear from the quantitative data in Chapter Four that the course had changed engagement with woods, with a positive increase in the number of visits outside the programme, a trend that stabilised at the follow up point, suggesting that this change was maintained. Woods visits was the one measure where longer course length did make a difference with a trend for correlation between longer courses and visits. Since the literature review, a community level study on woodlands in Scotland also showed a modest increase in woodland use following a programme of community engagement events (Ward-Thompson *et al*., 2019). Combined with the qualitative data reviewed in Chapters Five and Six, the study gave a sense of how the course could lead to feeling comfortable in an unfamiliar habitat, which taken together with the quantitative findings on course length, suggest that a longer period for this process to occur was important. Many studies are in relation to short interventions with no follow up, but a study at Westonbirt Arboretum also highlighted the importance of repeat visits for enabling familiarity (O'Brien, 2018). This was also the case with a nature-dose framework study which showed that the frequency of visits mattered, correlating more frequent greenspace visits with greater social cohesion (Shanahan *et al.,* 2016).

How do changes in woodland use come about?

In the literature review, the need for a deeper understanding of what woods meant to people and how this might impact their wellbeing over time in the light of NBI participation was highlighted. The quantitative data showed decreased perceptions of barriers and positive behaviour change with respect to increased visits to

woods and changes in the meaning of woods and in participants' attitudes towards them were very apparent in the qualitative studies. Much of the literature on access is on physical barriers, but Morris *et al*., (2011) give a more nuanced approach that considers social, cultural and physical factors. Chapter Two reviewed the factors which prevent people going to woods and acknowledged the different barriers for different groups. Whilst physical barriers are more difficult to shift, the data showed how the AW NBI addressed the '*deep-seated psychological, emotional and socio-cultural nature'* (Morris *et al*., 2011:375) of some of the barriers. Indeed, the intervention addressed all three key issues identified by this rapid evidence review on public access to woods and forests - knowledge and awareness of where and how to use woods, motivations and enthusiasms to do so and feeling welcome. The next section considers how the NBI functioned as a 'greenspace turning point' before discussing the social element as a contributing factor.

A greenspace turning point

The focus group data in Chapter Five demonstrated the capacity of AW to be a transformative experience for people based on having a positive experience in nature in adulthood. How doing things in the natural environment contributed to participants feeling part of it, or that it was for them was very apparent and demonstrates how a childhood lack from visiting can thus be reversed by such a scheme. In Chapter Two, the term 'nature-acculturation' (Bell *et al*., 2014; Ward Thompson 2008) was raised in relation to the strong influence childhood exposure to the natural environment can have on adult visiting behaviour (Ward Thompson, 2008). These results show how the course can in some way provide a substitute for the regular visits in a cohesive group that family visits as a child might have. This has been described as a greenspace turning point (Bell, 2014). The data also showed how the programme also functioned as a greenspace *re*-turning point for those who had become disconnected due to adult busyness or mental health issues.

Through the NBI, participants gained an opportunity for repeated exposure or re-exposure to nature over the course of the programme. Narratives from the focus groups showed how it was experienced as a kind of 'balm' (the sensory experience, the positive impact on mood, feelings of escape/a break), within the safe space of the group and gave in depth insight into how their whole attitudes to nature and woods changed, to the extent that it impacted on their very identities (feeling more 'woodsy', 'outdoorsy', 'like Bear Grylls'). Crucially, this perception of the 'balm' like qualities of nature was maintained, as were diminished views of barriers, which had led to more and different use of woodlands (like spending longer there and 'making more of it').

Just as Hitchings (2013) identified in his qualitative study how people had lost touch with the 'very idea' of spending time outdoors, so this study showed that in order to understand the need, a seed must be planted (or re-planted) regarding the wellbeing benefits that woods can offer. As Chapter Five identified, although some were already regular users, for most, this was a need that they either did not know they had or had

forgotten about. The focus group data also showed how the courses were a conduit to people spending time differently in the woods in a way that was not 'cardio' and did not cost money. Chapter Six, in tandem with the trend for increased woods visits, showed how this led to lasting change and the development of new habits and behaviours from which they derived enhanced wellbeing, a route by which natural wellbeing became part of everyday lives.

Social connectedness outside

As mentioned, the increased accessibility to socialising/social support under the '*social connectedness'* theme was a really important part of the programme and supported participants' accessibility to nature. The rising popularity of sociable outdoor activity such as health walks and park runs shows increased awareness of the importance of focussing on social as well as physical factors. In the baseline quantitative study, '*no-one to go with'* was the major reason not to visit woods, which as discussed in Chapter Three, is likely linked to confidence and safety. Indeed, we know that company matters, for example a review of 135 studies showed that "…*people's enjoyment of the outdoors is enhanced when they are spending time with family and friends, and in particular with partners*"(What Works Wellbeing, 2018:4). Although this was given as a major access barrier in the quantitative study, it was not so prevalent in the qualitative data. However, some participants did talk about how having someone to go with would allay their fears about getting lost and how having company would support them when 'having a bad day' in terms of their mental health would be what stopped them. Despite the social connections made on the course and the changes described, '*no-one to go with'* was still the largest barrier reported at T2. However, it also saw the largest decrease and the data clearly shows how the programme works for connecting people socially. This is a good example of where combining methods was very useful, in that the baseline quantitative data showed that relationships (someone to go with) were significant at the outset in relation to feelings about independent engagement with woods. The qualitative data then highlighted how the social connections and the group experience on the NBI were a catalyst for change.

Beneficial outcomes have not been the case in all projects, for example, Ward Thomson *et al*.,'s (2019) study on 'Woods In and Around Towns' reviewed the effects of various initiatives in deprived Scottish communities. Whilst individuals who visited found them restorative, mental health at community level did not improve. The study concluded that whilst nature can help support mental health, it cannot take away structural challenges like money worries. Whilst acknowledging this important point, it would seem that a more structured programme such as those in this study with a stronger sense of group can perhaps stimulate benefits that are less easily realised on a less cohesive programme. Reflecting on what worked, when O'Brien (2018) did repeat visits to Westonbirt Arboretum with those with mental health, addiction, autism and behavioural problems she found that the intensive and immersive nature of programmes with small numbers of participants could

support an emotional affinity with nature. The study highlighted the importance of inclusive and supportive programmes, especially for vulnerable participants who have been shown to be less likely to engage with nature than the wider population.

Implications for woodland access

The potential of NBIs to connect or re-connect people with nature is really important. 20% of the population are not accessing greenspace and people who experience nature regularly are the exception as opposed to the norm (Cox *et al.,* 2017). As discussed in Chapter Two, greenspace can moderate health inequalities (De Vries *et al*., 2003; Mitchell and Popham, 2008; Wheeler *et al*., 2015). The learnings from this study show how an NBI can support sustained change in relation to woodland access. Given that the value of structured activities has been evidenced through this and previous studies (AWE study; O'Brien and Morris, 2014), and the insight that this study gives into the overriding importance of company as a defining factor in woodland use, those seeking to proactively encourage access to the natural environment particularly to those beyond their usual audiences may want to consider the role that similar provision could play. With this in mind such projects offer a tried and tested pathway for conservation organisations and land managers to partner with health and social care agencies in order to successfully attract and support different sectors of society.

7.5 Maintenance of changes

To our knowledge, this is the first time quantitative and qualitative methods have been combined in a single study on maintained change in an NBI. As identified in the literature review, the most commonly occurring critique of the field is the lack of long term research into the sustainability of effects over time, (Hartig *et al*., 2014; Thompson-Coon *et al*., 2011; Bowler *et al.,* 2010; Kamoika *et al*., 2012). The gap applies to broader nature and wellbeing research, as well as to NBIs and to structured interventions aimed at widening access. This study has been able to make a useful contribution by finding out more about what happens next. There were obvious synergies between the quantitative and the qualitative data sets whereby the quantitative data (Chapter Four) demonstrated what benefits were sustained, showing that gains on all measures stabilised with no significant increases or decreases (except woods visits where, as discussed above, there was a trend for increase). This is an important finding showing that the significant positive gains at T2 on all measures had held. The qualitative data at follow up tied in with this (Chapter Six) and provided a unique insight into the factors at play here and revealing an upward trajectory in many aspects of wellbeing in the narratives of most participants.

Role of self-efficacy

As Chapter Four showed, the upward trajectory of the group mean for self-efficacy following the end of course significant positive gain, meant that whist it had been lower than the population norm at baseline, it actually

exceeded it by follow up. Analysis of the quantitative data was subsequently able to identify this construct as a particularly important predictor of maintained change in MWB. This was strongly backed up by changes reported in the focus group data, particularly the augmentation of feelings of 'can do' and an enhanced sense of capability based on what had been achieved on the course tie in directly with positive movement in the numerical scale for this construct. Self-efficacy is a central part of Socio-Cognitive theory, one of the assumptions of which is a move towards self-regulating behaviour (Stajkovic and Luthens, 2002) and data in Chapter Six showed many examples of this as participants described embedded lifestyle changes such as newly using the bus reglularly, daily walks or going places alone.

Higher levels of self-efficacy have been associated with lower levels of negative behaviours such as sedentariness (Szczuka *et al*., 2020) and Chapter Six discussed how important self-efficacy is in the HAPA model for the maintenance of new behaviours (Schwarzer, 2008). These feelings of self-efficacy are paramount as if a person thinks they can do something they are more likely to persevere, embedding lifestyle changes such as newly socialising and exercising so that they become habitual. In Chapter Two, the malleable quality of self-efficacy was highlighted (Strecher *et al.,* 1986). The combination of the quantitative and qualitative data shows the influential role that AW has had in manipulating it in a positive direction which had clearly affected health and wellbeing behaviours. This comes back to Huppert's (2008) definition of psychological wellbeing at the outset, which considers the importance of lives going well but adds the importance of effective functioning at times of challenge. Links to the Theory of Stress and Coping (Lazarus and Folkman, 1984) were identified in Chapters Five and Six, where the way that participants' resources to cope with the demands in their lives has been augmented by the programme.

Enduring behavioural changes

As Corden and Millar (2007:531) state, *'analysing change over time is the specific contribution of longitudinal methodology'*. Here, in tandem with numerical evidence of enduring change, the longitudinal qualitative data developed and extended our understandings of concepts such as perspective shifts and barriers in relation to wellbeing and woodland access attitudes and behaviours. As Chapter Four identified, for those with mental health conditions in particular, there was a trend for increased days of exercise at follow up, (although other groupings decreased) which is a positive outcome given how important exercise is for depression and a range of physical health conditions. A systematic review of 38 studies showed that even 10 minutes of physical activity often appears sufficient to achieve gains in mood (Chan *et al*., 2017). This also applies to knowledge gained on increased woodland visits, meaning that even short visits can be beneficial. What shone through from our qualitative findings was the enjoyment of being outside, particularly for those with mental health challenges. In combination with multiple narratives reminiscing about the programme in Chapter Six, the high mean score attached to how important AW was to them indicates that participants enjoyed the

programme. Clearly, enjoyment matters and could be what sustained those with mental health challenges to increase their activity levels, making a particular contribution to longer term behavioural changes. As Fraser *et al*., (2019) found, enjoyment is a key motivational driver for green exercise.

As mentioned in Chapter Four, one study which subsequently carried out follow up research was Forest Research's 'Active Forest' programme on physical activity (O'Brien and Forster 2017). They found an accelerating upward trend through time for the sporting activity of less active individuals. Factors reported to enhance the experience of exercise outdoors which echoed those of this study included the beauty, scenery and wildlife, sensory and seasonal experiences, and a sense of freedom and getting away from everyday life. Although in this study, those with mental health challenges did not have particularly low physical activity levels at the outset, the findings are consistent with systematic review outcomes which have found exercise outdoors to be particularly beneficial for mental wellbeing (Bowler *et al*., 2010; Thompson-Coon *et al*., 2011).

The interesting results showing maintenance of the behavioural changes necessary for increased wellbeing mirrored a sense of a continued 'upward' wellbeing trajectory in the qualitative data. Firstly, at the T2 focus group (Chapter Five), data under the '*perspective shifts'* theme showed how participants had begun to think differently about themselves and begun to make changes in their wider lives, as detailed under the '*lifestyle changes'*, '*social processes'* and '*accessibility*' themes. Chapter Six then gave in depth understanding of the maintenance of changes, demonstrating that the beneficial wider perspective gained over the course had held, as had the positive behaviour changes. It showed how for most participants, a range of changes were reported to have become embedded.

The central role of the social aspect and how it acted as a catalyst to both extending social networks and deepening friendships was very apparent (Chapters Five and Six). It was evident from this data that social connections were a key driver for maintained change and data pointed to an increase in social connections alongside the development of supportive relationships which both increased participants' social capital. In relation to these enduring changes in social behaviours, Chapter Six showed how the early gains in social connectedness had been a strong foothold on which to build. It was clear that the natural environment provided so much more than just a 'bumping place' (Bagnall et *al*., 2017) or a place outside our individual homes for connection (Kuo *et al*., 1998) and that the feelings of relaxation engendered by being there made that very connection possible. The data, as discussed, showed that beyond the programme, nature was valued as a space for socialising in a different way, supportive of a better quality of social connection, for example, being outside in company and not interacting. As suggested in the conclusion to Chapter Six, in order for conservation organisations to successfully increase access to a wider demographic, greater efforts are needed to provide social opportunities in nature, particularly ones which may enhance feelings of relaxation and bonding.

Implications for maintenance of change

What is targeted in an intervention in order to foster maintained change might be different to what is targeted for more immediate change. As self-efficacy has been identified as the best predictor of maintained change in wellbeing, a recommendation is that NBIs could target this modifiable factor in their programmes. Interventions to promote this construct would be very different (i.e. focussing on confidence and skills) to those promoting esteem, which would focus on sense of self. Whilst there is already an emphasis on developing skills (nature ID, woodland crafts, cooking for example), the benefit of further developing independent capabilities *where possible* was outlined in Chapter Six, for example, supporting participants to lead a walk or a section of a walk or getting involved in set up and set down, taking responsibility for erecting the tarpaulin, gathering tools or fire lighting. As evidenced, many groups do this very well, with some using former participants as volunteers for example. In the description of the group who had taken the woodland skills back to their recovery community (Chapter Six), or the group who had set themselves up as the 'fox clan' conservation group following the course end(Chapter Four), we see how successful AW can be as a springboard to the formation of new, self-sustaining groups.

Psychologist Tuckman (1965) described stages of group development (forming, storming, norming, performing, later adding adjourning). New groups of course need to be more structured at the beginning and then for staff to step back (an observation from my field notes was that forest schools trained staff did this promotion of independence noticeably more). This stepping back is not possible with all groups, for example not with higher needs groups or where attendance is sporadic with new members constantly joining. At some of the follow up sessions, there was a real sense of groups 'performing', as described in 4b, the sense of participants owning the space and being very empowered had a different feel to groups at the outset. However, recognising the diversity of capability within groups is crucial, supporting and promoting independence where possible, providing a 'forming' stage for groups to feel safe and that some groups may not have the capacity to reach a 'performing' stage as an independent group.

In Chapter Six, the importance of relapse prevention strategies for maintaining newly adopted behaviour changes was discussed as theorised by Schwarzer (2008). Here, the importance of follow up activities to support maintenance was highlighted. The fact that the follow up sessions arranged for both the quantitative and qualitative focus groups were widely appreciated was mentioned which perhaps could be borne in mind for future planning and funding bids. From a practical perspective however, such sessions could also identify when more support or bridging is needed. Here, there is an opportunity for the follow up groups to play a role in the cementing of friendships, recognising the value of the social processes that take place on the programme, and given the prominence of wanting '*someone to go with'* as a barrier to independent woodland

access. What happens next in people's lives is an unknown and indeed, it would be interesting from a research perspective to find this out.

7.6 Critique

This study on multiple woodland activity programmes across Wales gave definitive answers to the research questions, that is, establishing how an NBI can impact both wellbeing and woodland use longer term. On a practical level, collecting enough follow up data from participants, particularly those who might have more chaotic lifestyles related to their health or social circumstances, was extremely challenging and one very real reason for the large gap in the evidence base for longitudinal research. Specific follow up sessions that offered an activity in tandem with the data collection were helpful in attaining this data. As mentioned (Chapter Six), anecdotal evidence tells us that these sessions had therapeutic value and were appreciated by participants as an opportunity to reconnect, which highlights how ongoing support may help to maintain and embed change in people's lifestyles. Of course, there is a potential positivity bias of those who come back for the T3 sessions, and for those who elected to participate in the focus groups. Nonetheless, all participants were invited back whether they wanted to participate in the group or not and those taking part were encouraged to answer and speak honestly.

Whilst the data gives good insight into longer term change at three months, it would be interesting to see how people are over a longer period, for example in 6 – 12 months. Actif Woods are in a relatively unique position in being a longer-term programme as many similar projects are much shorter term with funding and the associated activities and networks ending after a few years. Bearing in mind the resource challenges and difficulties of maintaining a sample after programme completion, further longitudinal research could include repeated measures (e.g. online focus groups) at set intervals (e.g. two further three month time points with a sub-set of existing focus group participants) to ascertain longer term direction of change and barriers and enablers to maintaining wellbeing and visiting behaviour. However all data collection is necessarily a moment in time and the study reported here was constrained by resource and time by being part of a PhD programme. At organisational level, AW's perspective is that the longer-term follow up data from the study provided them with much needed information on how their services might impact people's health, wellbeing and contact with nature/woodlands longer term. This approach is often hard to achieve within an organisation with time and other constraints. Their ongoing monitoring involves a combination of pre-programme and post-programme evaluation forms and case studies to measure and demonstrate the impact of their programmes on physical health (using the short international physical activity questionnaire or IPAQ), mental wellbeing (using the Long Warwick Edinburgh Mental Wellbeing Scale or WEMWBS), knowledge and skills changes and woodland usage.

Some changes may be or were reported to be attributable to the interventions, however as for all research, external influences cannot be excluded, for example many participants take part in activities alongside AW or live in supported schemes. Within the groups there was considerable variation (e.g. self-referral, addiction recovery, mental health needs) and programmes varied and had many contributing factors including the programme structure, the social aspect and nature. Naturally, weather varied with field notes reporting everything from 'Hot, gorgeous day' to 'Storm Callum!' and this affected attendance of some sessions and can affect mood in different ways. Nonetheless, as Bragg and Atkins (2016) acknowledged in their review of NBIs for mental health, despite the heterogeneity of provision, all had similar activities and a similar ethos. Whilst there was no control group, a strength is that this study was with people who had a range of very real life challenges. Their own baseline was the control and their self-report scores reflected their own subjective evaluation of their lives at each time point. This points to the strength of using textual data alongside numerical scales whereby participants explain their experiences and meanings in their own words. Indeed, in the qualitative results there were numerous examples of benefits directly attributed to AW.

According to Grey *et al.,* (2017:904) *"A more rigid quantitative approach can lead to important issues being over-looked due to them not being considered in the initial research catalogue".* This is why mixed methods are so important as there is always a risk that something crucial is missed/downplayed or reified/amplified with the pre-set scales and imposed measures of quantitative studies. An example of this is how our questionnaire highlighted the importance of company as a barrier for not going to the woods, which is not in the POF survey. Likewise, our quantitative study did not pick up the importance of group and nature in the way that the focus groups did. Hence, a parallel qualitative approach can present what is salient for participants that may have been missed from a questionnaire and leaves room for the emergence of unforeseen changes or influencing factors. Neither method dominated and both were of equal importance. As outlined by Shorten and Smith (2017:75), a combined approach can *"provide opportunities for participants to have a strong voice and share their experiences across the research process"* providing diverse perspectives. The quantitative work was carried out at all three time points whilst the qualitative work was conducted at course end point and follow up only. Whilst it would have been interesting to have gathered data on participants' perspectives on how their lives were at the course beginning, on reflection this study design was appropriate to the aims of the research. That is, the quantitative work gave a good indication of baseline wellbeing to allow change to be ascertained numerically, whereas the aim of the qualitative study was to explore change in participants' own words. How participants' lives were prior to the course was frequently reflected on by them in the focus groups.

By using different methodological approaches, we were able to look at wellbeing from several angles and perspectives. Reflecting on how health and wellbeing are defined, Bell *et al*., (2015) remind us of their

dynamic nature, how different it is for different individuals and how it changes over time for them - a challenge for research and standardised measures. Thus, '*in-depth narrative accounts'* can give *'nuanced insights'* which reflect the '*personal salience of different settings'* (Bell *et al.,* 2015). Indeed the focus groups were successful at capturing in depth data about the impacts of the course on daily lives and gave good data across the two time points, whereby participants observed changes that they saw in themselves, sometimes through the drawings and sometimes observing changes in each other. They gave a rich picture of what was behind the increase in the MWB measure - the '*perspective shifts'*, the '*lifestyle changes'* and the '*social processes'* and the new or renewed *'accessibility'* to the wellbeing benefits of nature. Taking both studies together, they helped us to meet identified gaps in the literature for independent, robust and longer term research that furthers understanding on how NBIs can support wellbeing and woodland use.

Our study combined approaches from two disciplines, bringing together psychological perspectives on wellbeing and behaviour change with geographic perspectives on human-nature relations and place-attachment. Thus, the focus on the 'micro' captured individual change whilst also capturing the 'macro' social and environmental context. As anticipated, social geography's emphasis on qualitative methods was particularly useful in understanding the role that nature played in supporting the wellbeing benefits experienced. The additionality or unique contribution of this was very apparent in these data, such as how connectedness to nature worked as part of individuals' sense of self and identity. Overall, the study gave an opportunity to compare the 'kind' of experience we learn about when using both quantitative and qualitative measures, and how, as Cresswell and Clark (2017) say, multiple methods can help to address a research problem, offering multiple ways of 'knowing' (Cresswell, 2016). Furthermore, working in disciplines outside our own is key to moving forward, bringing together health and environment sectors to harness the potential of the natural environment for wellbeing, including to a wider, often otherwise marginalised demographic.

7.7 Conclusion

This study showed wellbeing increase and positive changes to woodland use aligning with longstanding theories about the benefits of time in nature. It is critical to evidence maintained change and this is one of the few studies to show that these benefits were sustained well beyond the NBI. Together, the quantitative and the qualitative studies show how such change occurred and augmented, meeting a gap in the literature that has been noted time and again. In a review of NBIs for improving health and wellbeing which interviewed 19 experts from seven countries (Shanahan *et al.,* 2019), the researchers called for research to identify what the drivers are that influence their effectiveness for enhancing health and wellbeing. The study gave good insight into this, highlighting the primary role of self-efficacy for change maintenance. The qualitative studies provided an understanding of processes of change identifying three key themes, personal (perspective shifts

and lifestyle changes), social (increased connectedness) and environmental (a feeling of being supported by nature, with changed access behaviours and attitudes). The range of benefits identified link to a number of national policy goals for health and wellbeing, such as 'A Healthier Wales' (Welsh Government, 2018), promoting an increase in healthy behaviours for participants through enhanced physical activity and increased social contact to benefit mental wellbeing. From a policy perspective, projects such as AW could contribute towards the achievement of this and other policies such as the Well Being of Future Generations (Wales) Act 2015, 'A More Equal Wales', and 'A Wales of Cohesive Communities' as well as international policies such as the United Nations goal for health and wellbeing.

There is "*often a specific remit for the Forestry Commission or local authority to provide public benefits and encourage access*" on land they manage (O'Brien and Morris, 2014). The data presented here demonstrated how groups under-represented in countryside visitor statistics, such as those on low incomes, gained and maintained access as a result of the programme. Through the process of reviewing the literature for this thesis it became clear that access could be about more than simply visiting or passing through a place and that greater connection with nature had been reported to be equated with greater wellbeing benefits (Lumber *et al.,* 2017). This study supports that evidence with accounts of how for some participants, their conceptualisation of nature completely changed over the course of the programme, opening up and enhancing the wellbeing benefits of the woodland space for them. How the NBI functioned as an adult greenspace turning or re-turning point, introducing people to the 'very idea' of accessing woodlands for health and wellbeing benefits was very apparent. Results demonstrated that an NBI can foster a deeper connection with woodlands, showing that woods were valued more following the programme, and that the way woods were used changed, enhancing their mental wellbeing benefits. As land managers like the National Trust are experimenting with nature connection initiatives and woodland managers like NRW and the Forestry Commission look to further develop their holdings as spaces for wellbeing, the role that projects like AW can play is clear.

The risks of making generically positive assumptions about how people experience nature was outlined in the literature review (Dickinson, 2012; Munoz, 2009) and studies on 'sense of place' rightly stress that benefits are relational and cannot be assumed. What this work contributes is insight into how a structured and supportive programme can offer up the natural environment to those who might feel alienated, disconnected or have simply not have considered the possibility of spending time there. How people interpret and engage with places is key to whether they are experienced as therapeutic or not. Contributing to literature on therapeutic landscapes, how NBIs can maximise the opportunity for an encounter with the woodland landscape to be therapeutic (rather than negative in some way e.g. frightening, threatening or disorientating) is revealed, providing narrative accounts of how a supported experience in nature can open this pathway to

wellbeing for those whose previous associations may not have been positive ones. The thesis shows in depth the processes that can occur so that wellbeing benefits are realised and the opportunity is at least presented, moderating inequalities of access. Bell *et al.,* (2014) highlight the complex transactions that occur between a person and a landscape and in the literature review, socio-geographic theories on this were explored, particularly relational connections between wellbeing and the place where it is generated. Building on such research, this thesis shows is how an NBI can support people's sense of place to shift, opening up or maximising the therapeutic benefits of woodscapes in particular. That is, their emotional attachment to woods is potentially transformed and their values and beliefs about them (place identity) potentially shifted. This is not least due to the social bonding that takes place in that setting, the role of group care and social processes having been highlighted in the qualitative data. In conclusion, findings align with widely acknowledged social geography theory on therapeutic landscapes but highlight the role that NBIs can play in broadening access to both the landscapes and their therapeutic potential. Linking this to psychological theory, particularly the Theory of Stress and Coping, the study shows how connecting with nature can enhance coping resources, bolstering psychological constructs of self-esteem of feelings of self-efficacy.

The World Health Organisation have acknowledged that very few public health interventions can provide the range of benefits afforded by greenspace (WHO, 2017[b]). Projects such as AW clearly act as a bridge to increased and self-sustaining access which can have a profound effect on the health and wellbeing of some of the most vulnerable members of society who stand to benefit disproportionately. Whilst attention on NBIs has gathered pace (Shanahan *et al*., 2019; Bloomfield, 2017) and their role in improving health and wellbeing is increasingly well established, there remains a lack of mainstreaming and they are far from secure in terms of funding and sustainable support. This has implications for the running of such programmes, making it difficult for them to plan ahead and can have an impact on staff turnover. As social prescribing becomes more embedded in the UK, connecting with provision should be an increasingly important route for such projects to recruit those most in need of initiatives like this. This is particularly the case given that this research on long term impacts shows that NBIs work beyond the life of programmes. Whilst celebrating the gains and amidst mounting evidence of the wellbeing benefits of the natural environment, structural change is needed to mainstream NBIs to really capitalise on this. It is vital to sustainably fund projects such as AW to embed the role that they can play in delivering social care, increasing the fairness of access to the benefits of the natural environment and contributing to health and happy lives of participants. Funding through health boards for example, would remove the need to pursue repeat rounds of short-term funding for AW and other NBIs to be able to deliver their service. This would enable long term community engagement that provides therapeutic and preventative care for people whilst also caring for the woodland environment.

7.8 Recommendations

A vital part of any study is the recommendations, their dissemination and hopefully their implementation. Coed Lleol (Small Woods Wales) have stated that the research has been invaluable to their conversations about what constitutes and defines wellbeing and their future evaluative approaches (for example they are now measuring change in woodland usage). As well as providing essential knowledge and understanding of the longer-term impacts of their programme, it provided the evidence base for a Social Return of Investment calculation (Hartfiel *et al.,* in preparation). Dissemination and dialogue with Coed Lleol, the Woodland Trust and other stakeholders (cross sector academic and non-academic) is ongoing through reports, research papers, presentations and meetings. Recommendations from each chapter and from sections of the discussion chapter are compiled here:

Policy

- Sustainable funding is required to increase the use, mainstreaming and embedding of NBIs, given that the research builds on evidence of their efficacy for wellbeing, increased access to the natural environment from under-represented groups, and recognising the role they can play with behaviour change for a range of policy goals e.g. physical inactivity, social isolation
- Consider whether a 'dose' approach (e.g. a dose of nature a day improves wellbeing) could support nature becoming a guideline like, e.g. like '5 a day' fruit and veg

Practice (for AW/NBIs)

- Recognise that providing structure and routine (e.g. through weekly provision) is very important for breaking old and damaging habits like formerly sedentary and insular lifestyles, and replacing with new, healthier habits
- The opportunity to be picked up by provided transport was clearly important in addressing barriers related to anxiety, depression and social isolation and reaching those perhaps most in need of an intervention. It is advised that the importance of its provision is recognised and financed by funders and planned for and built in by projects
- Raise the profile and promote the role NBIs can play for instigation and maintenance of behaviour changes (and nature connection)
- Where possible, consider incorporating the promotion of independence as a flexible goal to strategies, bearing in mind that some very vulnerable people take part for whom leaving the house is a major step
- Encourage participants to be proactive in sessions – setting up the site, lighting the fire, cooking etc to develop self-efficacy for upskilling/learning of transferable skills/sustainable change

- Build in activities to develop self-efficacy for independent access (not a current goal) to the natural environment. This could include activities such as discussing transport options to sites, looking at maps/interpretation of the local area and discussing routes with either map reading, or encouraging people to lead short walks or sections of walks to build confidence
- Consider two streams of provision/support, where former participants can come back as volunteers and offer peer support to more vulnerable participants
- A buddy system at AW is now in place to support and facilitate engagement which is recommended for other projects. Ensuring it is set up to maximise the opportunity for peer support and encouragement when a programme finishes is key to participants maintaining hard won gains
- Noting the therapeutic value follow up activity can have, build monthly or three monthly follow up sessions for when courses end into funding bids and planning. This is in recognition of how these can function as a facilitated and reflective space for a former group – to crystallise gains so that they are not lost; to intercept anyone that is struggling; to cement social connections
- Continue to offer/fully integrate short mindfulness activities (training existing staff) as well as whole courses such as the Mindfulness in the Woods programme (using trained teachers) recognising the value of 'being' time in the woods as well as 'doing' time
- Recognising the success of AW for encouraging hard to reach groups to access woodlands, identify other under-represented groups (e.g. BAME groups) to extend reach

Practice for conservation organisations/land managers

- An important finding was that many people had lost touch with the 'very idea' of spending time outdoors. This study showed that in order for this to change a seed must be planted (or re-planted) regarding the wellbeing benefits that woods can offer. The role for AW type provision here is clear (i.e. working in partnership with health and social care groups to offer a regular and supported programme where a sense of group can develop)
- Such provision is also an excellent and proven route to increase access from under-represented groups both to tackle lack of company as a barrier to accessing the natural environment and to promote future unsupported access and improve wellbeing
- In order to facilitate such provision, permission to use spaces within woodlands is needed. Set up includes a fire pit or bowl (important as a focal point for group cohesion and as an external focus for those who are socially anxious in groups, as well as for upskilling in cooking low budget nutritious meals). A basic shelter to meet and start sessions can be useful or permission to erect a tarpaulin. A circle of logs for seating reduces the need to carry a lot of equipment to the site

- Recognise the value of 'being' time as well as 'doing' time in nature for mental wellbeing when developing activity programmes or engagement events (e.g. mindfulness, forest bathing). This can also take the form of self-guided sensory trails or suggestions for a site
- Recognise the values of quieter time in nature for mental wellbeing from an infrastructure perspective. Provision of or permission to use a separate space away from popular footpaths or trails would support this. Basic seating and shelter so that led activities can still go ahead in wet weather would be an excellent addition

Research

- Prepare report to feedback findings to both participants and stake-holders
- Use ongoing monitoring data gathered to further investigate optimum course length (AW)
- Ascertain the distance people travel to programmes to give an indication of how likely people are to re-visit the wood where they take place or visit somewhere nearer to where they live (which may or may not be as pleasant)
- Monitor and/or further investigate reasons for programme drop out. Who do NBIs not work for and why? Are there any barriers that can be easily addressed?
- Consider the need to build in the collection of follow up data to routine monitoring of NBIs, ideally using mixed methods (e.g. tie to three month follow up sessions, which have therapeutic benefit)
- Monitor longer term outcomes of similar projects
- The addition of 'no-one to go with' may be a worthwhile addition to future POFS surveys.
- Collaborations with stakeholders to optimise research impact

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APPENDICES

Appendix 1.1: Sample programme 1

Actif Woods Wales
Coed Actif Cymru

Woodland Wellbeing Programme

Fridays, 1.30pm – 4pm

Please wear warm clothes. We will be eating healthy food together each week. 12 week programme. Transport organised by Tai Ceredigion.

Sessions in Aberystwyth Area:

- 8th June - Wildlife Watching at **Ynyshir Bird Reserve**
- 22nd June—Cordials, Teas and Balms at **Hafod Estate**
- 6th July—Whittling and Art at **Nant yr Arian**
- 20th July—Foraging and Cooking at **Nant yr Arian**
- 3rd August—Natural Dyeing—**location tbc**
- 17th August—Arts and Crafts at **Ynyslas Beach**
- 7th September—Felting at **Ynyshir Bird Reserve**
- 21st September—Cordage and Weaving at **Nant yr Arian**

Sessions in Aberaeron:

- 15th June—Foraging and Plant ID
- 27th July—Natural Dyeing at **Cardigan Wildlife Centre**
- 10th August—Fire Lighting
- 28th Sept—CELEBRATION EVENT

actifwoodsaber@smallwoods.org.uk/ 01654 700061 Ext.25 @actifwoodsaberystwyth

Appendix 1.1: Sample programme 2

Actif Woods Wales
Coed Actif Cymru

Woodland Activity Programme

Improving physical, mental and social well-being through the use of woodlands.
Offering woodland based well-being programs, including:

- Green woodworking
- Woodland craft
- Bushcraft / survival skills
- Willow work
- Conservation and woodland management
- The chance to gain an optional OCN accreditation

These activity programmes are open to all people over 24 who are long term unemployed, a carer or have a health condition meaning you can't work. Also to anyone over 54.

All programmes have monitoring and evaluation outcomes measured through our research partners.

Activities are available in Merthyr and 8 other areas of Wales.

Get in touch to find out more about how we can work together.

actifwoodsmerthyr@smallwoods.org.uk **www.coedlleol.org.uk** **@actifwoodsmerthyr**
07765213514

Appendix 1.2: Table to summarise woodland location, type and facilities

Group/ Group type	Woodland
Neath Mind/ *Multi-activity*	Gnoll Estate Country Park, on the edge of Neath, County. Early 18th century landscaped garden. 81 hectares of woodland (1950s conifer plantation, small areas of beech, parkland trees) and open areas. Car park, visitor's centre and café (meeting point for group), woodland and lakeside walks.
Aberystywth Mind *Multi-activity*	Gogerddan Woods, managed by NRW. 3 miles north east of Aberystwyth, Ceredigion. 34 hectares of steep sided, ancient semi-natural woodland, with veteran trees including oak, sweet chestnut and lime. Group have agreement to create and use a secluded area, creating e.g. log seat fire circle, shelter building.
Merthyr Tyd. CPAN[1] *Multi-activity*	Nant Llwynog Park, Bedlinog, Merthyr Tydfil. A 5 hectare Local Nature Reserve on an old colliery site, owned and managed by Merthyr Tydfil County Borough Council. Open Mosaic Habitat of scrubland, grassland, ponds, rivers and hedgerows. No formal facilities. Group have agreement to create and use an area creating by creating log seats and a fire circle.
Merthyr AI[2] 3 *Multi-activity*	Group meet at Dowlais Community Centre, Merthyr Tydfil. Approx 1 – 2 hectares of greenspace (grassed areas), a hall, kitchen and community café and garden run by a charitable trust. Tables are erected outside where activities take place. Walks to nearby woodland.
Swansea AI *Multi-activity* (Picture 1)	Penllergaer Valley Woods, 101 hectares on the outskirts of Swansea. A community owned and managed woodland, formerly privately owned by the Penllergaer Estate. Site is an abandoned picturesque and romantic landscape, designed in the 19th century and slowly being restored. Coniferous woodland, semi-natural broadleaved and parkland trees. River, waterfall and a large lake. Car park and café. Area used by AW is half a mile from car park in semi-natural broadleaved area.
Merthyr Tyd AI 2 *Multi-activity* (Picture 2)	Cyfarthfa Park, on edge of Merthyr Tydfil. 61 hectares of parkland with wooded areas, lake and woodland walks. Group meet at a hut on the edge of the park used by other voluntary groups so have access to a toilet and running water. Log seating area with fire site where a tarp is erected outside hut.
Aberystwyth AI 2 *Multi-activity*	See Aberystwyth Mind
Neath P.T. Skewen, AI *Multi-activity* (Picture 3)	Coed Maesmelin, Skewen, Neath Port Talbot. 16.57 ha of ancient woodland and grassland in an urban landscape. A public bridleway runs through the site. No facilities. Group meet at a nearby community centre and set up a temporary site with a fire bowl and log seats.
Gwynedd 2 Mindfulness (Picture 3)	Plas Tan y Bwlch – a 13 acre garden and woodland at the Snowdonia National Park Environmental Studies Centre. Formal gardens surrounded by semi-natural woodland (oaks, beeches), coniferous species and imported and imported ornamental trees and shrubs and a lake. Parking and way-marked woods. Group used a hut in the gardens as a base.
Bedlinog CPAN *Multi-activity*	Nant Llwynog Park, Bedlinog. A 5 hectare Local Nature Reserve on an old colliery site, owned and managed by Merthyr Tydfil County Borough Council. Open Mosaic

(Picture 4)	Habitat of scrubland, grassland, ponds, rivers and hedgerows. No formal facilities. Group have agreement to create and use an area creating by creating log seats and a fire circle
RCT Treherbert A I Multi-activity	Barry Sidings Country Park, a few miles outside Pontypridd, Rhondda Cynon Taf. 7.52 ha of steep sided scrub woodland, conifer plantation and grassland reclaimed from former industrial land and railways sidings. River and woodland walks. Car park, café and cycle repair shop. Group meet in café, then walk to and create a 'pop up' area with a fire bowl and log seats and use the surrounding area for woodland walks.
Merthyr Tydfil AI 1 *Multi-activity*	See Merthyr Tyd AI 2
Gwynedd NWRC[4] *Multi-activity*	Use several woodlands for conservation work and activities. Main sites are the young Woodland Trust Coed Cadnant Woodland (3.82 ha)on the edge of Caernarfon, Gwynedd, planted as amenity for the local community with a stream running through it (no facilities) and sites along the Lon Las Ogwen cycle track, a former railway along a stream with semi-natural wooded flanks.
Ceredigion AI 1 *Multi-activity*	See Aberystywth Mind
Flintshire *Coppice Products*	Warren Woods, 20 hectares of woodland (coppice with standards, new plantings) privately owned by the Bodfari Woodland Skills Centre, Denbighshire. Permanent Forest School sites, workshops and two timber-frame Centre buildings. Groups use indoor and woodland areas.
Gwynedd Tremadog *Multi-activity* (Picture 5)	Nursery Woods, on the edge of the village of Tremadog, South Gwynedd. 10 hectares of ancient woodland built as a nursery for ship building in the 1920s with a stream running through. Designated pathways, no facilities. Group creates a 'pop up' site, including a fire bowl and log seating, trestle tables for drinks and a canopied toilet sited over a dug hole.
Banwen 2 AI *Multi-activity*	Group meet at the Dove Community Centre, in the former mining village of Banwen, Neath Port Talbot and walk 500m to the woods (semi-natural and scrub leading into large conifer plantation). Group creates a 'pop up' site with a fire bowl, tarpaulin and log seating.
Banwen 1 *Multi-activity*	See Banwen 2
Tai Ceredigion *Multi-activity*	Ynys-Hir RSPB reserve, Powys. A UNESCO Biosphere reserve with SSSI, SAC and RAMSAR status. A mixture of Welsh oak woodland, lowland wet grassland, peat bog, reedbed, freshwater pools and saltmarsh. Visitor's centre and café on site. Group use a secluded area half a mile from this with camping chairs for this older predominantly older person's group.
Gwynedd 1 *Mindfulness*	See Gwynedd 2

[1]CPAN = Communities People and Nature Project, affiliated to AWW; [2]AI = Active Inclusion funded;
[3]CP = Connecting People, affiliated to AWW; [4]NWRC = North Wales Recovery Community

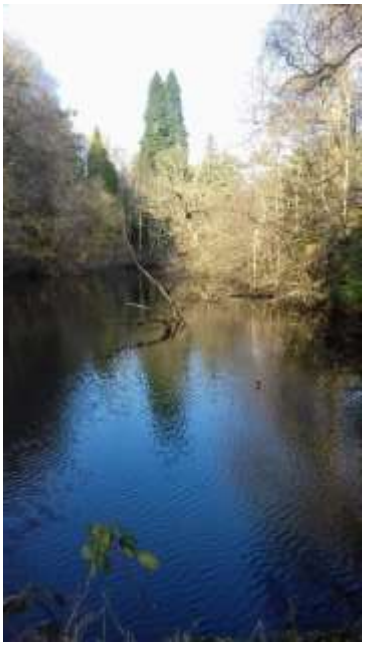
Note: Detail of groups in study in Appendix 3.6

Appendix 1.3: Photographs of woodland sites

Picture 1: Swansea AI

Pic. 2: Merthyr Tydfil AI

Pic 3: Neath P.T. Skewen, AI



Pic 4: Gwynedd mindfulness

Pic. 5: Bedlinog CPAN

Pic 6: Gwynedd Tremadog

PRIFYSGOL BANGOR UNIVERSITY

Appendix 3.1

RESEARCH STUDY: EVALUATING THE IMPACTS OF ACTIF WOODS WALES ON PERSONAL WELLBEING

You are being invited to take part in our study to evaluate the impacts of the Actif Woods Wales 12 week woodland based health and well-being course on personal wellbeing. Before you decide, it is important for you to understand why the study is being done and what it will involve for you. Please read this information sheet and feel free to discuss it with others if you wish. You can ask us anything that isn't clear to you or that you want to know more about. Take your time to decide whether or not you would like to take part.

What is the purpose of the study?
We want to understand more about how the Actif Woods Wales programme affects the wellbeing of people who take part. We also want to know more about how you use woodlands outside of the programme.

Why am I being asked to take part?
You are one of the people using the Actif Woods Wales service.

Do I have to take part?
It is your choice. If you decide to take part, you will be given this information sheet to keep and asked to sign a consent form. You can withdraw at any time and you don't need to give us a reason. If you decide not to take part or to withdraw at a later date, your choice will in no way affect your involvement with Actif Woods Wales.

What will I need to do if I take part?
We will give you a questionnaire to complete at week 1 of the 12 week course. This will take between 10 and 20 minutes. We will be available to answer any questions and will collect the questionnaire from you.

The questionnaire is in 3 parts:

1. Questions about you
2. Questions about your wellbeing
3. Questions about your visiting woodlands

Follow up
We will contact you again at the end of the course and in 3 months time to ask you the same questions to see how you are getting on. We will get in touch with you through Actif Woods Wales. We will ask you for your contact details if this isn't possible so we can contact you directly.

What if I need help to fill out the questionnaire?
We will be available to help with the questionnaire in case you have any difficulties like sight or literacy.

Will my answers be confidential?
Any information you give us will be confidential. Your personal details will be detached from the questionnaire and stored separately from your answers. You will be assigned a unique code for your questionnaire so that your data is not identifiable. The reason we need your personal details is solely so we can contact you for the follow up questionnaires. Any findings reported after the study will be completely anonymous.

What will happen to the results?
We will write a report based on the results for the Woodland Trust and Actif Woods Wales and publish the results in academic journals and at conferences – please tick the box on the consent form if you would like a summary of the report.

Who has developed this study?
This study has been developed by Bangor University researcher Heli Gittins, under the supervision of Professor Val Morrison and Dr Sophie Wynne-Jones. It has been developed in partnership with Actif Woods Wales and The Woodland Trust.

Focus groups and interviews
We are looking for a small number of volunteers to take part in an end of course focus group, and/or a 30 minute interview 3 months after the course to hear more about people's experiences in their own words. These will be recorded by the researcher, but kept confidential and answers will be anonymous in any write ups.

This is completely optional – you can just take part in the questionnaire, or not at all and whatever you decide won't affect your taking part in the study or the 12 week programme as a whole.

Contacts
If you would like any further information about the study, please feel free to contact the researcher, the supervisors or speak to one of the Actif Woods Wales team:

Project researcher:	Heli Gittins	heli.gittins@bangor.ac.uk
Project supervisors:	Prof Val Morrison	v.morrison@bangor.ac.uk
	Dr Sophie Wynne-Jones	s.wynne-jones@bangor.ac.uk

Complaints:
If at any time you have any complaints about the way this research study was carried out please contact the School Manager: Mr Hefin Francis, School Manager, School of Psychology, Bangor University, Bangor, Gwynedd, LL57 2DG h.francis@bangor.ac.uk

Thank you for your time

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Appendix 3.2

PRIFYSGOL BANGOR UNIVERSITY

RESEARCH STUDY: EVALUATING THE IMPACTS OF ACTIF WOODS WALES ON PERSONAL WELLBEING

CONSENT FORM

☐ I have read and understand the information sheet about the study and had the opportunity to ask questions

☐ I understand that taking part in the study is completely voluntary and that I can withdraw at any time without having to provide a reason

☐ I understand that all information I give will be completely confidential

☐ I consent to AWW sharing their data on my attendance

☐ I agree to take part in this study

☐ I agree to be contacted at the end of the course and 3 months time afterwards for follow up questionnaires, even if I'm no longer attending AWW

☐ I would be willing to be contacted for a focus group or an interview at a later date

Please provide your name and preferred method of contact below. This information is stored separately from any data collected:

Name: Contact phone number:

Contact email or address:

Project researcher: Heli Gittins heli.gittins@bangor.ac.uk

Project supervisors: Prof Val Morrison v.morrison@bangor.ac.uk
Dr Sophie Wynne-Jones s.wynne-jones@bangor.ac.uk

Signature of participant:_____ **Date:**_____

Signature of researcher:_____ **Date:**_____

☐ I would like a copy of the Summary Results

Appendix 3.3

ACTIF WOODS WALES QUESTIONNAIRE

Participant name:

Home postcode:

Date completed:

Is someone helping you to fill out this form? YES/NO

If yes, please say who is helping you (e.g. support worker, friend)

……

If yes, please say more about why

…….

☐ I would be willing to be contacted for an interview or a focus group at a later date (optional)

This sheet will be detached and stored separately to your answers to the questionnaire to protect your anonymity

---

For researcher to complete:

Record Number:

Type of AWW Activity:

For researcher to obtain from Actif Woods Wales:

Date participant first attend Actif Woods Wales?

How many times has participant attended Actif Woods Wales

ACTIF WOODS WALES QUESTIONNAIRE

Participant Number:…… (For researcher to complete)

SECTION A

Please circle your answer to the following questions:

1. **Your gender:** Male/Female/Non-binary/Other

2. **Your age:** 18 – 24 25 – 44 45 – 64 65 – 74 75 +

3. **Your first language: …….** **Any second language: …….**

4. **Best description of your ethnic group or background:**
   White British White Other
   Mixed/ Multiple ethnic groups Black/ African/ Caribbean/ Black British
   Asian/ Asian British Arab
   Chinese Other ethnic group

5. **What is the highest level of education you have completed?**
   ☐ Secondary School to 16 years
   ☐ Secondary School to 18/19 years
   ☐ Special Educational Needs School
   ☐ Between secondary level and university (e.g. technical training)
   ☐ University
   ☐ Other, please state: ……

6. Are you currently employed, and if so, what do you do?
   (Job title, full or part-time)?
   …….

7. Are you currently retired? If formerly employed, what was your employment
   (Job title, full or part-time)?
   …….

8. **If any, can you list your main health issues or concerns (e.g. heart disease, dementia, depression)?**

9. **What are you hoping to gain from getting active in the woodlands as part of a group?**

	Strongly agree	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**
Social benefits (e.g. meeting new people, making friends)	1	2	3	4	5
Being in nature (e.g. being outside)	1	2	3	4	5
Physical health benefits (e.g. feeling fitter, losing weight)	1	2	3	4	5
Mental health benefits (e.g. feeling happier, less stressed)	1	2	3	4	5
Education (e.g. learning new things)	1	2	3	4	5
Support (e.g. practical or emotional)	1	2	3	4	5
Other, please specify	1	2	3	4	5

10. **What, if any, other regular and lead activities do you take part in? (e.g. gardening programme, walking group)**

SECTION B

11. **A. On how many days in the past 7 days have you done at least 30 minutes of physical activity? (Only count physical activity that increased your heart and breathing rate, or that made you sweat a bit)**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*

B. How many of the above were Actif Woods Wales Days? ……..

12. **Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the past 2 weeks.**

STATEMENTS	**None of the time**	**Rarely**	**Some of the time**	**Often**	**All of the time**
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 dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5

13. **Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please give a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted.**

Can't be too careful										Most people can be trusted
0	1	2	3	4	5	6	7	8	9	10

14. For the following question, please tick the one box that best describes your answer. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

15. Below is a list of statements dealing with your general feelings about yourself. Please indicate to what extent they are true for you by ticking one box for each question.

STATEMENTS	Not at all true	Hardly True	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
2. If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
3. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
4. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
6. I can solve most problems if I invest the necessary effort.	1	2	3	4
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
8. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
9. If I am in trouble, I can usually think of a solution.	1	2	3	4
10. I can usually handle whatever comes my way.	1	2	3	4

16. **Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.**

	Statement	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
1	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
2	I feel that I have a number of good qualities.	SA	A	D	SD
3	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
4	I am able to do things as well as most other people.	SA	A	D	SD
5	I feel I do not have much to be proud of.	SA	A	D	SD
6	I take a positive attitude towards myself.	SA	A	D	SD
7	On the whole, I am satisfied with myself.	SA	A	D	SD
8	I wish I could have more respect for myself.	SA	A	D	SD
9	I certainly feel useless at times.	SA	A	D	SD
10	At times I think I am no good at all.	SA	A	D	SD

SECTION C

17. **Before you started the AWW programme, approximately how regularly would you visit woods? Please circle:**

Never	Once or twice a year	Three or four times a year	Monthly	Weekly or more

18. **Have any of the reasons listed below ever stopped you from visiting the woods outside a structured programme like Actif Woods Wales? Please tick any that apply, ticking the box to indicate whether it is a major reason or a minor reason:**

REASONS FOR NOT VISITING	MAJOR REASON	MINOR REASON	NOT A REASON
Cost			
Not interested			
Difficulty in moving around			
Health reasons			
Prefer other areas of countryside			
Lack of confidence			
Too busy/Not enough time			
Concerns that woods are not safe			
Don't have a car			
Too far away			
Lack of public transport			
Lack of information			
Lack of facilities			
Woodlands are badly maintained			
No-one to go with			
Bad weather			
Other reasons, please specify			

19. **What are the top 3 factors that would encourage you to go to the woods, outside of a structured programme like Actif Woods Wales?**
    1. …….
    2. ……
    3. ……

At the end of the course and in 3 months time we will ask you a similar set of questions, to see how/if things are changing for you.

If you want to add any comments about these question or the answers you have given, please feel free to do so here:

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Appendix 3.4

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RESEARCH STUDY: EVALUATING THE IMPACT OF ACTIF WOODS WALES ON PERSONAL WELLBEING

Thank you for taking the time to participate in this study

How it helps

This research will help us to understand more about how the Actif Woods Wales programme affects the wellbeing of people who take part. This will help them and similar projects to plan their activities in the future.

It will also help us to know more about how people use woodlands. This will help the Woodland Trust to plan how best to support people to benefit from visiting woods.

Contacts

Please feel free to contact the researcher, the supervisors or speak to one of the Actif Woods Wales team if you have any questions about the study:

Project researcher: Heli Gittins heli.gittins@bangor.ac.uk

Project supervisors: Prof Val Morrison v.morrison@bangor.ac.uk
Dr Sophie Wynne-Jones s.wynne-jones@bangor.ac.uk

Just in case taking part in the study has raised any questions for you about your physical or mental well-being, we would encourage you to speak to your GP or one of the support agencies listed here:

- Mind: 0300 123 3393 (Mon-Fri, 9am-6pm) www.mind.org.uk
  Promotes the views and needs of people with mental health problems

- Samaritans: 116 123 (Free 24-hour helpline) www.samaritans.org.uk
  Confidential support for people experiencing feelings of distress or despair

- NHS choices Mental Health Helplines and other sources of support:
http://www.nhs.uk/Conditions/stress-anxiety-depression/Pages/mental-health-helplines.aspx

Appendix 3.5: Results of normality testing on all measures

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Days of exercise in past 7 days	.123	118	.000	.907	118	.000
TRANSFORMEDWarTOTS	.098	114	.009	.963	114	.003
Social trust Scale 0 to 10	.139	118	.000	.953	118	.000
T1_SF12_NEW	.189	113	.000	.906	113	.000
T1_GSES_CORRECT_TOT	.133	113	.000	.961	113	.002
T1_RSE_TOT	.080	112	.078	.981	112	.109
Frequency of visits to Woods	.226	112	.000	.863	112	.000

a. Lilliefors Significance Correction

Appendix 3.6.a: Table to summarise groups in study

Group/ Group type	Length/ frequency	T1 Baseline	No.	T2 Course End	No.	T3 Follow Up	No.
Neath Mind/ *Multi-activity*	4 or 9 wks/ Weekly	13.11.18	12	29.1.19	5	April 2019	5
Aberystywth Mind *Multi-activity*	7 weeks/ Weekly	19.10.18	7	23.11.18	4	Feb. 2019	3
Merthyr Tyd. CPAN[1] *Multi-activity*	12 weeks/ Weekly	Sept 2018	1	3.12.18	0	March '19	1
Merthyr AI[2] 3 *Multi-activity*	6 weeks/ Weekly	5.9.18	3	10.10.18	3	Feb '19	1
Swansea AI *Multi-activity*	12 weeks Weekly	26.6.18	5	4.9.18	3	Dec. 2018	3
Merthyr Tyd AI 2 *Multi-activity*	12 weeks/ Weekly	19.6.18	6	4.9.18	1	Dec 2018	2
Aberystwyth AI 2 *Multi-activity*	12 weeks/ Fortnightly	8.6.18	4	End Sept	2	Dec 2018	2
Neath P.T. Skewen, AI *Multi-activity*	12 weeks/ Weekly	14.5.18	6	6.8.18	1	Nov. 2018	1
Gwynedd 2 *Mindfulness*	6 wks Weekly	8.5.18	5	26.6.18	4	Sept. 2018	4
Bedlinog CP *Multi-activity*	12 weeks/ Weekly	2.5.18	5	11.7.18	5	Oct. 2019	4
RCT Treherbert A I *Multi-activity*	12 weeks/ Weekly	2.5.18	5	11.7 .18	1	Oct. 2018	1
Merthyr Tydfil AI 1 *Multi-activity*	12 weeks/ Weekly	16.3.18	8	25.5.18	5	Oct. 2018	6
Gwynedd NWRC[4] *Multi-activity*	14 weeks/ Weekly	15.3.18	4	28.6.18	4	Sept. 2018	3
Ceredigion AI 1 *Multi-activity*	12 weeks/ Weekly	26.1.18	5	13.4.18	3	Oct. 2018	2
Flintshire *Coppice Products*	10 weeks/ Weekly	23.1.18	8	27.3.18	8	July 2018	7
Gwynedd Tremadog *Multi-activity*	13 weeks/ Fortnightly	12.1.18	5	15.6.18	4	Sept. 2018	3
Banwen 2 AI *Multi-activity*	13 weeks/ Weekly	29.11.17	3	1.3.18	0	-	0
Banwen 1 *Multi-activity*	12 weeks/ Weekly	28.6.17	10	30.8.17	7	Nov. 2017	5
Tai Ceredigion *Multi-activity*	8 weeks/ Fortnightly	16.6.17	7	13.10.17	6	Oct. 2017	5
Gwynedd 1 *Mindfulness*	6 wks Weekly	9.5.17	11	13.6.17	9	Feb. 2018	5
TOTAL: 20 groups			**120**		**74**		**63**

[1]CPAN = Communities People and Nature Project, affiliated to AWW; [2]AI = Active Inclusion funded;
[3]CP = Connecting People, affiliated to AWW; [4]NWRC = North Wales Recovery Community

Appendix 3.7: Table showing partial correlations between measures, showing zero order correlations

	1	2	3	4	5	6	7
1. SWEMWBS	-						
2. Social trust	.38[a]***	-					
	*.38****						
3. Self-rep. health	.45[b]***	.29[b]**	-				
	*.45****	*.31****					
4. Self-efficacy	.58[a]***	.46[a]***	.57[b]***	-			
	*.58****	*.45****	*.56****				
5. Self esteem	.61[c]***	.39[c]***	.59[d]***	.74[c]***	-		
	*.60****	*.42****	*.59****	*.75****			
6. Phys. activity	.27[b]**	.14[b]	.34[b]***	.22[b]*	.21[d]*	-	
	*.26***	*0.13*	*.33****	*0.20**	*.19**		
7. Woodland use	.07[c]	.23[c]*	.13[d]	.010[c]	.04[c]	.27[d]**	-
	.07	*.27***	*.16*	*.06*	*.09*	*.27***	

Note:

[a]partial correlation controlling for type of health condition

[b]partial correlation controlling for type of health condition and age

[c]partial correlation controlling for type of health condition and education

[d]partial correlation controlling for type of health condition, age and education

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)

Note: r = .10 to .29 = small, r = .30 to .49 = medium, r = .50 to 1.0 = large (Pallant, 2016)

Appendix 3.8: Tables showing t-test and ANOVA results for frequency of woodland visits

8.a: T-test results for effect of gender on frequency of woodland visits at baseline

	Male		Female				
	Mean	**SD**	**Mean**	**SD**	**t**	***df***	***p***
Freq. of woods visits	3.10	1.46	3.36	1.45	-0.95	110	0.343

8.b: ANOVA results for effect of age on woodland use

	18-44		45-64		65+			
	M	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
Freq. of woods visits	3.34	1.36	3.13	1.5	3.29	1.64	0.26 (2,109)	0.775

Table 8.c: ANOVA results for effect of type of health condition on woodland use at baseline

	PH		MH		Both		None			
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**	**F (*df*)**	***p***
Freq. of woods visits	3.22	1.48	3.20	1.47	3.00	1.44	3.60	1.44	0.79 (3,108)	0.503

Appendix 3.9: Chi-square test for independence results on barriers ranked top five

3.9.a. Chi-square test results for gender

Barrier	x^2 *(df)*	*p*	*phi*
No-one to go with	(1, n=112) = .24	0.62	-0.06
Bad weather	(1, n=112) = .44	0.51	-0.08
Too busy	(1, n=111) = .00	1	0.003
Lack confidence	(1, n=112) = .07	0.79	0.044
Health reasons	(1, n=112) = .1.93	0.16	0.15

Note: x^2 values with Yates Continuity Correction
Note: p = asymptotic significance (2-sided), significant at <.05

3.9.b. Chi-square test results for age

Barrier	x^2 *(df)*	*p*	*Cramer's V*
No-one to go with	(2, n=112) = 2.68	0.262	0.155
Bad weather	(2, n=112) = 4.94	0.085^	0.21
Too busy	(2, n=111) = 2.51	0.284	0.151
Lack confidence	(2, n=112) = 4.95	0.084^	0.21
Health reasons	(2, n=112) = 3.91	0.142	0.187

Note: Age categories 18 - 44, 45 - 64 and 65+
Note: p = asymptotic significance (2-sided), significant at <.05

3.9.c. Chi-square test results for type of health condition

Barrier	x^2 *(df)*	*p*	*Cramer's V*
No-one to go with	(3, 112) = 2.181	0.536	0.14
Bad weather	(3, n=112) = .430	0.934	0.062
Too busy	(3, n=112) = .430	0.934	0.062
Lack confidence	(3, n=112) = 8.616	.035*	0.277
Health reasons	(3, n=112) = 14.069	0.003*	0.354

Note: p = asymptotic significance (2-sided), significant at <.05
Note: Health categories = physical health issues, mental health issues, both physical and mental health issues, no health issues

Appendix 4.1: Follow up questionnaire

ACTIF WOODS WALES FOLLOW-UP QUESTIONNAIRE

Participant name:

Date completed:

Is someone helping you to fill out this form? YES/NO

If yes, please say who is helping you (e.g. support worker, friend)

……

If yes, please say more about why

…….

☐ I would be willing to be contacted for an interview or a focus group at a later date (optional)

This sheet will be detached and stored separately to your answers to the questionnaire to protect your anonymity

---

For researcher to complete:

Record Number:

Type of AWW Activity:

For researcher to obtain from Actif Woods Wales:

How many times has participant attended Actif Woods Wales since the baseline questionnaire? .....

ACTIF WOODS WALES FOLLOW UP QUESTIONNAIRE

Participant Number:…… (For researcher to complete)

SECTION A

1. On a scale of 0 to 10, how important has this Actif Woods Wales course been for you? …….

Please say a little more about why

2. What have you gained from getting active in the woodlands as part of a group?

	Strongly agree	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**
Social benefits (e.g. meeting new people, making friends)	1	2	3	4	5
Being in nature (e.g. being outside)	1	2	3	4	5
Physical health benefits (e.g. feeling fitter, losing weight)	1	2	3	4	5
Mental health benefits (e.g. feeling happier, less stressed)	1	2	3	4	5
Education (e.g. learning new things)	1	2	3	4	5
Support (e.g. practical or emotional)	1	2	3	4	5
Other, please specify	1	2	3	4	5

3. Approximately how many times have you attended Actif Woods Wales since the baseline questionnaire?

1-3 4-5 6-10 11+

4. If you are no longer attending Actif Woods Wales activities can you tell us your reasons for this here:

5. What, if any, other regular and led activities do you take part in? (e.g. gardening programme, walking group

SECTION B

6. **A. On how many days in the past 7 days have you done at least 30 minutes of physical activity? (Only count physical activity that increased your heart and breathing rate, or that made you sweat a bit)**

0	*1*	*2*	*3*	*4*	*5*	*6*	*7*

B. How many of the above were Actif Woods Wales Days? ……..

7. **Below are some statements about feelings and thoughts. Please tick the box that best describes your experience of each over the past 2 weeks.**

STATEMENTS	**None of the time**	**Rarely**	**Some of the time**	**Often**	**All of the time**
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 dealing with problems well	1	2	3	4	5
I've been thinking clearly	1	2	3	4	5
I've been feeling close to other people	1	2	3	4	5
I've been able to make up my own mind about things	1	2	3	4	5

8. **Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? Please give a score of 0 to 10, where 0 means you can't be too careful and 10 means that most people can be trusted.**

Can't be too careful										Most people can be trusted
0	1	2	3	4	5	6	7	8	9	10

9. **For the following question, please tick the one box that best describes your answer. In general, would you say your health is:**

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

10. **Below is a list of statements dealing with your general feelings about yourself. Please indicate to what extent they are true for you by ticking one box for each question.**

STATEMENTS	**Not at all true**	**Hardly True**	**Moderately true**	**Exactly true**
11. I can always manage to solve difficult problems if I try hard enough.	1	2	3	4
12. If someone opposes me, I can find the means and ways to get what I want.	1	2	3	4
13. It is easy for me to stick to my aims and accomplish my goals.	1	2	3	4
14. I am confident that I could deal efficiently with unexpected events.	1	2	3	4
15. Thanks to my resourcefulness, I know how to handle unforeseen situations.	1	2	3	4
16. I can solve most problems if I invest the necessary effort.	1	2	3	4
17. I can remain calm when facing difficulties because I can rely on my coping abilities.	1	2	3	4
18. When I am confronted with a problem, I can usually find several solutions.	1	2	3	4
19. If I am in trouble, I can usually think of a solution.	1	2	3	4
20. I can usually handle whatever comes my way.	1	2	3	4

21. Below is a list of statements dealing with your general feelings about yourself. Please indicate how strongly you agree or disagree with each statement.

	Statement	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
1	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
2	I feel that I have a number of good qualities.	SA	A	D	SD
3	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
4	I am able to do things as well as most other people.	SA	A	D	SD
5	I feel I do not have much to be proud of.	SA	A	D	SD
6	I take a positive attitude towards myself.	SA	A	D	SD
7	On the whole, I am satisfied with myself.	SA	A	D	SD
8	I wish I could have more respect for myself.	SA	A	D	SD
9	I certainly feel useless at times.	SA	A	D	SD
10	At times I think I am no good at all.	SA	A	D	SD

SECTION C

22. **Since joining Actif Woods Wales how regularly have you been visiting woods (outside the AWW programme)? Please circle:**

Never	Once or twice a year	Three or four times a year	Monthly	Weekly or more

23. **Have any of the reasons listed below ever stopped you from visiting the woods outside a structured programme like Actif Woods Wales? Please tick any that apply, ticking the box to indicate whether it is a major reason, a minor reason or not a reason:**

REASONS FOR NOT VISITING	MAJOR REASON	MINOR REASON	NOT A REASON
Cost			
Not interested			
Difficulty in moving around			
Health reasons			
Prefer other areas of countryside			
Lack of confidence			
Too busy/Not enough time			
Concerns that woods are not safe			
Don't have a car			
Too far away			
Lack of public transport			
Lack of information			
Lack of facilities			
Woodlands are badly maintained			
No-one to go with			
Bad weather			
Other reasons, please specify			

24. **What are the top 3 factors that would encourage you to go to the woods, outside of a structured programme like Actif Woods Wales?**

1. …….
2. ……
3. ……

If this is the end of course questionnaire, in 3 mths time we will ask you a similar set of questions, to see how/if things are changing for you.

If you want to add any comments about these questions or the answers you have given, please feel free to do so here:

Diolch am eich amser/Thank you for your time

Appendix 4.2: Results of normality testing on all measures at T2

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	***df***	**Sig.**	**Statistic**	***df***	**Sig.**
T2WARTOTTRANSFORMED	0.138	74	0.001	0.945	74	0.003
T2_Social_Trust_Question	0.195	74	0	0.923	74	0
T2_Days_of_exercise	0.122	74	0.008	0.93	74	0.001
T2_SF12_NEW	0.235	74	0	0.894	74	0
T2_GSES_TOT	0.106	73	0.042	0.968	73	0.059
T2_RSE_TOT	0.076	71	.200*	0.982	71	0.401
T2__Woods_visits	0.262	70	0	0.759	70	0

* This is a lower bound of the true significance.

a Lilliefors Significance Correction

Appendix 4.3: Chi squared results for attrition analysis

Table 4.3.a: Chi squared results comparing baseline to end of study for gender and age

	Male %	**Female %**	**18-44**	**45-64**	**65+**
Continued	59.3	63.6	57.1	62.7	70.0
Dropped out	40.7	36.4	42.9	37.3	30.0

(x^2 (1, *n* = 120) = .091, *p* = .76, phi = .-.045) (x^2 (2, *n* = 120) = 1.037, *p* = .60, Cramer's V = .093)

Table 4.3.b: Chi squared results comparing baseline to in at all three time points for gender and age

	Male %	**Female %**	**18-44 %**	**45-64 %**	**65+ %**
Continued	44.4	50.0	44.9	47.1	55.0
Dropped out	55.6	50.0	55.1	52.9	45.0

(x^2 (1, *n* = 120) = .179, *p* = .67, phi = -.055) (x^2 (2, *n* = 120) = .588, *p* = .75, *Cramer's* V = .070)

Table 4.3.c: Chi squared results comparing baseline to end of course for education and type of health condition

	SS to 16 %	**Education to 18 %**	**Uni or higher %**	**Physical Health %**	**Mental Health %**	**Both %**	**None disclosed %**
Continued	53.8	66.7	74.4	67.9	56.3	51.5	74.1
Dropped out	46.2	33.3	25.6	32.1	43.8	48.5	25.9

(x^2 (2, *n* = 108) = 3.660, *p* = .50, Cramer's V = .113) (x^2 (2, *n* = 120) = 4.048, *p* = .26, Cramer's V = .184)

Table 4.3.d: Chi squared results comparing baseline to in at all three time points for education and type of health condition

	SS to 16 %	**Education to 18 %**	**Uni or higher %**	**Physical Health %**	**Mental Health %**	**Both %**	**None disclosed %**
Continued	43.6	53.3	56.4	57.1	46.9	39.4	48.1
Dropped out	56.4	46.7	43.6	42.9	53.1	60.6	51.9

(x^2 (2, *n* = 108) = 1.379, *p* = .16, Cramer's V = .184) (x^2 (2, *n* = 120) = 1.923, *p* = .59, Cramer's V = .127)

Appendix 4.4: T2 minus T1 Change scores for all variables (with outliers in)

	n	Min.	Max.	Mean	SD
SWEMWBS	70	-6.87	15.75	1.62	3.92
Social trust	72	-8.00	6.00	0.81	2.53
Self-rep. health	70	-2.00	2.00	0.31	0.69
Self-efficacy	70	-10.00	16.00	1.28	4.21
Self-esteem	67	-13.00	16.00	1.62	4.44
Phys. activity	73	-6.00	6.00	0.64	1.98
Woods visits	*65*	*-4.00*	*4.00*	*0.49*	*1.31*
Woods visits2	*48*	*-4.00*	*4.00*	*.35*	*1.33*

Appendix 4.5: Independent sample t-test results comparing early change scores between mindfulness and mixed courses

		Mindfulness		**Mixed**		
	Scale	***Mean***	***SD***	***Mean***	***SD***	***p***
SWEMWBS	7 – 35	2.79	2.19	1.17	3.71	.15
Social trust	0 – 10	0.92	1.98	0.78	2.65	.86
Self-rep. health	1 – 5	0.38	0.51	0.30	0.73	.69
Self-efficacy	4 – 40	2.19	3.56	0.95	4.00	.31
Self esteem	0 – 30	2.77	3.37	1.38	4.48	.30
Phys. activity	0-7	1.08	1.80	0.55	2.02	.39
Woodland use2	1 – 5	0.50	1.00	0.47	1.02	.97

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig. (2-tailed)

Appendix 4.6: T-test results for effect of gender on early change (T1 to T2)

		Male		**Female**				
	Scale	***Mean***	SD	***Mean***	SD	***t***	***(df)***	***p***
SWEMWBS	7 – 35	1.14	3.91	1.68	3.25	-0.63	68	0.53
Social trust	0 – 10	0.93	2.40	0.93	2.40	-0.47	70	0.64
Self-rep. health	1 – 5	0.17	0.80	0.41	0.59	-1.45	68	0.15
Self-efficacy	4 – 40	1.20	3.98	1.16	3.94	0.04	68	0.97
Self-esteem	0 – 30	0.84	4.15	2.31	4.35	-1.40	65	0.16
Phys. activity	0-7	0.81	2.04	0.51	1.95	0.64	71	0.52
Woodland use	1 – 5	0.55	0.67	0.42	1.24	0.41	46	0.68

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Appendix 4.7: Effect of age on early change (T1 to T2)

		18-44		45-64		65+			
	Scale	M	SD	M	SD	M	SD	F (*df*)	*p*
SWEMWBS	7 – 35	1.48	3.12	1.16	2.65	2.11	5.96	.30 (69)	[a].830/.823
Social trust	0 – 10	0.63	1.98	1.16	3.07	0.36	2.17	0.59 (71)	0.56
Self-rep. health	1 – 5	0.33	0.78	0.32	0.60	0.25	0.75	0.06 (69)	0.94
Self-efficacy	4 – 40	1.27	2.96	1.10	4.17	1.16	5.42	0.01 (69)	0.99
Self-esteem	0 – 30	2.19	4.29	1.17	3.98	1.58	5.20	0.38 (66)	0.68
Phys. activity	0 – 7	0.46	1.91	1.00	2.05	0.15	1.95	1.03 (72)	0.36
Woodland use	1 – 5	0.50	0.52	0.56	1.26	0.14	0.90	0.46 (47)	[a].598/.562

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Note: [a]Where Levene's test for homogeneity of variances is <.05 (i.e. assumption of homogeneity of variance has been violated), *p* values shown are from Welch/Brown-Forsythe test)

Note: Group sizes fairly uneven, with a smaller older age group.

Appendix 4.8: Effect of education on early change (T1 to T2)

	School to 16		Education to 18		Uni or higher			
	M	SD	M	SD	M	SD	F (df)	p
SWEMWBS	0.85	3.99	1.60	3.28	1.83	3.50	.468 (67)	0.628
Social trust	0.70	2.98	0.75	2.49	1.04	2.17	.130 (69)	0.878
Self-rep. health	0.50	0.61	0.05	0.71	0.34	0.72	2.148 (67)	0.125
Self-efficacy	1.21	4.18	1.19	3.79	1.05	4.07	.013 (67)	0.987
Self-esteem	1.67	3.41	1.50	2.75	2.37	5.01	.305 (64)	0.738
Phys. activity	0.45	2.61	0.45	1.43	1.14	1.30	1.19 (70)	0.31
Woodland use	0.27	1.35	0.71	0.91	0.45	0.91	.592 (46)	0.558

Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.

Note: To better facilitate between group ANOVAs on education, the three who were in the 'other' category were re-assigned; two to the 'secondary school to 16 category', one who had said they didn't attend much school and one who had attended a Special Educational Needs school, and a third participant who had ticked 'other' with no explanation was treated as missing data for this analysis. However, SPSS still read the group sizes as unequal, thus the harmonic mean of the group sizes is used and type I error levels are not guaranteed.

Appendix 4.9: ANOVA results for effect of age on change scores T2 to T3

		18-44		45-64		65+			
	Scale	M	SD	M	SD	M	SD	F (*df*)	*p*
SWEMWBS	7 – 35	0.45	3.18	0.23	2.69	-0.52	2.51	0.44 (56)	0.65
Social trust	0 – 10	-0.18	1.53	-0.58	2.04	0.09	1.51	0.63 (56)	0.54
Self-rep. health	1 – 5	0.05	0.65	0.21	0.72	0.20	0.63	0.37 (55)	0.69
Self-efficacy	4 – 40	1.07	3.30	0.81	2.96	1.40	4.03	0.12 (55)	0.89
Self-esteem	0 – 30	0.57	3.92	0.85	3.71	1.30	1.95	0.14 (53)	0.87
Phys. activity	0 – 7	-0.27	1.96	-0.70	2.32	0.18	1.33	0.73 (55)	0.49

Note: ^*p* <0.1 = trend, **p* <0.05 = significant, ***p* <0.01 = moderately sig., ****p* < 0.001 = highly sig.

Note: Sig. values for Levene's tests >0.5 so assumption of homogeneity of variance not violated

Appendix 4.10: ANOVA test results for effect of education on change scores T2 to T3

	School to 16		Education to 18		Uni or higher			
	M	**SD**	**M**	**SD**	**M**	**SD**	**F (df)**	***p***
SWEMWBS	-0.72	2.36	0.48	3.45	0.63	2.65	1.22 (54)	0.30
Social trust	0.29	1.05	-0.69	1.92	-0.45	1.92	1.54 (54)	0.22
Self-rep. health	0.24	0.44	0.27	0.80	0.00	0.76	0.87 (53)	0.42
Self-efficacy	1.18	3.05	0.17	3.43	1.52	3.27	0.80 (53)	0.45
Self-esteem	0.38	3.16	-0.07	2.43	1.43	4.23	0.89 (51)	0.42
Phys. activity	0.00	2.76	-0.56	1.21	-0.82	1.33	0.93 (53)	0.40

Note: ^p <0.1 = trend, *p <0.05 = significant, **p <0.01 = moderately sig., ***p < 0.001 = highly sig.

Note: Sig. values for Levene's tests >0.5 so assumption of homogeneity of variance not violated

Note: Group sizes are unequal, so harmonic means sample sizes used, type 1 error levels not guaranteed

Appendix 4.11 Article by participant for a mental health magazine

"Over the weeks we explored the coppice woodland and we learnt about its management and its trees and wildlife. We then harvested some materials to use from the woodland which we used to make a hazel hurdle. Hurdles have a long history in the agricultural world where they were used to pen livestock or separate land in open field systems but also look great in my garden now. The group also made a mallet each from a single piece of harvested wood shaped by a billhook. We used our mallets to hammer fence poles we had made and weave branches around to make a fence. We gained experience using a shave horse and pole lathe and we all produced a kitchen spatula and gypsy flowers. The charcoal making was really interesting as we all hadn't a clue as to what charcoal was all about and how it was important. We made an amount of artists charcoal which I brought home an actually drew a picture with it! Each thing we achieved as individuals or a group increased our confidence and strengthened us as a team. This extended in our break times where we all became close, sharing experiences as it felt safe to do so. I have never shared my own mental health experiences before and it was very liberating. Reflecting on the mini bus home on the last day about the course, I realised how much I had changed but also how much my fellow "coppicers" had altered too. Smiles, laughter, banter and chat now filled the minibus replacing the silence and apprehension of our first journey. Being in nature, or even viewing scenes of nature, reduces anger, fear, and stress and increases pleasant feelings. Exposure to nature not only makes you feel better emotionally, it contributes to your physical wellbeing, reducing blood pressure, heart rate, muscle tension, and the production of stress hormones. Doctors prescribe us medication which may work initially but this combined with lack of talking therapies, we become socially isolated and loneliness exacerbates our symptoms. I was overwhelmed at my progress and what I achieved on the course. There was a definite reduction of my mental health symptoms all down to nature! My Coppice Product making certificate (accredited) at the end of course was my prescription to wellbeing."

Appendix 4.12 Email from ‘the fox clan’

“This is to let you know that on Wednesday last (the 18th) a few of us, myself, B, A, C and S got together at our base camp in ‘Dobie Woods Park’ to continue in the spirit of the Actif Woods course. My intention is that we meet as the ‘Dobie Woods Nature and Sustainability Group' to give it its full name or for everyday use the ‘Dobie Nature Group'. Everyone in this email list is naturally included as a member although we realise that individual commitments may affect people’s ability to attend…Another intention is that if things go well with my Masters course in sustainability, especially the project with the Bear Clan First Nations people of British Columbia that we can 'twin' with them. To that end we are already calling ourselves, in spirit at least, the 'Fox Clan of Dobie Woods'. So, welcome to the Fox Clan! At our first meeting B was kind enough to lead us in spoon carving which was great fun! Each week, as before, we will have some planned activity and by the end of August with co-ordination from A we hope to have had a nature event and a "Teddy Bears' Picnic" for the local children's playgroup.”

COLEG GWYDDORAU IECHYD AC YMDDYGIAD
COLLEGE OF HEALTH & BEHAVIOURAL SCIENCES

COLEG GWYDDORAU NATURIOL
COLLEGE OF NATURAL SCIENCES

PRIFYSGOL BANGOR UNIVERSITY

Appendix 5.1 Participant Information Sheet for Qualitative Study

RESEARCH STUDY: EVALUATING THE IMPACTS OF ACTIF WOODS WALES ON PERSONAL WELLBEING – FOCUS GROUPS

Thank you for indicating that you would be willing to be considered for a focus group. We hope to hear more about people's experiences in their own words to further evaluate the impacts of the Actif Woods Wales 12 week woodland based course.

Before you decide, it is important for you to understand why the study is being done and what it will involve for you. Please read this information sheet and feel free to discuss it with others if you wish. You can ask us anything that isn't clear to you or that you want to know more about. Take your time to decide whether or not you would like to take part.

What is the purpose of the study?
We want to understand more about how the Actif Woods Wales programme affects the wellbeing of people who take part. We also want to know more about how you use woodlands outside of the programme.

Why am I being asked to take part?
You are one of the people using the Actif Woods Wales service.

Do I have to take part?
It is your choice. If you decide to take part, you will be given this information sheet to keep and asked to sign a consent form. You can withdraw at any time and you don't need to give us a reason. If you decide not to take part or to withdraw at a later date, your choice will in no way affect your involvement with Actif Woods Wales.

What will I need to do if I take part?
We need a small number of people to take part, so we will select names of willing volunteers at random. Focus groups will be at the end of the course and at a 3 month follow-up session.

Focus Groups
You will be in a group of 3 – 6 people and the researcher will ask you more about the course using a set of guide questions based on the questionnaire you've completed about the how the course has impacted on your well-being and use of woodlands. You will be invited to draw a picture to reflect your experience (optional) and "free-write" a few sentences to explain it on the back (also optional). It will last no more than 1 hour.

Will my answers be confidential?
The discussion will be recorded so that the researcher can listen again. The recording will be kept securely locked away and only the researcher will have access.

If you have chosen to draw a picture, you can choose whether to keep it or not. If you hand it in, it is with permission for us to use it in the study (which can later be withdrawn).

Any information you give us will be confidential. Any findings reported after the study will be completely anonymous.

What will happen to the results?
We will write a report based on the results for the Woodland Trust and Actif Woods Wales and publish the results in academic journals and at conferences – please tick the box on the consent form if you would like a summary of the report.

Who has developed this study?
This study has been developed by Bangor University researcher Heli Gittins, under the supervision of Professor Val Morrison and Dr Sophie Wynne-Jones. It has been developed in partnership with Actif Woods Wales and The Woodland Trust.

Contacts
If you would like any further information about the study, please feel free to contact the researcher, the supervisors or speak to one of the Actif Woods Wales team:

Project researcher:	Heli Gittins	heli.gittins@bangor.ac.uk
Project supervisors:	Prof Val Morrison	v.morrison@bangor.ac.uk
	Dr Sophie Wynne-Jones	s.wynne-jones@bangor.ac.uk

Complaints:
If at any time you have any complaints about the way this research study was carried out please contact the School Manager Mr Hefin Francis, School Manager, School of Psychology, Bangor University, Bangor, Gwynedd, LL57 2DG h.francis@bangor.ac.uk

Thank you for your time

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Appendix 5.2 Consent Form for Qualitative Study

RESEARCH STUDY: EVALUATING THE IMPACTS OF ACTIF WOODS WALES ON PERSONAL WELLBEING – FOCUS GROUPS

CONSENT FORM

☐ I have read and understand the information sheet about the study (V1:15.8.17) and had the opportunity to ask questions

☐ I understand that taking part in the study is completely voluntary and that I can withdraw at any time without having to provide a reason

☐ I understand that all information I give will be completely confidential

☐ I agree to take part in this study

☐ I am willing to take part in a focus group at the end of the course

☐ I am willing to take part in a focus group 3 months after the end of the course

☐ I consent to the recording of the focus group

Please provide your name and preferred method of contact below. This information is stored separately from any data collected:

Name: Contact phone number:

Contact email or address:

Project researcher:	Heli Gittins	heli.gittins@bangor.ac.uk
Project supervisors:	Prof Val Morrison Dr Sophie Wynne-Jones	v.morrison@bangor.ac.uk s.wynne-jones@bangor.ac.uk

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Signature of participant:_____ **Date:**_____

Signature of researcher:_____ **Date:**_____

☐ I would like a copy of the Summary Results

Appendix 5.3 Topic guide and research guidelines for qualitative study

QUALITATIVE RESEARCH GUIDELINES: Focus Groups

Welcome and Introduction:

1. The researcher introduces herself and the roles within the focus groups: "During the discussion I'll be asking questions and listening to all you want to say. I'll be also helping to make sure that we hear from each of you".

2. The researcher introduces second researcher if available: "The second researcher will take notes and observe the session".

3. The researcher will briefly describe the session goals: "We want to explore experiences and perceptions of people that have taken the 12 week AWW Programme in relation to your personal well-being and their use of woodlands outside the programme"

4. The researcher introduces the reflective drawing activity: "You will be invited to draw a picture to reflect your experience on your own before we talk as a group (optional), and to "free-write a few sentences to explain it on the back (also optional). You don't have to show it to anyone. It is up to you whether you hand it in to be used (anonymously) in the study, or to keep it"

Picture question: In what ways has coming to AWW impacted on you, if it has at all

5. The researcher reminds the group that the sessions are audiotaped and that: "All participants will remain anonymous when the study is reported" and that "Only the research team will listen to the tapes".

Focus group rules:

The researcher will report the guidelines of the discussion:

1. "Because the session is being taped, I would like to ask you all to please talk clearly and only one at a time"
2. "Please refer to each other on a first name basis".
3. "Even if you don't agree with someone please listen respectfully".
4. "I am interested in everyone's point of view so please can I hear from everyone today".
5. The researcher will ask everyone to introduce themselves only with first name for the tape.

Topics to be discussed:

Personal Wellbeing

- In what ways has coming to AWW impacted on you, if it has at all
- Have you seen benefits to your wellbeing as a result of attending AWW? Can you say more?
- How has the programme done that? What is it about attending that has led to these changes?
- Have those impacts/effects changed over time?
- If it has, how has it made a difference to your life outside the programme?

Woodland Access

- Does it make a difference that it's in the woods?
- Do you enjoy being in the woods? How does it make you feel? What is it about the woods?
- Do you go to the woods more since taking the 12 week course with AWW? Why/not?
- Are there any woods near you? Do you go them? Why/not?

Debrief:

1. We have come to the end of the focus group
2. It is up to you whether you keep the picture or give it to me to use anonymously in the research.
3. Are there any other questions or comments anyone would like make?
4. If you would like to receive a summary of the findings once the study has been completed and you haven't tick the relevant box on the Consent Form please let me know now or contact me on the contact numbers provided to you.
5. Thank everyone, and hand out debriefing form.