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The Impact of Green Exercise on Volunteers' Mental Health and Wellbeing – Findings from a Community Project in a Woodland Setting

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An increasingly robust evidence base supports the therapeutic value of nature on mental health and wellbeing. The rise in reported mental ill-health across the world has major implications for the effective use of healthcare budgets, as well as economic consequences. Health practitioners may need to consider going beyond traditional mental health service provision and look to more widespread engagement with community-based interventions. This is especially important given that the structured nature of service provision may present significant challenges for some people with mental ill-health (MIND, 2016). Thus, this study explored the experiences of volunteers with mental health problems attending an unorthodox center in a woodland setting within the North West of England, which seeks to promote health and wellbeing through green exercise¹.

An ethnographic approach, involving the use of fieldwork diaries and photographs, explored the center's informal and unique physical and socio-cultural environment. Formally researching as outsiders on participants was deemed incongruent with the empowering ethos of the center. Following a six-week relationship building period, in which the researchers immersed themselves in the practical activities, individual fieldwork interviews were conducted with each of the volunteers (n=11).

Transcribed data revealed three key themes underpinning the self-reported positive impacts on personal mental health and wellbeing. The importance of the physical and social environment was paramount, whereby volunteers recognized the restorative effects of the natural environment, but also stressed the flexible, informal and 'no nonsense'

ethos of the center, combined with the social support, as major factors in delivering positive health outcomes. The clear sense of purpose and meaning underpinning activity choice/ participation, and the feeling of togetherness this fostered, were also major influences. Using existing skills and developing new ones demonstrated the power of occupational engagement in enhancing enjoyment, achievement and overall contribution.

Recognition of the influence of the context and structure of services on people's ability to engage in therapeutic activities is therefore crucial in order to enable people to access support in their mental health recovery.

Key words: mental ill-health; natural environment; mental wellbeing; green exercise, occupation; volunteers.

¹ Defined by Pretty et al (2005) as any physical activity undertaken in the presence of nature

Mental Health: The Current Picture

According to MIND (2016) roughly 1 in 4 people in the UK will experience a mental health problem in any given year. Mental ill-health includes a range of conditions including depression, anxiety, phobias and OCD, and within the UK, these problems currently represent 28% of the burden of disease, outstripping the levels for both cancer and heart disease (Mental Health Foundation, 2016). WHO (2016) have charted a rise from 416 million people diagnosed with mental ill-health worldwide in 1990, to over 600 million in 2013, with those living in low and middle income countries more at risk; and the scale of the problem necessitated the Mental Health Action Plan 2013-2020 to be adopted with international consensus in 2013 (WHO, 2013). It is estimated that in the UK alone, the costs of mental health problems to the economy represent the equivalent of 4.5% of GDP, or £70-100 billion each year (Mental Health Foundation, 2016); which implies the need for parity in treating mental health compared to physical health will become necessary in the very near future. MIND (2016) further highlight the 57 million anti-depressant prescriptions issued by the NHS in the UK during 2014, representing a 46% increase on 2012 figures; and that just 25% of people experiencing mental health problems receive support in any given year.

Nature (and Gardening) as Therapy

The therapeutic value of the natural environment – for physical and mental health - has been documented from ancient times through to the modern day (AHTA 2012; Söderback, Söderström, & Schäländer, 2004; Clatworthy et al, 2013). Pioneers of the occupational therapy profession recommended the use of activities such as gardening to promote wellbeing during the 1950's (Genter, Roberts, Richardson & Sheaff, 2015). A burgeoning interest in researching the value of nature-based therapy (or 'green care', 'eco-therapy') for social prescription purposes has been apparent in the last two decades in particular, with applications across a wide range of contexts (Pretty, Peacock, Hine, Sellens, South & Griffin, 2007) – for example, community-based projects (Sempik, Aldridge & Becker, 2009; healthcare settings (Genter et al, 2015); and secure institutions (Christie, Thomson, Miller & Cole, 2016; Page 2008) - and with different population groups, including children (McCurdy, Winterbottom, Mehta & Roberts, 2010), older adults (Finlay, Franke, McKay and Sims-Gould, 2015; Jackson, 2005), immigrant families (Hordyk, Hanley & Richard, 2015) and those presenting with physical and mental ill-health (Wichrowski, Whiteson,

Haas, Mola & Rey, 2005), for example.

There is already a well-established and undisputed weight of evidence behind the benefits of regular physical activity in facilitating good health (Bauman 2004; Bowler, Buyung-Ali, Knight & Pullin, 2010), and increasingly substantive support for the links between physical activity and enhancements to mental health (Rethorst, Wipfli & Landers 2009).

Meanwhile, a growing number of studies have suggested how mental ill-health is specifically improved through accessing greenspace (Beyer et al, 2014; Nutsford, 2013). Other researchers have similarly highlighted the restorative effect of natural environments (Mackay and Neill, 2010; Ulrich, Simons, Losito, Fiorito, Miles & Zelson, 1991; Clatworthy et al, 2013) with reference to specific theoretical constructs such as 'attention restoration theory' (Kaplan and Kaplan, 1989), although there is not always consensus on the precise mechanisms for these effects (Bowler et al, 2010), or even whether all green environments elicit the same beneficial impact upon mental health.

With reference to green exercise, Barton et al (2012) found positive contributions to mental health outcomes as a result of a combination of exposure to nature, exercise and social interaction. Being close to nature appears to promote a '*feel good*' factor, considered to be as a result of the innate, emotional connection human beings have with other living organisms – the evolutionary '*biophilia hypothesis*' as suggested by Wilson (1984). Further, a systematic review by Bowler et al (2010:1) cited evidence of similar benefits derived from green exercise and posited that these resulted from a combination of '*physiological effects as well as participation in social activities and engagement with others*'. The role of social interaction - and the mutual support offered by being part of a '*green exercise*' group (and/or more specifically a gardening group) - has also been noted as an important contributor in enhancing self-esteem and positive mood states (Barton et al, 2012; Perrins-Margalis, Rugletic, Schepis, Stepanski & Walsh, 2000, Fieldhouse (2003) and Söderback et al, 2004).

Moreover, a growing body of research focusing specifically upon how gardening and horticultural activity may promote positive impacts on mental ill-health has emerged in recent years (Fieldhouse, 2003; Rappe et al, 2008; Wilson & Christensen, 2011). For example, a study by Gonzalez, Hartig, Patil, Martinsen



Figure 1. An area that the volunteers maintained



Figure 3. One of the participants engaging with dry stone walling



Figure 2. The walled garden was a constant source of vegetable and fruit produce



Figure 4. One of the research team working with a volunteer to develop a new wildlife pond

& Kirkevold (2009), suggested a restorative effect underpinned changes in depression severity and perceived attentional capacity outcomes for clinically depressed adults as a result of a therapeutic horticultural program.

Methodology

Hitherto, both quantitative and qualitative approaches have been used in researching the benefits of horticultural/gardening activity (Christie et al, 2015; Rappe et al, 2006; Page, 2008), including allotment work (Genter, Roberts, Richardson & Sheaff, 2015). Whilst studies have emphasized the positive health outcomes resulting from regular participation, the precise *mechanisms and processes* underpinning reported health benefits are often less well defined or reported (Christie et al, 2016). This study deliberately adopted a qualitative, ethnographic approach in order to explore the center's unique culture and the experiences of the volunteers accessing it.

Location

The study was undertaken at a rural establishment situated in a woodland setting within an area of outstanding natural beauty within the North West of England, United Kingdom. The center comprises a large dwelling house and ten acres of grounds - a mix of woodland, grass, flower beds and vegetable/fruit growing plots (*Figures 1 & 2*) - owned by a retired husband and wife, who have opened its doors on a twice weekly basis to benefit others presenting with mental health problems. Its ethos is to provide a non-judgmental, 'come-and-go-as-you-please' opportunity for volunteers to undertake meaningful occupations in natural surroundings with the express aim of improving their mental health.

There were no formal partnerships with the National Health Service (NHS) in England, although a local charity assisting adults with mental health problems has formed an association with the center, bringing a minibus of 4-6 participants along every Friday. Others either arrived by their own means, or were collected at designated times and locations by the owners. Whilst the venue offered no formally trained therapist to lead activity sessions, it more closely resembled a 'therapeutic horticultural' model - given its focus upon plant-related activities as a means of promoting mental wellbeing,

and with the main organizer someone who had himself previously experienced mental health problems - perhaps more so than a typical social horticultural project (AHTA, 2012). It could also be defined in terms of green exercise as a group activity-based initiative involving a habitat focus and a clear emphasis upon supporting people presenting with mental health problems (Pretty et al, 2007).

Subjects

Participants (n=11; male= 9, female= 2, ages 35-67) in the study included the two owners (Frank & Jane - pseudonyms) who facilitated the group activities on every occasion, including transporting some volunteers to the site; two volunteer facilitators (Katie & Alan - pseudonyms), and seven volunteers attending the project with at least one years' experience of participation, who presented with varying degrees and histories of mental ill-health. The precise nature of individuals' mental health status was not sought, but participants discussed their mental health and the impact upon their lives freely and openly. All interviewees were comfortable with the description of being a 'volunteer'.

Activities

Participants self-selected from a range of activities on the two occasions a week they attended, including: gardening (*weeding, tidying, pruning, raking, planting, harvesting*); dry stone walling (*Figure 3*); painting/ decorating outbuildings; and other ad hoc projects (*for example, making bird tables, creating a new pond for wildlife with a viewing platform - Figure 4*). Participants typically stayed for between 4-6 hours on each visit. The activities were undertaken either individually, in pairs or small groups, with social activities such as taking a tea or lunch break at designated times involving all participants, where conversation typically focused upon their contributions that day, as well as discussing a variety of personal anecdotes, such as hobbies and interests undertaken away from the center.

Intervention

Initially, the researchers worked alongside the group for a six-week period on a twice weekly basis, whilst making fieldwork observations, akin to a *verstehen*² and sympathetic introspective approach to participant observation methodology (Best, 2014). This initial 'relationship building' phase also gave the researchers

² *Verstehen* involves an interpretive process whereby an outside observer of a culture seeks to relate to it, and thus understand the behavior of others. This enables researchers to account for the meanings 'actors' (the observed) attribute to their actions or environment, rather than treat them as 'objects' (Best, 2014).

an insight into volunteers' motives for attending, guiding the framework for questions to be used in the subsequent interviews. Thus, the researchers acted as *'insiders'*, immersing themselves in the practical activities, and socializing at the scheduled breaks, which in turn facilitated their rapid acceptance within the cultural dynamics of the group, thereby ensuring that any observational data collected more accurately reflected the phenomenon and context under study (Best, 2014). Moreover, given the mental health status of several of the study's participants, this was arguably a more appropriate means of investigation - as opposed to a more impersonal 'direct observation' approach, which, whilst viewed as less immune to bias in respect of observations being made - given its more detached perspective - may have created anxiety for those being observed.

Fieldwork individual interviews (duration 15-40 minutes), using audio recording devices, were conducted whilst volunteers were in an 'active' role. Some pre-planned questions were devised (*e.g. motives for attending; feelings about the environment; what participation means to them*) but researchers allowed the conversation to flow as naturally as possible. Whilst this approach can cause complications - given each interview can spin off in its own unique direction, and potentially create difficulties in synthesizing data across respondents - the small number involved in the study meant that the data analysis process was manageable, and common themes nevertheless became readily apparent.

Transcribed data was analyzed using Atlas-ti v.6.2 software, generating initial codes, sub-themes and core themes, which were later revisited and refined, at first independently by each researcher, before comparisons were made, thus promoting trustworthiness and a robust audit trail (Braun & Clarke, 2006). Researchers arrived at very similar key themes. Subsequently, trustworthiness was further facilitated through visiting the participants to confirm the findings as representative of their contributions, re-affirming that the researchers' observations, and the findings reported within, were a manifestly accurate reflection of participants' experiences. On two of these occasions this was achieved via a poster presentation.

Ethics

Ethical approval was obtained through the university's ethics committee. The two researchers initially met with the participants as a group to explain the purpose

of the research study, and to answer any questions regarding participation. Seven days elapsed between the presentation of information pertaining to the research project and confirming participant consent. The usual conventions surrounding client confidentiality were observed, including the use of pseudonyms. Any volunteer who declined involvement with the research was still able to engage with the activities at the center.

Results

Mental Health Benefits

All of the participants cited that they felt happier, satisfied, more self-confident and personally re-invigorated as a result of their sustained participation, findings mirrored in a study by Rappe et al (2008), involving mental health patients undertaking group gardening activity. St. Pierre, for example, claimed that *"...I go away with an enormous sense of wellbeing"* (St. Pierre, Interview: 30), while Bob linked his participation with a profound improvement to his mental health, suggesting a more powerful effect than other treatments available to him:

"...I think this has done more for my mental health than any talking therapies or anything like that that I have done in the past." (Bob, Interview: 42).

George was more specific, valuing the support of the group and combining feelings of being away, with doing something productive in enhancing his health:

"Because it is away from the hussle and bussle, and you are doing something hands-on, literally with your hands and something that you can see the end result, even if it is planting potatoes or cropping potatoes or fruits and assisting generally" (George, Interview: 4).

Frank meanwhile cited the gains in self-confidence volunteers accumulated through *"...getting involved with people, around a task"* which helped develop supportive relationships through the sharing of problems and experiences, which in turn made people feel *'safer'* (Frank, Interview: 53), whilst George considered the opportunities presented at the center not only added structure to what could otherwise be a bleak existence in his home circumstances (no electric for days, sleeping on the floor with no bed), but was also therapeutic in his recovery from a recent stroke (George, Interview: 2).

Volunteers also referred to mental wellbeing enhancements in respect of greater self-reliance and

self-esteem, sense of personal agency and identity, inner calm, being relaxed and distraction from negativity. Indeed, the very act of volunteering has shown to make a useful contribution to wellbeing, social connectedness and reduced social isolation (Cornwell et al, 2008).

Findings: Core Themes

Three main themes (Figure 5) were derived from the coding and data analysis process underpinning the perceived enhancements to mental health and wellbeing noted by respondents. These comprised: Beneficial environmental influences, 'doing' meaningful occupations, and social connectedness.

Whilst these core themes suggested distinctive focuses for analysis, it was evident that there was some degree of overlap, so they should not be considered as being mutually exclusive.

Examples of specific factors referred to by respondents underpinning each of the core themes are shared below (Table 1), although it is worth acknowledging the interplay between these core themes.

For example, how the attractive natural environment motivated regular attendance and involvement in

self-selecting and co-operative activities, that in turn provided meaning and purpose to individuals, and thus an opportunity to value and share experiences. Additionally, the social interaction fostered by the varied menu of purposeful nature-based occupations, and their restorative effects, led to personal developmental impacts, a strengthening of inter-personal relationships and feelings of a social milieu that was both safe and supportive, further enhancing both personal and social capital effects. Tom suggested for instance that he derived a real 'buzz' from his participation in a variety of occupations, citing a link between the natural environment and social activity as being instrumental to such an effect (*Tom, Interview: 25, 30*).

Benefits such as those described above might also appear to create a 'transformative wave' of impacts that encompass personal, social and community capital – in positively influencing the individual (*wellbeing enhanced*), immediate others (group dynamics, connectedness, bonding) and the community/environment (*improvements to woodland habitat, accessible to community groups, for example*).

The next section further illustrates the core themes, with specific testimonies exploring the precise mechanisms supporting the perceived mental wellbeing enhancements.

Analysis

Core Theme 1: Beneficial environmental influences

There is already convincing research suggesting the restorative influence of natural environments in promoting recovery from pre-existing mental ill-health, as well as potentially preventing future susceptibility (Bowler et al, 2010; Clatworthy et al, 2013; Groenewegen et al, 2006). This benign influence is associated with feelings of inner calm, an escape from daily worries and routine work, and the effortless attention derived from the '*soft fascination*' of engaging in nature-based activity, such as tending to plants (Kaplan, 1995).

The tranquility, calm and restorative nature of the environment was referred to by all respondents. For example, Dan described it as '*very pleasant, very tranquil*' (*Dan, Interview: 100*); Gareth asserted that it offered distraction in the form of '*taking his mind off things that weighed on his shoulders*' (*Gareth, Interview:*

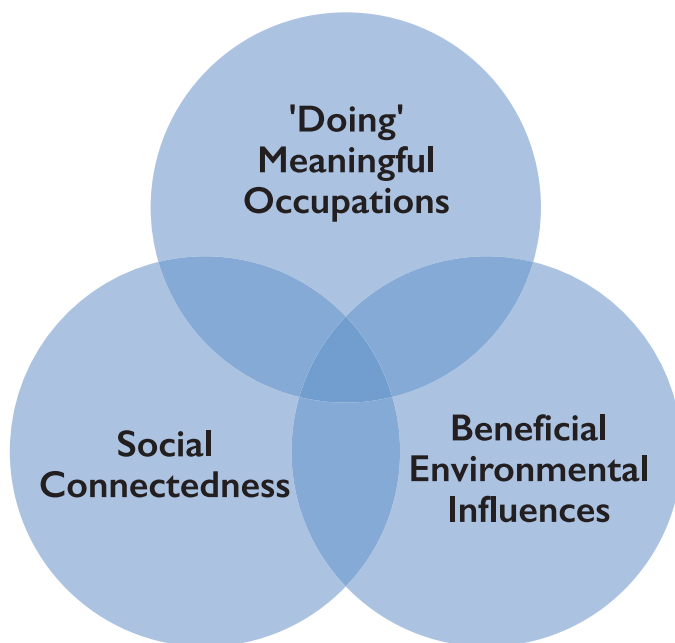


Figure 5. The three core themes underpinning perceived enhancements to participants' mental wellbeing

Table 1*Moderating and mediating influences on mental well-being*

Core theme	Moderating and mediating factors leading to enhanced mental well-being - examples
Beneficial environmental influences	Sense of escape/'being away'; 'being' in and with nature; fascination with nature (fauna and flora); 'beauty and tranquility' of the site; friendly, 'safe' place; unique, quirky, informal setting; motivational environment ('gets me out of bed'); non-pressurizing, non-judgmental ethos of center; de-stigmatizing and inclusive feel; varied opportunities available; accessible; no 'form filling' or formal procedures
Social connectedness	Social interaction; teamwork; group dynamics; shared tasks; sense of identity, purpose and belonging; feeling valued, respected; trust; reduced social isolation; development of social capital; mutually supportive relationships; shared values; social and task cohesion; reinforcement of personal success by others
'Doing' meaningful occupations	Being productive (e.g. growing own food); learning and experiencing new things; varied, self-selected activities at own pace; giving structure to the day; meeting individual needs; rekindling old skills, or learning new ones (skill acquisition); transformative effect of collective efforts; matching of ability to task; sense of purpose and achievement; intrinsically motivating tasks (e.g. enjoyment, satisfaction, pride)

23); whilst Griff and Frank linked the uniqueness of the venue to the evident fascination volunteers derived from the natural surroundings, which occasionally provided a surprise:

"I don't think there is another place like this, it's unique, it offers (up) so much. Like today, when we were clearing the weeds, (the owner) said 'that's a walnut tree!' – I've never seen a walnut tree, it's so big!" (Griff, Interview: 34)

"We've integrated nature with bits of Victoriana and Georgian (outbuildings)... beautiful trees, we've got some nice specimen trees, some specimen limes. Dan went round... taking pictures and he came back, and said 'why's that tree like it is?' but that's how a lime tree should grow." (Frank, Interview: 84)

Similarly, Jane referred to the opportunities to be involved with either tending to a variety of planted areas, or the more 'wild, woodland bit'; and also the delight that volunteers gained from the fauna that occasionally frequented the grounds, including creatures such as voles, slowworms, muntjac deer and rare butterflies.

Griff also referred to how his 'mind doesn't think negative (when here)' (Griff, Interview: 6) suggesting he was experiencing 'flow' on a regular basis, a state related to attention restoration theory in which negative thoughts can be displaced in favor of more positive feelings including self-worth and contentment, as posited by Csikszentmihalyi (2002). A similar effect was

highlighted by service users presenting with mental health issues in a medium secure unit involved with a therapeutic horticultural intervention (Christie et al, 2016).

A number of participants also spoke about the essence of the center's ethos in facilitating their sustained involvement, highlighting the non-pressurized, relaxed, informal and non-conformist approach, for example:

"...it's a no nonsense set up, that is how I describe it. It is quirky as well, it's quirky! It is not overly organized and it's not driven by monetary values. It is driven by personal satisfaction and their (the owners) values" (George, Interview: 24).

This ethos heavily contrasts with the more structured nature of some mental health service provision individuals have previously experienced, which individuals drew attention to in the course of their interviews:

"Yes...there are no therapists here. We are not being monitored, observed, as far as I know (laughs)!" (Dan, Interview: 84)

There was an awareness amongst the group of how the male owner had deliberately set out to provide an environment which was supportive, welcoming and resisted the need for form filling or protocol, with Bob noting that '*...you haven't got an appointment time!*' (Bob, Interview: 52). This relaxed and informal



Figure 6. Recycled items are used to create outdoor features



Figure 8. Tom undertaking some garden maintenance



Figure 7. The quirky nature of the setting is best exemplified by the eclectic mix of artefacts and features dotted around the site.



Figure 9. The renovated barn used for further socialising during the day over tea and lunch

leadership was also recognized as facilitating social inclusion within a de-stigmatized, non-judgmental, open and welcoming culture, for example, Dan referred to *'being able to open up more'* (Dan, Interview: 34) as a result, and asserted that:

"We can come here and not feel marginalized, worried that like if we were in a normal work program, you know there is a chance of being bullied or...being singled out like "Oh here's that weird guy who does this 'n that" (Dan, Interview: 16)

Dan also felt he derived benefits in terms of dignity, achievement and sanctuary from what he described as a *'non-threatening environment'* (Dan, Interview: 100).

Katie similarly stressed that there was no expectation to attend every week, and that: *"There is no kind of pressure to work at a certain pace or push yourself too far"* (Katie, Interview: 16). This was echoed by Bob who spoke of Frank's refrain to *'slow down a bit, we don't do rushing here!'* (Bob, Interview: 22); whilst Alan noted that:

"...we are laid back here but there is a simple structure. We are respected in that there is hospitality shown and we have got a wonderful place to sit and look out and see a deer going across the lawn and have the drawing room and all that. Then we have the assignment of task, it's all by choice, so in a sense there is a natural leadership within the setting here" (Alan, Interview: 43).

The volunteers also referred to a sense of escape from their home environment and/or from the stress and turmoil they were currently experiencing in their lives, for example George referred to his colleagues finding sanctuary from their *'boxed room environment in town'* and the opportunity to immerse themselves in *'...the fresh air, the green trees and...blue skies!'* (George, Interview: 28). Similarly, Frank spoke of one participant who *"...just wants to get away from it and talk to some like-minded person and his problems seem little. It might be as bad when he gets home but at the time it's escapism"* (Frank, Interview: 91).

It may well be that the specific culture of the center, and the volunteers' affinity for it, provided an attractive alternative to the recognizable procedures, rules and structure associated with occupational therapy and mental health care services (Creek, 2010) – and thus

motivated sustained participation that by association led to the perceived health and wellbeing improvements of the participants, the accounts of which are expanded upon below.

Core Theme 2: 'Doing' meaningful occupations

Facilitating engagement with activities of meaning and value to participants are important principles associated with occupational therapy. Such activities should promote occupational performance in respect of developing skills, knowledge and experience that can be helpful in facilitating a return to employment and wider social inclusion. The volunteers frequently cited the *'satisfaction'* and *'stimulation'* of *working outdoors and 'doing something worthwhile'* (George, Interview: 2), benefits noted by other researchers evaluating volunteer projects involving restoration work (Miles, Sullivan & Kuo, 2000). Bob enthused about becoming personally re-invigorated through the novelty of the activities on offer, in which he not only gained satisfaction, but also a range of new skills and learning experiences:

"I've done loads of different things. I've had a bash at drystone walling, 'cos one of the trees came down in a storm, and took the wall with it. So...we rebuilt it. I've never done anything like that before and it's really satisfying, we actually did a good job of it." (Bob, Interview: 12)

The sense of achievement was characterized by both the desire to record a memory of the experience, and the praise from important others: *"...I actually took a photograph of it. One of my friends...is a landscape gardener... and he looked at it and said 'You've done a bloody good job there' (laughs)"* (Bob, Interview: 14)

Frank defined the activities as representing both a commitment to conservation principles, but also the center's rather quirky style (Figures 6 & 7):

"We don't do intense gardening, [or] pretty gardening, we do wildlife gardening... and the benefit is the insects, the butterflies." (Frank, Interview: 62)

and that:

"You've just seen a bathtub turned into a pond and that's what we do. Up cyclers and recyclers, it's a fashionable thing, but we've done it for years" (Frank, Interview: 26).

Wildlife planted areas, and a walled kitchen garden, were both sites of productive activity.

Importantly, volunteers were encouraged to undertake tasks that ensured the development of self-efficacy; so whilst a varied 'menu' of activities was important, so was matching ability to such tasks, thus providing the optimal level of challenge (Fieldhouse, 2003), avoiding disappointment and encouraging repeat attendance:

"People won't get neglected here, they're usually buddied up, because everybody needs somebody, and everybody helps somebody, and we work out what people need" (Frank, Interview: 29)

Volunteers clearly enjoyed the novel learning experiences the natural, woodland setting fostered, and the opportunities to pass on specific knowledge or skills, including Tom, who had prior experience of dry stonewalling. Such occupational engagement can be an important development for people who have hitherto typically experienced productive role deprivation (Mee et al, 2004).

The valued attached to these occupations assisted with the acquisition of vocational skills, but importantly enhanced self-esteem and self-identity, through experiencing a sense of purpose, personal achievement, a shared experience, meaning and satisfaction with their endeavors:

"...whatever you do here, whether it be fruit picking or weeding or walling...at the end of the day you look and you can say, 'yeah I did that' and so it's a nicer thing to take home with me, in my head rather than working away all day and not seeing the results, you know." (Bob, Interview: 30)

There was also a sense of volunteers investing in others' successes, for example in harvesting their own vegetable produce, thereby facilitating an active provider role and a sense of occupational identity (Fieldhouse & Sempik, 2014):

"...we'd got freshly dug potatoes out of the kitchen garden. Jane's got one of these special earthenware pots that you can stick into the ashes of the bonfire and then when we'd finished, we each had a baked potato with homemade butter, which was still in the ground you know an hour and half ago and which some of us had planted." (Bob, Interview: 8)

Jacobsen et al (1996) has suggested that being active and receiving positive reinforcement are important elements in assisting people with mental health problems attain more positive mood states (the 'activation hypothesis'). Here, several volunteers spoke about the enjoyment and challenge associated with the 'physical' nature of many of the activities they engaged in (Figure 8), and the rewards derived from seeing the fruits of their labor:

"...you're feeling valued, because at the end of the day we can stand and look at what we have done, (the owners) will say "Ooh, you have done really well on that today" and it makes you feel good." (Katie, Interview: 42)

Recapturing one's capacity for personal agency from a hitherto troubled past promotes a sense of 'hope' as posited by Miller (1992), whereby individuals can picture themselves moving towards a more positive future for themselves built upon improved health and wellbeing, personal competency, meaningful occupation and greater self-reliance. In this respect, Page (2008) suggests that gardening related activities are ideal vehicles to engender feelings of hope, whereby an individual's personal journey in respect of recovery from mental illness can be associated with simple practices such as seeing plants grow from seed and flourish under their care. George positively envisaged himself moving on from his rehabilitation at the center, to playing a useful role in helping others within the community:

"Who knows, perhaps it will, perhaps in an advisory capacity in some form, maybe even working with people with learning disabilities, who might need a supervisor. Maybe in some form of part-time paid work. I am open to all things." (George, Interview: 20)

This theme of 'hope' was developed by Katie, who highlighted how the activities motivated people not only to 'get out of bed' (Katie, Interview: 10), but also the specific skills and attributes engagement facilitated, such as commitment and initiative (Katie, Interview: 24). These impacts upon psychological wellbeing have been identified by Genter et al (2015) in their systematic review of gardening as a therapeutic activity. Although it is recognized that such impacts are difficult to measure, the development of a sense of self and personal agency are important elements in recovery from mental illness.

Meanwhile Bob found that his participation not only developed specific skills, but also facilitated renewed

interest in, and knowledge of, nature, including birds, and here, trees:

“...You know, I know what a sycamore tree looks like now, because we have to keep cutting them back, they are very tenacious.” (Bob, Interview: 40).

The intrinsic motivation derived from the personal (and social) meaning volunteers attached to these nature-based occupations perhaps best explains their sustained involvement, as all those present had been attending the center for a year or longer; this is in keeping with other research findings evaluating such motivational effects (Pearson, Braithwaite & Biddle, 2015). It seems the volunteers were in a process of overcoming a hitherto occupationally deprived existence, and moving steadily towards a more hopeful and socially inclusive future. In addition, the repeated exposure to the beneficial influence provided by undertaking compatible, self-selected and autotelic occupations in a natural environment such as described here may have contributed sufficient restorative effects, shifts in mood states and coping mechanisms to promote at least a partial recovery from ill-health (Fieldhouse, 2003).

Core Theme 3: Social connectedness

It was clear to both researchers that the volunteer group and the facilitators had a close bond, comfortable in their own company, aware of any sensitivities within the group, keen to share experiences, and determined to make a success of every visit. George perhaps best summed up the consensus in this respect:

“It’s just the spirit of being together...it’s almost like being a part of a football team...it’s sort of, like nice, to have a good bond with people of different ages and to listen to what they are about” (George, Interview: 36).

Jane similarly maintained that the volunteers were characterized by a strong social bond, in that they ‘were really good friends’ who ‘gel together’ over common interests, and that:

“... (this) is one of the wonderful things...they are all nice to each other...they just know each other and look forward to seeing each other. If they are not there, they say ‘why isn’t so and so coming?’ - [it’s] just so friendly. They all sit down and eat together.” (Jane, Interview: 12).

Others, including Katie and George, stressed a reciprocity of support within the group, expressing the view that volunteers genuinely ‘cared’ about each other, were ‘interested’ in their respective efforts, and offered the essential support network that had hitherto been absent from their troubled lives (Katie, Interview: 48; George, Interview: 4). This self-generated, supportive social milieu – enhanced by the owners’ caring style – was manifest in terms of the collective effort and sense of purpose demonstrated by volunteers’ actions and their discussions in the social room (Figure 9), with a recognition that everyone was a positive contributor to the process – whether very active or less so – and this factor should not be underestimated in promoting recovery from mental ill-health (Fieldhouse, 2003).

St. Pierre also referred to how the social support, friendship and camaraderie was crucial in having enhanced his confidence, and helped him cope with adversity, exemplified by Frank’s assertion that *“People that have suffered mental health...are genuinely in need of help. And that’s what we do, we just keep our eyes and ears open as everybody does here and everybody helps each other” (Frank, Interview: 29)*. This chimes with the work of Milligan et al (2004), who found that the social network derived from being part of an older adults’ allotment group acted as a buffer to stress. However, as Fieldhouse (2003: 287) notes, volunteers like St. Pierre have to first appreciate how *‘supportiveness is actually experienced’* in order to improve their own *‘social functioning’*.

Whilst working in a group may be viewed as beneficial to enhancing mental health, it does not necessarily have to be the case, as individually tailored programs involving exercise have also proven successful (Stanton & Reaburn, 2014). This is important as although the social interaction was viewed by all volunteers as personally beneficial, Gareth suggested it was not always necessary to be sociable to benefit from participation: *“I can be gregarious, but also can be a loner if I want to be” (Gareth, Interview: 36)*.

Several spoke about the destructiveness of social isolation – defined as a *‘lack of social ties’* (Toepoel, 2013: 357), and which is associated with physical and mental ill-health (Giummarra et al, 2007). For example, St. Pierre claimed that without the support he had received from involvement, *“I could be dead, in prison, or sectioned again” (St. Pierre, Interview: 20)*; and Bob gave a particularly stark account of living

alone in a flat, 'hitting rock bottom', then attempting suicide. He subsequently left hospital but contracted pneumonia, leaving him in a poor physical state. But, although at first thrust back into the same circumstances surrounding the failed suicide attempt, Bob spoke about his first connection with the center, after being referred by mental health services to a 'completely boring' day center where 'women tended to knit all day' or the best activity on offer was a chat with others over coffee:

"So I came out of there and came back in my flat and thought 'oh God, nothing has changed!' and I found out about this place purely by chance". (Bob, Interview: 4).

The center offered the ideal social environment for his needs, where he quickly became assimilated into the social dynamics of the group, appreciating the diversity in backgrounds people had and the teamwork that gave him (and others) satisfying experiences.

It appears that most of the group had discovered the center through a variety of different sources, and in the process managed to overcome any inhibitions to facilitate their initial participation. The lack of any formal process to participate, and the supportive, sociable (*and natural*) environment they perceived on their first encounter, were instrumental in their subsequent engagement. Toepoel (2013) suggests a likely explanation for this effect, in that the quality and regularity of the social dynamic and interaction therein – essentially 'social connectedness' - encourages a reinforcing effect that acts as motivation for continued engagement, which then strengthens the social bonding effects within the volunteer group, reducing the risk of social isolation as a consequence (Cornwell et al, 2008).

Finally, according to MIND (2016), 50% of people with mental health problems have to wait over 3 months for talking therapies within the NHS in the UK. Volunteers had little confidence in traditional services designed to support them, perhaps best summed up by Alan:

"I think one thing that is characteristic of here is that we work with each other on an equal basis and we work alongside each other. There is nobody who is above or below, its equity and its working in partnership with people. That may be a simple thing to say but actually within [mental health] services that is not always the case." (Alan, Interview: 106)

Conclusion

The primary characteristics of a restorative environment therefore appeared to have been played out here (Kaplan and Kaplan, 1989), in which volunteers described their fascination for the natural surroundings; their feelings of escape and being away from their unfavorable circumstances; the desire to explore what the center had to offer in respect of new experiences (extent); and, through its myriad of compatible, physical activities, a feeling of meaningful nature-based occupations that met their immediate needs. Additionally, the social dynamics facilitated by the center, with its supportive and caring atmosphere, may have an important role in both the management and promotion of recovery from mental ill health for these volunteers (Barton et al, 2012), despite difficulties in identifying the full range of causal mechanisms and the longer-term impacts (Bowler et al, 2010). Whilst this study only involved engagement with participants over several weeks, it does nonetheless reflect participant experiences based upon one (or more) year's engagement. The rapidly expanding body of research regarding green exercise, including gardening and related activities, appears to confirm that there is a substantive role for community projects utilizing nature-based activity. Policy makers are increasingly considering more investment in social prescribing with a view to designing effective, sustainable interventions within communities, and public campaigns involving nature-based activity as part of an overall public health strategy, for example, the 'Muckin4life' initiative (House of Commons, 2012). The lack of longitudinal evidence, or use of randomized controlled trials, is viewed as problematic in making the case for such investment (Buck, 2016), although it is questionable as to how such tight control offered by such a method can easily measure complex, real world settings. Finally, it is encouraging to note the interest in green space for public health purposes (Public Health England, 2014), and gardening as a recommended mode of enhancing health and wellbeing by the UK Government (Department of Health, 2011).

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