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GREEN CARE IN THE COMMUNITY

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Summary of portfolio

This thesis considers experiences of green care interventions and psychological processes impacted through attendance.

Section A is a literature review. It draws together qualitative research that explores participant experiences of a variety of group based, green care interventions. Findings suggest that common benefits are provided across intervention types, and that these can be related to psychological, social and environmental contexts. The review concludes there is a need for further research to understand how those attending green care interventions can benefit most. Additionally, there is a need to better understand how psychological processes are impacted by factors associated with social, environmental and occupational components of green care interventions.

Section B is an empirical paper. It presents a grounded theory study that seeks to explore how participants experiencing mental health difficulties understand the impact of attending community gardening groups on their mental health. Key processes that appear to parallel those involved in one to one psychotherapeutic work are indentified, and mechanisms by which these may occur are considered. Clinical implications are discussed and directions for future research suggested.

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Section A
Green care interventions: A review of participant experiences

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Abstract

There is a growing body of qualitative research that explores user experiences of green care interventions for mental health. This review aimed to draw together this research, seeking firstly to summarise findings to date and secondly to compare and contrast experiences of different intervention types falling under the green care umbrella. The findings of eighteen qualitative papers were included in the review, which illustrated a range of experiences and benefits related to the environmental, social and occupational contexts within different types of green care interventions.

The review suggests that regardless of type, green care interventions may promote similar psychological benefits, such as increased confidence, self-esteem and improved mood. Similarly positive relationships with non-human nature and other people, as well as benefits related to increased activity are commonly reported by participants. Differences between the dominance and balance of component elements within different types of green care intervention, as well as attendance frequency and duration may impact the range and intensity of benefits experienced. Future research could usefully seek to understand how differing component factors of Green Care interventions may affect mental health, in order to design interventions to best meet individual needs. Additionally, there is a need to understand how these factors combine to impact psychological processes and promote therapeutic change.

Keywords: Green Care, Mental Health, Intervention

Green care interventions: A review of participant experiences

What is green care?

Green care is an umbrella term that includes a wide range of interventions aimed at improving health and well-being. The common and defining feature of all green care interventions is the "use of nature and the natural environment as a framework in which to create these approaches" (Sempik, Hine, & Wilcox, 2010,p.11).

Sempik et al. (2010) make clear that the concept of green care involves more than a passive experience in a natural setting, rather it describes an active process in which the natural environment is used with the intention of providing benefits to well-being, both physical and mental. As opposed to leisure time spent in a natural setting, green care interventions have specific intended outcomes, most often working with vulnerable or socially excluded populations.

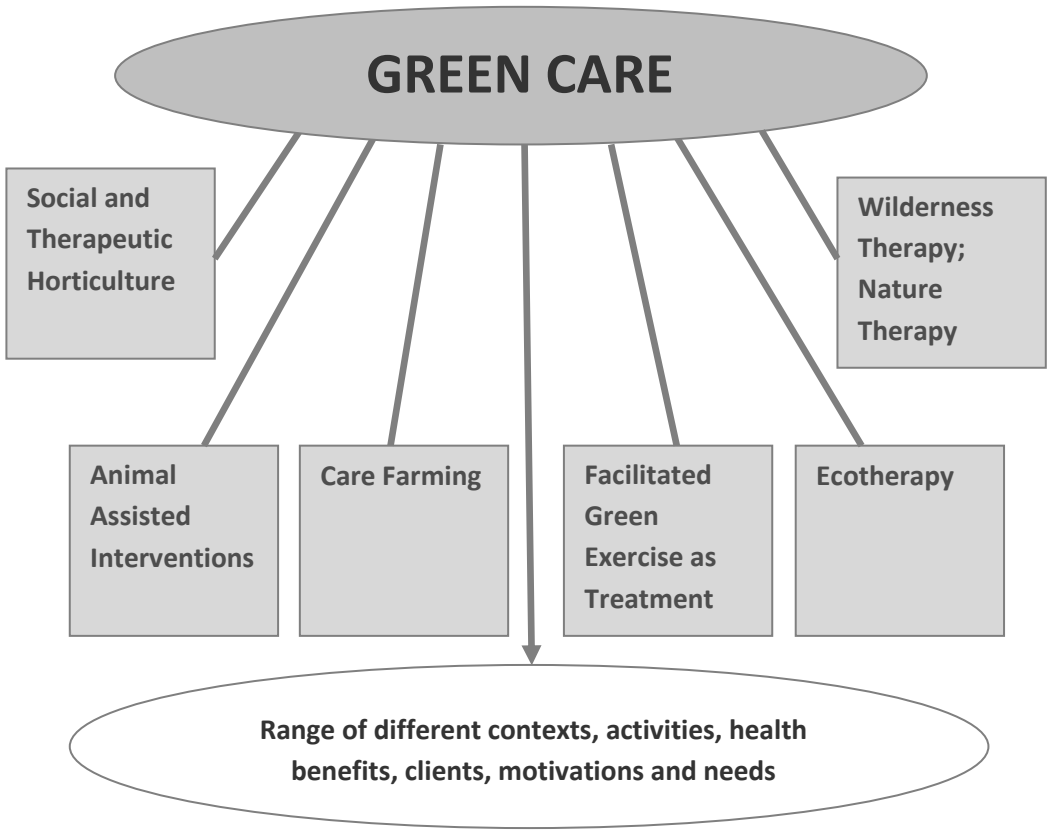
The use of natural spaces for recuperation, health related activities and occupation is not new. Historically, hospitals, monasteries, churches and prisons have included gardens to promote healing and reflection (Gerlach-Spriggs et al., 1998) as well as those to provide meaningful occupation and health related benefits (Frumkin, 2001). However, in the 1950s and 1960s, with an increasing focus on medical intervention, healthcare technology and the closure of hospital farms and gardens, there was a decline in the therapeutic use of nature (Hine et al., 2008a; Sempik et al., 2010).

In recent years, there has however, been a growing movement towards the use of green care once again (Hine et al., 2008a; Sempik et al., 2010; Haubenhofer, Elings, Hassink & Hine, 2010), producing an ever growing body of research, as well as the promotion of the use of the natural environment for psychological health by government and charities (Department for Environment, Food & Rural Affairs, 2011; Faculty of Public Health, 2010; Mind, 2007).

Types of green care

Hine et al. (2008b) broadly define the types of interventions that constitute green care as shown in Figure 1.

Figure 1: Under the *green care* umbrella – the diversity of green care



Adapted from "Care farming in the UK: evidence and opportunities." By Hine, R.,Peacock, J. & Pretty, J. National Care Farming Initiative: UK

Sempik et al., (2010) highlight areas of overlap between different types of green care interventions, stating that one of the required tasks of the green care movement is to be more able to clearly define and contextualise what green care is and is not. Similarly there is a need to develop a theoretical framework that is applicable to all types of green care, and yet allows specific differences between types to be recognised. Definitions and features of types of green care interventions are given in Table 1.

Theoretical perspectives

Theories suggesting mechanisms by which contact with nature is beneficial are most often used as the theoretical foundation for green care interventions. The two dominating theories are Attentional Restoration Theory (Kaplan & Kaplan 1989; Kaplan 1995) and Stress Reduction Theory (Ulrich et al., 1991). Both have their roots in the Biophilia Hypothesis (Wilson, 1984) which states that humans have an evolutionary relationship with nature that genetically predisposes them to affiliate with life like processes.

Attentional Restoration Theory focuses on the process of attention, suggesting that our cognitive resources become depleted in everyday life as we use our directed attention to concentrate on tasks we wish to accomplish. As cognitive resources become exhausted we begin to suffer from directed attention fatigue (Kaplan, 1995). Recovery from directed attention fatigue requires the engagement of an alternative type of attentional processing, that of indirect attention or fascination which is non-goal oriented. Within natural environments it is argued, fascination dominates as attention is effortlessly held by a variety of sensory stimuli. In addition to fascination, three additional factors are required in order for an environment to be restorative (Table 2).

Table 1: Definitions of types of *green care*

Type	Definition	Common features
Social and Therapeutic Horticulture	"*the participation by a range of vulnerable people in groups and communities whose activities focus around horticulture and gardening*" (Haubenhofer, Elings, Hassink, & Hine, 2010,p.108).	Usually there is no formalised therapeutic component and the goal is a more generalised well-being as opposed to a specific goal, a defining feature of *Horticultural Therapy* (Sempik, Aldridge, & Becker, 2003,p109).
Animal Assisted Interventions	"*goal directed interventions in which an animal that meets specific criteria is an integral part of the treatment process … key features include specified goals and objectives for each individual and measured progress*" (Kruger & Serpell, 2006,p.23).	Such interventions include equine-facilitated psychotherapy, and the therapeutic use of companion animals.
Care Farming	"*the use of commercial farms and agricultural landscapes as a base for promoting mental and physical health, through normal farming activity*" (Hine, Peacock, & Pretty, 2008a,p.247).	Whilst the tasks and levels of care and support on different farms may vary, activities focus on regular farming task such as working with crops, horticulture and livestock and there is usually no formalised therapeutic component.
Facilitated Green Exercise as Treatment	"*synergistic* effect of engaging in physical activities whilst simultaneously being directly exposed to nature" (Sempik et al., 2010,p.41).	Green exercise activities include running, walking and cycling in a variety of outdoor locations.
Ecotherapy	"*supporting disadvantaged or marginalised people with a variety of disabilities to work with nature (both plants and wildlife), with the specific aim of the conservation or establishment of a local habitat or green space as a form of therapy*" (Hine, Peacock, & Pretty, 2008b,p.29).	Ecotherapy can comprise a wide range of activities that jointly benefit those taking part and the environment, for example, woodland management and conservation work.
Wilderness Therapy	is an "*immersion in wilderness or comparable lands, group living with peers, individual and group therapy sessions, and educational and therapeutic curricula, including backcountry travel and wilderness living skills*" (Russell & Phillips-Miller, 2002,p.415)	Usually comprises psychotherapeutic goals, using nature as *co-therapist*. Wilderness therapy is most commonly used to work with young people with behavioural problems, aiming to separate them from negative influences of their usual environments to lead to therapeutic change.
Healing Gardens	"*are specifically designed to support recovery processes caused by illness or injury by reducing physical symptoms, reducing stress, and increasing general well-being*" (Haubenhofer et al., 2010,p.108).	Users of these are encouraged to spend time either passively or actively in the garden environments, either alone or in groups. There may be a formalised therapy or therapeutic elements incorporated into programmes, these types of interventions are commonly used for stress reduction, improving mood and cognitive stimulation in Alzheimer's disease.

Table 2: Attentional Restoration Theory - Factors of a restorative environment

Factor	***Description***
Fascination	*Fascination* refers to indirect, non goal directed attention, the engagement of which is required to recover from *directional attention fatigue*. This type of attention often dominates in natural environments as attention is effortlessly held by a wide range of sensory stimuli.
Being Away	*Being away* from the mental processing associated with directed attention, often ones day to day activities which involves "*a conceptual rather than a physical transformation*" (Kaplan, 1995, p.173).
Extent	*Extent* is provided by a wide range of stimuli with which to become engaged and that "*constitutes a whole other world*" (Kaplan, 1995, p.173).
Compatibility	*Compatibility* between the environment and a person's intentions "*the setting must fit what one is trying to do and what one would like to do"* (Kaplan, 1995, p.173).

It is proposed that natural environments provide each of these factors, which when experienced together provide the necessary conditions for attentional restoration and a corresponding feeling of mental well-being.

There is evidence to suggest that natural environments can support attentional recovery (Hartig, Evans, Jamner, Davis, & Gärling, 2003; Herzog, Black, Fountaine, & Knotts, 1997; Laumann, Gärling, & Stormark, 2003; Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2008; Ottosson & Grahn, 2008), an increase in reflective capacity (F. S. Mayer et al., 2008) and an ability to alter one's perspective on difficulty (Ottosson & Grahn, 2008).

Stress Reduction Theory (Ulrich et al., 1991) suggests that due to our evolutionary history we are predisposed to relax and recover from stress in non-threatening natural environments. Natural stimuli, it is argued, trigger the parasympathetic nervous system, evoking feelings of relaxation and calmness.

In support of Stress Reduction Theory there is evidence for reduction of physiological indicators of stress in natural as opposed to urban environments (Hartig et al., 2003; Laumann et al., 2003). Those living in urban environments have been shown to process stress less

readily than those living in rural locations (Lederbogen et al., 2011) and it has been suggested that every day access to nature may provide a buffer to stress, enhancing coping capabilities (Ottosson & Grahn, 2008).

Evidence for green care interventions

In addition to cognitive and physiological benefits afforded by the natural environment, many green care interventions also offer social (Gonzalez, Hartig, Patil, Martinsen, & Kirkevold, 2011; Sempik, Rickhuss, & Beeston, 2014) and occupational benefits (Kam & Siu, 2010; Stepney & Davis, 2004) and a means to counteract the negative effects of stigmatisation (Holmes, 2010; Parr, 2007; Stepney & Davis, 2004).

Nature based interventions have been shown to provide a reduction in symptomology for a wide range of mental health difficulties including PTSD (Gelkopf, Hasson-Ohayon, Bikman, & Kravetz, 2013), depression (Gonzalez, Hartig, Patil, & Martinsen, 2011; Kam & Siu, 2010; Stepney & Davis, 2004), and anxiety (Kam & Siu, 2010).

Further benefits associated with an increased sense of meaning (Parkinson, Lowe, & Vecsey, 2011; Parr, 2007; Rappe, Koivunen, & Korpela, 2008; Stepney & Davis, 2004), belonging (Diamant & Waterhouse, 2010), reduction in stress (Kam & Siu, 2010; Rappe et al.,2008) and improvements in physical health (Rappe et al., 2008) have also been reported.

Rationale for review

Much research related to green care interventions is designed to measure effectiveness. This raises questions as to what is considered effective, by whom, and what it is hoped interventions will achieve. A large proportion of the research evidence has been focused upon reduction of symptoms, however improvements in quality of life and happiness are not necessarily dependent on this (Anthony, 1993; Leamy, Bird, Le Boutillier, Williams & Slade, 2011). It has been argued that perhaps the best way to assess outcomes of green care services is to "listen to the views and experiences of participants" (Sempik et al., 2010,p.113).

There have been a number of reviews drawing together the growing body of research around green care interventions, including those focused on gardening (Clatworthy, Hinds, & Camic, 2013), allotment gardening (Genter, Roberts, Richardson, & Sheaff, 2015) care farming (Pedersen, Patil, Berget, Ihlebæk, & Gonzalez, 2015) and green care interventions in general (Annerstedt & Wahrborg, 2011; Sempik et al., 2003; Wilson, Ross, Lafferty, & Jones, 2009).

There has not, however, been a review that combines evidence across different types of interventions and focuses in detail on the experiences of those participating. This review aims to add to our understanding of green care interventions by summarising participant experiences of a range of green care interventions. Additionally, it aims to consider similarities and differences in perceived outcomes of attendance at different types of green care intervention.

Method

Eligibility criteria

The review aimed to collate qualitative findings from qualitative and mixed methods research that specifically addresses the experiences of people with mental health difficulties, attending programmes of green care interventions. Mental health difficulty was defined as any symptom of mental distress, such as stress, as well as any commonly used label to define symptoms, such as depression. In order to maintain a degree of homogeneity between the types of interventions, the review included only those carried out in groups and further excludes wilderness therapy due to the specific nature and client group most often taking part in this type of programme. Green care interventions for the purpose of this review were therefore scoped to include group gardening, care farm and group therapeutic interventions.

Research focusing on children under 16 years of age, organic brain dysfunction, dementia or learning disabilities was not included. The scope was further narrowed to include only community based participants, excluding institutionalised populations, such as those in nursing homes or prisons.

Thrive, formally the Royal Society for Horticultural Therapy, was set up in 1978 demonstrating a longer standing interest in green care than the recent academic interest might suggest. In order to include as many studies as possible this review has included studies from this date because it arguably marks the beginning of green care within the UK. The inclusion criteria are detailed in Table 3.

Table 3: Review inclusion criteria

Criteria	Description
Qualitative Data	Specifically interview or focus group data, including qualitative data from mixed methods studies
Firsthand Accounts	Limited to accounts of personal experiences
Participants	Limited to participants living in the community, excluding those in residential care and institutionalised settings. Limited to mental distress (excluding dementia, organic brain dysfunction, learning disability, children under 16)
Intervention Type	Includes only green care interventions carried out in groups, excludes wilderness therapy.
Date Range	Published January 1978 – March 2016
Publication Type	Published in a peer reviewed journal
Language	Published in English

Literature search

The literature search was carried out in July 2015 and updated in March 2016. A systematic approach was taken, using a clearly defined method (Booth, Papaionnou, &

Sutton, 2011,p.72). A search of seven online databases (Table 4) was carried out using the search terms defined in Table 3. A flow chart detailing the search process is shown in Figure 2.

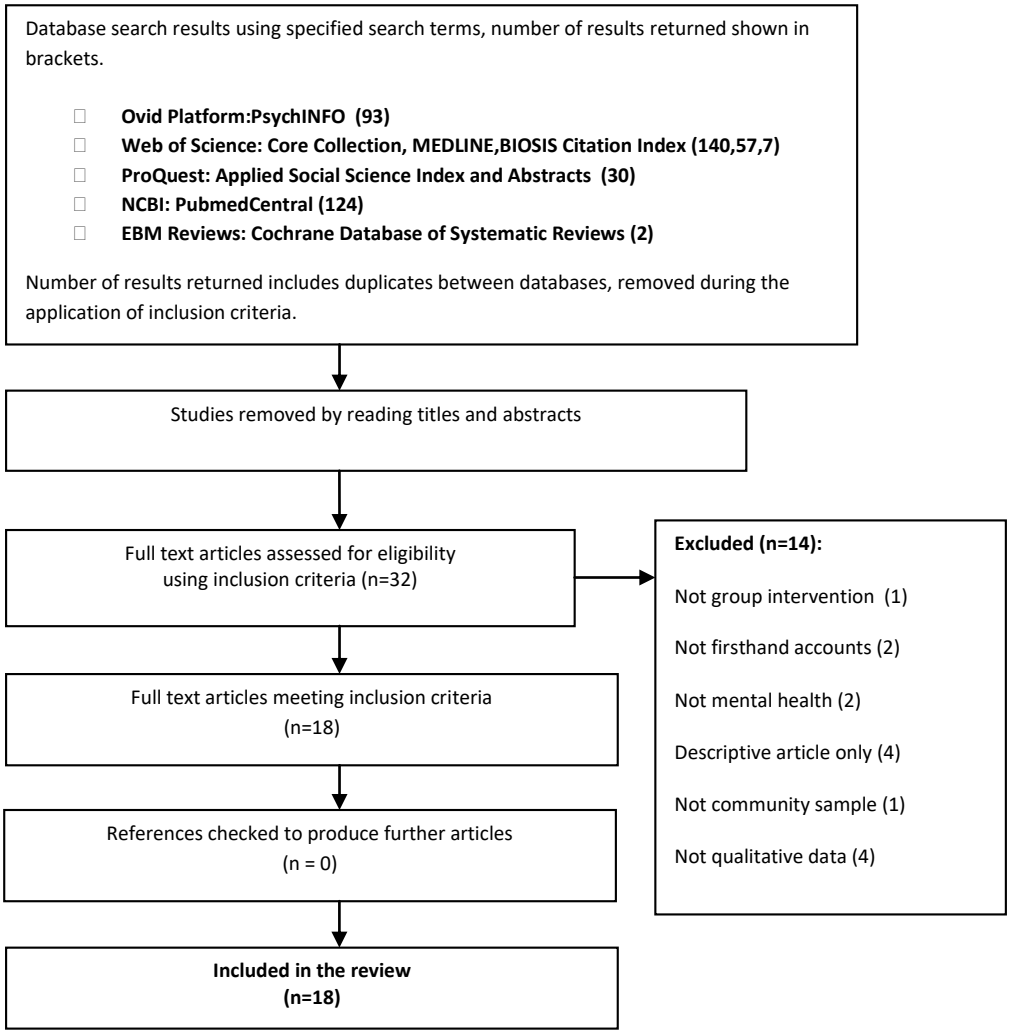
Table 4: Databases searched

Platform	Database
Ovid	PsychINFO (112)
Web of Science	Core Collection (95) MEDLINE (75) BIOSIS Citation Index (21)
ProQuest	Applied Social Science Index and Abstracts (25)
NCBI	PubmedCentral (30)
EBM Reviews	Cochrane Database of Systematic Reviews (0)

Table 5: Search terms

Terms	Combined with
Horticult* Therapy	OR
Therapeutic Horticult*	OR
Garden* Therapy	OR
Therapeutic Garden*	OR
Green Care	OR
Ecotherapy	OR
Care Farm*	
****Indicates truncation – all words with root are retrieved***	

Figure 2: Search and selection process



Review

Overview of selected studies

The included studies examine user experiences of a range of green care intervention types and are summarised in Table 6. Participant characteristics for all studies are shown in Table 7 and orginal study themes and content in Appendix A.

Table 6: Summary of included studies

Study	Location	Aim	Intervention	Data Collection	Data Analysis	Key Findings
Adevi & Mårtensson (2013)	Sweden	To explore the impact of garden therapy on recovery from stress.	A programme at a garden including horticultural activities, nature assisted therapy, relaxation and art therapy	Semi-structured interviews	Grounded Theory	Contact with nature contributed to increased well-being and feelings of vitality. The place, people and activities of the garden were seen as providing opportunities for activity and interaction which the service users could use according to their own needs and interests.
Barley, Robinson & Sikorski (2012)	UK	To determine the views of members of the project, regarding their participation.	Horticultural garden with area managed as a nature reserve with arts groups occurring once per week.	Semi-structured interviews	Thematic Analysis	Participants experienced increased well-being through the provision of purposeful and enjoyable activity, escape from problems, improved mood and self-perceptions. Social contact was especially important to participants.
Elings & Hassink (2008)	Netherlands	To evaluate the effects of attending care farms.	8 different care farms	Focus groups using a semi structured topic list	Data grouped 'thematically'	Study participants felt better mentally and physically, feeling more useful with increased confidence, fitter and with increased self-respect.
Ellingsen-Dalskau, Morken, Berget, & Pedersen (2015)	Norway	To understand experiences of people with mental health difficulties, working on care farms.	Four care farm interventions, participants attending from 1 month to 2 years, between 2-4 days per week, 2 – 7.5 hours per day.	Semi-structured interviews	Phenomenological approach	The study identified important factors were related to structure and flexibility, understanding and acknowledgment, guidance and positive feedback, nature and animals and reflects on the future and personal functioning.
Eriksson, Karlström, Jonsson & Tham (2010)	Sweden	To explore how participants of a stress rehabilitation programme experienced the intervention, and how effects were integrated into life after the programme.	Rehabilitation programme over 12 weeks with number of sessions between 14 and 36. Sessions were both in groups and individually. Programmes included both group and individual CBT oriented psycho education and discussion and practical activities in a therapeutic garden.	Open ended interviews	Grounded Theory	Different approaches to rehabilitation may be useful to achieve different changes in everyday life, e.g. CBT to help learn strategies for coping with stressful situation, pleasurable activities to help recognise the benefits and ways to achieve occupational balance.
Eriksson, Westerberg & Jonsson (2011)	Sweden	To explore how participants experience programme of stress rehabilitation in a therapeutic garden, and how effects continued into life after the programme.	Programme of stress rehabilitation, 10 sessions over 10 weeks, two follow up sessions at 3 and 4 months. Sessions included group psycho-education (CBT orientation), mindfulness exercises and activities in the garden.	Semi-structured interviews	Grounded Theory	The core category describes a process of "leaving everyday life" to attend the programme, and taking insights gained at the programme back to "everyday life".

Table 6: Summary of included studies (cont.)

Study	Location	Aim	Intervention	Data Collection	Data Analysis	Key Findings
Fieldhouse (2003)	UK	To understand how social networking may have arisen during attendance at a horticultural group by examining what the group meant to members.	A horticultural allotment group, most participants attended on a weekly basis	Interviews and a focus group	A process of identifying and giving weight to categories and establishing relationships between categories.	Key phenomena from the natural environment, social group and public location combined to provide benefits associated with personal experience, social contact, and group and community membership.
Granerud & Eriksson (2014)	Norway	To understand experiences of users attending green care services for people with mental health difficulties or drug use.	A number of green care services linked to farms. Attendance ranged from between 4 months to 3 years, between once and four times per week, for between 4-5 hours each time.	Interviews	Grounded Theory	Participants reported positive experiences, destigmatising effects of participation and increased "meaning in life".
Hassink, Elings, Zweekhorst, van den Nieuwenhuizen & Smit (2010)	Netherlands	To identify the elements of care farms users feel most important, to find out if care farms can be examples of strength-based/empowerment-oriented practice.	A number of different care farms, participants most often attending a few half days per week	Semi-structured interviews	Data grouped thematically and frequency of categories calculated	Valued aspects were the social community, attitude of the farmer, the diverse range of activities and working with animals, provision of a daily structure, working at own pace and being in a natural environment.
Iancu, Zweekhorst, Veltman, van Balkom & Bunders (2014)	Netherlands	To compare experiences at care farms to those at day care centres	32 care farms and 6 day centres	Structured interviews and in-depth discussions	Integrated qualitative approach	Participants at all interventions engaged in a trajectory of recovery however interventions differed as on continuums of *open and closed community* and *patient and worker identity*. Care farm workers experienced more open community engagement and built identities as 'workers' as opposed to 'patients' to the greatest extent.
Kam & Siu (2010)	Hong Kong	To investigate the effect of a horticultural programme on stress, quality of life and work performance for persons with psychiatric illness.	A horticultural activity programme including indoor tasks (e.g. packing) and outdoor tasks (e.g. vegetable processing). 10 consecutive days of attendance, for one hour each day.	Mixed methods study, review includes only data from the qualitative part of the study - semi structured interviews	Not stated 'key themes identified'	Qualitative data showed positive impact and benefit as well as some challenges experienced by those in the intervention group.

Table 6: Summary of included studies (cont.)

Study	Location	Aim	Intervention	Data Collection	Data Analysis	Key Findings
Kogstad, Agdal & Hopfenbeck (2014)	Norway	To evaluate the effects of green care services for youth in vulnerable situations risking social exclusion.	Farm based enterprises attended approx 5 days a week, 6 hours a day	Semi-structured interview	Qualitative content analysis	Core success factors relating to principles of recovery were described such as recognition, supportive relationships, meaning, motivation, self-esteem, confidence and hope.
Pálsdóttir, Grahn & Persson (2013)	Sweden	To assess changes in experiences of everyday occupations and symptoms of stress after participation in a nature-based vocational rehabilitation.	12 week nature based rehabilitation programme. Groups ran four days per week, 3.5 hours per day, with a gradual build up to four day a week participation.	Structured interview	Handwritten notes organised into themes.	After the programme participants organised their lifestyle in a more balanced way.
Pálsdóttir, Persson, Persson & Grahn (2014)	Sweden	To explore how participants with stress related mental health difficulties experience the impact of the programme in relation to the role of the natural environment.	12 week rehabilitation programme set in a garden, aiming to reinforce physical and mental capacity with support from the natural environment.	Semi-structured interview	IPA	A three phase process of rehabilitation appeared to be in operation, *Prelude, Recuperating* and *Empowerment*.
Parkinson, Lowe & Vecsey (2011)	UK	To further understand the therapeutic benefits of horticulture	1 community allotment, 1 conservation scheme and four hospital garden projects	Mixed methods - qualitative side interviews.	No formal method stated	A wide range of factors affected motivation to engage in the projects including social factors and personal appeal.
Pedersen, Ihlebaek & Kirkevold (2012)	Norway	To understand experiences of a farm-assisted intervention and what the important elements in relation to mental health were felt to be.	12 week farm intervention, attendance 2 times per week.	Interviews	Method consistent with Thematic Analysis.	Contact with animals should be considered an important part of green care interventions. Taking part in activities as an equal and the experience of living 'an ordinary life' should be considered essential when planning interventions.
Sonntag-Öström et al. (2015)	Sweden		3 month forest based programme – 22 visits to the forest.	Semi-structured interview guide with open ended	Grounded Theory	Forest visits provided places for rest, were experienced as restorative, provided opportunities for reflection and may have started the coping process.

Table 6: Summary of included studies (cont.)

Study	Location	Aim	Intervention	Data Collection	Data Analysis	Key Findings
				questions		
Wilson et al., (2010)	UK	To evaluate the programme and identify the elements of therapeutic change.	12 week ecotherapy programme, approximately 3 hours per week	Semi-structured interviews with clients, 2 focus groups with staff (data from staff not included in this review).	IPA	The programme was perceived to represent a "stepping stone to further community engagement".

Table 7: Participant characteristics

Study	Sample Size	Sex	Age	Mental health difficulty
Adevi & Martensson (2013)	5	4 female 1 male	25-60	Stress (Exhaustion disorder) (5)
Barley, Robinson & Sikorski (2012)	16	7 female 9 male	38-91	Bipolar disorder (2) Depression (8) Anxiety and Depression (1) Psychotic Disorder (2) Social Isolation (2) Multiple sclerosis (1)
Elings & Hassink (2008)	42	Not stated	Not stated	Mixture of mental health difficulties and drug and alcohol abuse.
Ellingsen-Dalskau, Morken, Berget & Pedersen (2015)	10	8 female 2 male	20-42	Not stated
Eriksson, Karlstrom, Jonsson & Tham (2010)	8	7 female 1 male	32-50	"unhealthy degree of stress" (15)
Eriksson, Westerbery & Jonsson (2011)	5	5 female	36-52	Anxiety and Depression (1) Depression (2) Acute reaction to stress (1) Burnout (1)

Table 7: Participant characteristics (cont)

Study	Sample Size	Sex	Age	Mental health difficulty
Fieldhouse (2003)	9	3 female 6 male	24-61	Schizophrenia (4) Psychotic episodes & anxiety(1) Hypomania (1) Depression with somatic symptoms (1) Psychotic episodes & depression (1) Undetermined, outburst & low mood (1)
Granerud & Eriksson (2014)	20	12 female 8 male	22-55	Long standing mental health problems including psychotic disorders, personality disorders, and drug addiction.
Hassink et al. (2010)	16	4 female 12 male	not stated	Mixed, including depression, schizophrenia and anxiety disorders.
Iancu et al. (2014)	14 in care farms, (12 in day care services)	5 (5) female 9 (7) males	mean age 39.6 (44-48.6)	Mixed common and severe mental health difficulties
Kam & Siu (2010)	12 (including 2 drop outs)	Not stated	Not stated	Schizophrenia spectrum disorder, bipolar disorder, major depression.
Kogstad, Agdal & Hopfenbeck (2014)	9	7 female 2 male	17-25	Different degrees of problem severity, including substance abuse, self-destructive behaviour, suicide attempts, traumatic life events and lack of stable adults in childhood.
Palsdottir, Grahn & Persson (2013)	21	Female 19 Male 2	29-68 years old	Adjustment disorder and severe reaction to stress or depression.
Palsdottir, Persson, Persson & Grahn (2014)	43	35 female 8 male	25-62	Adjustment disorder and severe reaction to stress or depression.
Parkinson, Lowe & Vecsey (2011)	40 in total: 10 interviews	2 female 8 male	Participant data is given but not specifically for those who gave interviews.	Mixed mental health difficulties
Pedersen, Ihlebaek & Kirkevold (2012)	8	7 female 1 man	25-54	Depression (8)
Sonntag-Ostrom et al. (2015)	19	16 female 3 male	29-60	Long term stress (19)
Wilson et al. (2010)	28	Female 10 Male 18	Mean age 41.9 standard deviation 10	Mixed

Horticultural interventions. Four studies were in this category. Barley, Robinson and Sikorski (2012) and Fieldhouse (2003) used qualitative methods to explore experiences at a social and therapetuic horticulture project and allotment group, respectively. Two studies were of mixed methodological design, however this review included only data from the qualitative parts of the studies. Parkinson, Lowe and Vecsey (2011) interviewed participants attending a range of horticulturally based projects and Kam and Siu (2010) focussed on a horticultural activity programme.

Farm based interventions. Seven studies (Elings & Hassink, 2008; Ellingsen-Dalskau et al., 2015; Granerud & Eriksson, 2014; Hassink et al., 2010; Iancu et al., 2014; Kogstad, Agdal, & Hopfenbeck, 2014; Pedersen, Ihlebæk, & Kirkevold, 2012) focussed on farm based interventions, and all but one (Pedersen et al., 2012) included multiple farm based interventions in their studes. Participants in these studies undertook a range of farm based activities, such as those associated with food production and caring for animals. One study (Hassink et al., 2010) included the care farm experiences of different client groups and Iancu et al (2014) compared experiences at care farms with those at day centres. Only the data from participants with mental health difficulties, attending care farms will be included in this review.

Nature based programmes with a psychotherapeutic component. Studies under this heading comprised programmes of structured activities carried out in a natural environment. Five papers under this heading were conducted at the same rehabilitation centre in Sweden, The Alnarp Garden, (Adevi & Mårtensson, 2013; Eriksson et al., 2010; Eriksson et al., 2011; Pálsdóttir et al., 2013; Währborg, Petersson, & Grahn, 2014). These studies included garden based acitivies as well as group discussions based on cognitive behavioural therapeutic principles. They will be collectively referred to as ‘the Alnarp Garden studies‘ in this review.

Nature based programmes without a psychotherapeutic component. Sonntag-Öström et al. (2015) explored participant experiences of a forest based rehabilitation programme for people experiencing long term exposure to mental stress and Wilson et al., (2010) studied experiences of an ecotherapy programme that included conservation, construction and bushcraft tasks, as well as enviromental art and excercise activites. These studies will be referred to as the 'Forest' and 'Ecotherapy' programmes throughout this review.

Theoretical orientations

The green care interventions in this review did not have a strong theoretical basis in terms of design, however the studies cited a range of relevant theory and research evidence.

Attentional Restoration Theory was referenced by studies of horticultural (Fieldhouse, 2003; Kam & Siu, 2010; Parkinson et al., 2011), farm based (Kogstad et al., 2014; Pedersen, Martinsen, Berget, & Braastad, 2015) and Forest programmes (Sonntag-Öström et al., 2015).

Stress Reduction Theory (Ulrich et al., 1991) was cited by one horticultural programme (Fieldhouse, 2003) and the Forest programme (Sonntag-Öström et al., 2015).

Studies conducted in the Alnarp Garden described how the garden was especially designed according to theoretical perspectives from environmental psychology (Stigsdotter & Grahn, 2003). The programme attempted to use the natural environment to provide a balance between offering support and opportunities for activity, as suggested by Social Environment Theory (Ottosson & Grahn, 2008).

The importance of meaningful activity was stressed by the occupational therapy perspective (Clark, Wood, & Larson, 1998) adopted by Fieldhouse (2003). The need to address secondary effects of mental health difficulties such as social exclusion, low self-esteem and physical inactivity, in the prescence of symptoms was highlighted by studies using a recovery approach (Davidson & Strauss, 1992; Fisher, 2008). This was used to

ground the work of a horticulturally based study (Parkinson et al., 2011), three farm based studies (A Granerud & Eriksson, 2014; Iancu et al., 2014; Kogstad et al., 2014) and the Ecotherapy programme (Wilson et al., 2010).

Quality assessment

Explicitly stated criteria (Appendix B) derived from the Critical Appraisal Skills Programme (CASP) for qualitative research (Public Health Research Unit, 2006) were used to score each paper in the review (Appendix C). The intention was to be able to give weight to findings based on the research quality, however no study was excluded due to this score. The major issues around quality will be considered here.

As all studies explored participant experiences of green care interventions, qualitative methodology can be considered the most appropriate research design. All studies had clearly stated aims and were grounded in the context of existing research, practice and theory.

Ethics and consent. All studies stated that ethical approval was sought for the research. In most cases there was confirmation that consent had been gained from participants to take part, although one study (Adevi & Mårtensson, 2013) stated not receiving consent forms from all participants which is clearly problematic. There was a lack of information regarding the process of gaining consent in eight studies (Barley et al., 2012; Ellingsen-Dalskau et al., 2015; Granerud & Eriksson, 2014; Hassink et al., 2010; Pálsdóttir et al., 2013; Parkinson et al., 2011; Pedersen et al., 2012; Sonntag-Öström et al., 2015)**.**

Participants. Three studies failed to provide basic demographic participant information (Elings & Hassink, 2008; Hassink et al., 2010; Kam & Siu, 2010) and two studies (Ellingsen-Dalskau et al., 2015; Granerud & Eriksson, 2014) did not provide detailed information regarding mental health difficulties experienced within the sample.

In some studies the intervention itself was inadequately described, making it difficult not only to understand the nature of the programme, but also to be able to compare with other

interventions. For example omissions as to the number of visits or sessions (Adevi & Mårtensson, 2013; Barley et al., 2012; Elings & Hassink, 2008; Fieldhouse, 2003; Granerud & Eriksson, 2014), the time period over which the intervention occurred (Adevi & Mårtensson, 2013; Elings & Hassink, 2008; Hassink et al., 2010) and the programme of activities involved (Adevi & Mårtensson, 2013; Granerud & Eriksson, 2014).

Sampling. Sampling strategies of a number of studies was problematic. Three studies (Elings & Hassink, 2008; Pálsdóttir et al., 2013; Pedersen, Martinsen, et al., 2015) did not explicitly state selection criteria, leaving questions as to the reasoning behind including some participants as opposed to others. Two studies (Ellingsen-Dalskau et al., 2015; Eriksson et al., 2010) stated a 'theoretical sampling method' was used. However, no information was given as to the decisions behind this process, making it difficult to understand**.**

Five studies (Barley et al., 2012; Iancu et al., 2014; Kogstad et al., 2014; Sonntag-Öström et al., 2015; Wilson et al., 2010) used self-selection of participants, two (Adevi & Mårtensson, 2013; Eriksson et al., 2011) hand-picked their sample, two care farm studies (Ellingsen-Dalskau et al., 2015; Hassink et al., 2010) involved the farmer in the selection of participants and one (Parkinson et al., 2011) excluded participants who attended less than three sessions. The risk is that these studies only included those who had enjoyed or benefited most from the intervention, that more positive experiences and relationships were favoured, and that voices of those with negative experiences remain unheard.

Furthermore, the experience of being 'hand-picked' for the study may have resulted in perceived pressure to respond positively, omitting any less favourable experiences. Fieldhouse (2003) recruited participants by having them contacted by the Community Mental Health Team from which they were receiving care, again, raising questions as to whether participants felt pressurised in any way to take part or respond positively.

The time delay between participants ceasing attendance at the intervention and participation in the study interviews varied between studies. In two studies (Adevi & Mårtensson, 2013; Pedersen et al., 2012) this was between 14 and 18 months perhaps raising questions regarding the accuracy of retrospective accounts of experiences.

Data collection and analysis. All qualitative studies gave a clear description of data collection methods, and all except one (Elings & Hassink, 2008) also clearly stated the analysis process. The mixed method studies (Kam & Siu, 2010; Parkinson et al., 2011), however, failed to provide details of data collection and analysis procedures. In addition one (Kam & Siu, 2010) did not provide data to evidence findings of the qualitative part of their study.

Three studies (Adevi & Mårtensson, 2013; Granerud & Eriksson, 2014; Sonntag-Öström et al., 2015) reported using Grounded Theory, however, did not carry out data collection and analysis concurrently, a defining characteristic of the method. Adevi and Mårtensson (2013) particularly, appeared to have used a methodology more akin to thematic analysis, with codes being 'grouped' as a final stage of analysis as opposed to the development of categories throughout the analysis.

Two studies (Fieldhouse, 2003; Granerud & Eriksson, 2014) collected data using focus groups, however there appeared to be a lack of consideration of the potential problems of collecting data in this way, such as the influence of group dynamics and difficulty inferring consensus (Sim, 1998) . Finally Pálsdóttir et al., (2013) did not record and transcribe but collected data from interviews in the form of written notes. This potentially introduces researcher bias in terms of what is considered important or relevant enough to record. Failure to reflect on this process in a reflexive manner may have resulted in potential bias being unchecked.

Data validation. Only three studies (Elings & Hassink, 2008; Kam & Siu, 2010; Parkinson et al., 2011) failed to include at least some method of data validation. However, for the most part this involved confirming findings with research colleagues. Whilst this is a well recognised method for validating findings (Yardley, 2000), the degree to which co-researchers are likely to hold alternative views or challenge assumptions may be limited. Seeking out alternative 'other' views may have been helpful, as would checking data with original participants which occurred in only two studies (Fieldhouse, 2003; Hassink et al., 2010).

Additional factors. Interaction of effects of different aspects of the studies was not explicitly discussed by any of the studies. It would have been helpful to understand participant experiences of differing aspects of programmes involving more than one component, particularly within the Alnarp Garden studies that included what appears to be group CBT, mindfulness training and nature exposure.

Similarly, all the care farm studies interviewed participants taking part in different programmes, Sonntag-Öström et al. (2015) included participants taking part in different iterations of the same forest based programme, and one study (Barley et al., 2012) included both art and gardening groups with not all participants being involved in both groups. There was however, very little consideration on how these differing factors may have affected participant experiences.

A limitation of all studies was a lack of demonstrated consideration regarding reflexivity. Three studies (Pálsdóttir et al., 2014; Pedersen et al., 2012; Wilson et al., 2010) did state that their chosen methodology valued consideration of such effects, however a clear statement of how their own research may have been affected by these was lacking. Barley et al., (2012,p.128) states "different backgrounds and level of involvement in the garden" were considered, however conclusions drawn from these considerations were not made clear.

Findings

Horticultural interventions. Participants in these studies reported improved mood (Barley et al., 2012; Fieldhouse, 2003), increased feelings of self-worth (Barley et al., 2012) and increased confidence (Barley et al., 2012; Kam & Siu, 2010). The gardens were felt to be places where stress could be released (Kam & Siu, 2010), where it was possible to feel more relaxed (Fieldhouse, 2003; Parkinson et al., 2011) and experience increased well-being (Parkinson et al., 2011).

Participants were aware of thinking differently on the allotment having a 'clearer head' and becoming more engaged in the present moment (Fieldhouse, 2003).

Two of the studies (Barley et al., 2012; Parkinson et al., 2011) reported that the groups provided a sense of meaning and purpose. Participants had somewhere to go, something to look forward to and something to do, as opposed to staying at home focusing on problems, "It's getting something to do, something to look forward to in your mind*"* (Barley et al., 2012, p.129).

All four studies highlighted the value of the social context within interventions and the benefits of forming social relationships, "Staying on my own all the time makes me feel tense and frustrated – but now I was going out with people I could talk to" (Fieldhouse, 2003,p.290).

Participants developed a sense of belonging (Barley et al., 2012; Fieldhouse, 2003) and of being part of a team (Fieldhouse, 2003). The gardens helped to extend social networks (Kam & Siu, 2010), provide opportunities to improve social skills (Kam & Siu, 2010; Parkinson et al., 2011) and to develop friendships offering reciprocal support (Fieldhouse, 2003). For some the garden was the only opportunity to socialise (Barley et al., 2012). Social relationships within the groups were experienced as non-judgmental (Barley et al., 2012), accepting (Barley et al., 2012; Fieldhouse, 2003) and respectful (Kam & Siu, 2010).

The garden environments were experienced as peaceful (Barley et al., 2012; Fieldhouse, 2003), relaxing (Barley et al., 2012) and helped participants feel "better" (Barley et al., 2012).

Participants reported becoming more aware of the changing seasons (Fieldhouse, 2003) and more connected with nature (Barley et al., 2012; Kam & Siu, 2010). One study reported that participants developed an appreciation of stable and caring relationships with plants, birds and animals, "I just like plants, y'know – to see them growing. It's a bit of stability in the world, I think. They're not going to go anywhere and they're not threatening or anything.*"* (Fieldhouse, 2003,p.290).

Participants enjoyed a wide range of activities from which a sense of achievement was derived (Barley et al., 2012; Fieldhouse, 2003; Parkinson et al., 2011) and also benefitted from learning new skills (Barley et al., 2012; Kam & Siu, 2010; Parkinson et al., 2011). There was an appreciation of a lack of demands (Barley et al., 2012; Parkinson et al., 2011) and associated lack of stress when performing tasks. Being able to engage in normal occupation in a 'real life' setting was felt to be destigmatising (Fieldhouse, 2003; Parkinson et al., 2011), "It gives you a sense of accomplishment … erm … a return to the ordinary" (Parkinson et al.,2011, p.532).

Negative effects of the horticultural interventions were reported as feeling tired after the activities (Kam & Siu, 2010), experiencing hay fever as worse at the garden (Parkinson et al., 2011) and feeling more disconnected from everyday realities after attending the groups (Parkinson et al., 2011).

Farm based interventions. Participants reported increased motivation (Ellingsen-Dalskau et al., 2015; Iancu et al., 2014; Kogstad et al., 2014), self-discipline (Elings &

Hassink, 2008; Kogstad et al., 2014), self-esteem (Elings & Hassink, 2008; Kogstad et al., 2014), confidence (Hassink et al., 2010), self-care (Kogstad et al., 2014), independence (Kogstad et al., 2014), inner strength (Granerud & Eriksson, 2014; Pedersen et al., 2012) increased well-being (Elings & Hassink, 2008; Granerud & Eriksson, 2014), self-acceptance (Elings & Hassink, 2008) and improved mood (Ellingsen-Dalskau et al., 2015; Pedersen et al., 2012). In three of the studies (Elings & Hassink, 2008; Ellingsen-Dalskau et al., 2015; Kogstad et al., 2014) a feeling of peace was reported, and one reported recovery from mental health problems (Kogstad et al., 2014).

An increase in meaning was experienced through performing meaningful tasks (Iancu et al., 2014; Kogstad et al., 2014) and this was extended in one study where the major finding was that through attending the intervention participants had gained a "meaningful life" (Granerud & Eriksson, 2014,p.323). All studies demonstrated participants' appreciation of having a place to go, something to do and a reason to get out of the house.

All seven studies reported benefits associated with the social environment. Participants felt included, respected, part of the workforce at the farms and valued being "co-workers" rather than "clients" (Elings & Hassink, 2008; Granerud & Eriksson, 2014; Hassink et al., 2010; Iancu et al., 2014; Pedersen et al., 2012). Social relationships were felt to be more relaxed within the programmes due to shared experiences of mental health difficulties, "Contact with people here is different, more relaxed. That's because everyone is different, no one is normal" (Elings & Hassink, 2008, p.318).

Participants felt they could be open about their mental health difficulties (Elings & Hassink, 2008; Pedersen et al., 2012) and that they were understood by the farmer. They valued being appreciated and needed by the farmer (Ellingsen-Dalskau et al., 2015; Pedersen et al., 2012), being given responsibility (Ellingsen-Dalskau et al., 2015; Hassink et al., 2010),

and feeling useful (Elings & Hassink, 2008; Granerud & Eriksson, 2014; Iancu et al., 2014; Pedersen et al., 2012).

Two studies reported that participants working at the farms developed a sense of belonging not only within the farm community, but also within the wider society as they began to feel they had a valued role to play (Elings & Hassink, 2008; Granerud & Eriksson, 2014). As lives appeared to become stabilised through programme attendance participants became more socially active outside the programmes (Granerud & Eriksson, 2014; Iancu et al., 2014).

In all the studies contact with animals was highly valued. Many expressed how relationships with animals were very important when people felt difficult to trust (Kogstad et al., 2014) or complicated (Granerud & Eriksson, 2014). The animals were felt to be non-judgmental and to hold no expectations (Granerud & Eriksson, 2014; Hassink et al., 2010; Pedersen et al., 2012). They were felt to be accepting of negative mental states and symptoms, and appreciative of work done for them, *"*the animals never judge you. They just appreciated what they get*"* (Pedersen et al., 2012,p.1530).

The importance of physical contact with the animals was expressed (Granerud & Eriksson, 2014; Pedersen et al., 2012) generating appreciation, warmth, closeness and a sense of calm (Pedersen et al., 2012). Particularly striking was the value placed on being responsible for the animals, caring for them, and meeting their needs (Elings & Hassink, 2008; Ellingsen-Dalskau et al., 2015; A Granerud & Eriksson, 2014; Iancu et al., 2014; Kogstad et al., 2014; Pedersen et al., 2012). Some participants looked to the animals when they felt sad or dejected and were encouraged (Kogstad et al., 2014; Pedersen et al., 2012), "If I have a bad day, so … the cows are here. It is always possible to get a little hug or … just such small things" (Pedersen et al., 2012,p.1530). In some cases participants developed deep emotional bonds with the animals (Granerud & Eriksson, 2014).

Being outside was valued (Elings & Hassink, 2008; Iancu et al., 2014), providing a neutral space in which important matters could be discussed, as well as valued opportunities to be alone and to enjoy silence (Hassink et al., 2010; Kogstad et al., 2014). Participants became increasingly aware of seasonal changes, highlighting the passing of time, which was felt to deepen experiences of meaningfulness (Elings & Hassink, 2008; Granerud & Eriksson, 2014).

Attending the interventions facilitated the development of a regular 24 hour daily rhythm (Elings & Hassink, 2008; Ellingsen-Dalskau et al., 2015; Granerud & Eriksson, 2014; Hassink et al., 2010; Iancu et al., 2014; Pedersen et al., 2012). Participants in all studies reported physical health benefits associated with the farm work. Most common was an appreciation of being physically tired at the end of the day, felt to be satisfying and increasing the ability to sleep, thereby helping establish a daily routine.

Participants viewed attendance at the programmes as work as opposed to activity, implying pride and the obligation to attend every day, as well as indicating that the tasks were important and needed to be done (Elings & Hassink, 2008; Granerud & Eriksson, 2014; Kogstad et al., 2014; Pedersen et al., 2012). Having a job and being in a regular work setting was felt to be destigmatising, promoting a sense of dignity (Hassink et al., 2010; Kogstad et al., 2014; Pedersen et al., 2012), "It's an ordinary setting, and you get this … you experience yourself as a person again, you feel like a human being again" (Pedersen et al.,2012,p.1529). An important factor was being able to work at one's own pace (Hassink et al., 2010; Iancu et al., 2014) and having choices in the activities undertaken (Ellingsen-Dalskau et al., 2015).

Four studies reported that taking part in the farm interventions helped develop plans to continue with education or ambitions for work and the future (Elings & Hassink, 2008; Ellingsen-Dalskau et al., 2015; Arild Granerud & Eriksson, 2014; Kogstad et al., 2014) with

some participants explicitly stating that working on the farm was a positive step towards working in the wider society (Elings & Hassink, 2008).

Alnarp garden therapeutic programmes. Participants reported a range of psychological benefits including increased self–esteem and improved mood (Adevi & Mårtensson, 2013), increased self-confidence (Adevi & Mårtensson, 2013; Eriksson et al., 2010), inner strength (Pálsdóttir et al., 2014) and an increased sense of meaning and purpose (Adevi & Mårtensson, 2013).

As programmes progressed the participants became more accepting of their situation (Eriksson et al., 2010) and more able to make changes to their everyday lives by testing self imposed boundaries (Pálsdóttir et al., 2014). The programmes inspired participants to re-evaluate how they spent their time, prioritise activities that were enjoyable (Eriksson et al., 2010; Pálsdóttir et al., 2013) and to approach tasks at a slower pace, being more attuned to their needs (Pálsdóttir et al., 2013). Participants became more able to manage symptoms, use coping strategies, and to challenge thoughts and reactions to them (Eriksson et al., 2010) as might be expected from a CBT approach.

All studies highlighted the importance of the social context. Being in a group helped participants feel that they were not alone, listening to others with similar experiences encouraged a re-evaluation of behaviour and a decrease in feelings of shame (Eriksson et al., 2010). Sharing similar experiences of illness was felt to be important (Adevi & Mårtensson, 2013; Pálsdóttir et al., 2013) helping to promote feelings of equality between group members and contributing to feeling at ease in the group setting, "I was afraid to be in a group, but this went away fast because we were all on the same level" (Pálsdóttir et al., 2014,p.7101).

The groups were experienced as permissive, with participants not having to meet the demands of others (Pálsdóttir et al., 2014). Groups were, however, sometimes experienced as difficult due to a perception of differing goals (Eriksson et al., 2010). The programmes were

valued as a place to try out new ways of relating to others (Adevi & Mårtensson, 2013) and after the programme participants reported being more socially engaged, meeting up with friends and attending group classes and leisure activities (Pálsdóttir et al., 2013).

The garden was experienced as peaceful, tranquil (Pálsdóttir et al., 2014) and calming, which promoted feelings of security (Eriksson et al.,2011). Participants expressed joy at the sensory experiences offered by the natural environment (Adevi & Mårtensson, 2013) and experienced sounds such as birdsong and water as calming (Pálsdóttir et al., 2014).

All of the studies described personal relationships with the garden or elements of nature within it, which were experienced as accepting, non-judgmental (Adevi & Mårtensson, 2013; Pálsdóttir et al., 2014), "… a garden does not ask for something back, I could talk, I could say what the hell I wanted to the pine trees and they didn't shout back at me" (Adevi & Mårtensson, 2013,p.233).

The garden provided valued opportunities to be alone (Pálsdóttir et al., 2014) and in challenging times was felt to be comforting (Adevi & Mårtensson, 2013; Pálsdóttir et al., 2014). Participants in one study expressed the feeling of become re-attached to nature, and an underlying need for this connection (Pálsdóttir et al., 2014).

Being able to positively affect the growth of plants by meeting their needs and providing care, for example, by watering was felt to be important and increased self-esteem, purpose and meaning (Adevi & Mårtensson, 2013). Participants reflected on metaphorical links between the tasks in the garden and their own rehabilitation which was experienced as valuable (Adevi & Mårtensson, 2013; Eriksson et al., 2011; Pálsdóttir et al., 2014), for example viewing both themselves and small cuttings as progressing and expressing a desire to follow both their own, and the plants' progress (Eriksson et al., 2011).

Participants enjoyed taking part in new activities. That the tasks were experienced as undemanding, without there being a need for outcomes to the work, nor for any completion

of the task was felt to be important and helped develop self-confidence (Eriksson et al., 2010; Eriksson et al., 2011; Pálsdóttir et al., 2014). As a result of outdoor physical activity participants reported being more able to sleep (Adevi & Mårtensson, 2013).

Forest and ecotherapy programmes. Participants reported improved mood (Sonntag-Öström et al., 2015), increased confidence (Sonntag-Öström et al., 2015; Wilson et al., 2010), increased self esteem (Sonntag-Öström et al., 2015; Wilson et al., 2010), improved attitude towards their own life (Sonntag-Öström et al., 2015; Wilson et al., 2010), increased postive thinking and ability to cope (Sonntag-Öström et al., 2015), a sense of pride and acheivement (Wilson et al., 2010), ability to relax (Sonntag-Öström et al., 2015) and to be themselves (Sonntag-Öström et al., 2015). Taking time out from day to day routine and being able to "get out and do things" (Wilson et al., 2010, p9) was valued by those who often spent days alone and inactive.

When participants were able to experience peace of mind, this was reported to lead to reflective thinking and aims to change their life situation (Sonntag-Öström et al., 2015), solitude was felt to be neccessary for this to occur. For some this time to reflect resulted in changes in attitudes and behaviour towards others and increased happiness, "I have more patience with the kids and ... I am a little happier take more initiatives and ... feel like life is enjoyable again" (Sonntag-Öström et al., 2015,p.611).

Participants in the Forest programme reported increased levels of socialisation and improvements to social skills, "…I just seem to get on a lot better with people and it's being in a group ... I seem to be communicating a bit better with people" (Wilson et al., 2010,p.9).

The effects of the social context were reported less in the Forest programme (Sonntag-Öström et al., 2015) which possibly reflects the limited time spent as a group during this intervention and lack of shared tasks. Some participants enjoyed the social support of the group, although some found being part of a group stressful, especially at the beginning of the

programme. Participants in this programme stressed their enjoyment of sensory experiences in the natural environment, listening to the silence, birdsong and nearby water, “I just felt it was nice and beautiful with the stones ... and to be able to recognise patterns“ (Sonntag-Öström et al., 2015,p.611). The natural environment was felt to be restorative, with participants experiencing peace of mind and some reporting an icreased sense of themselves as a part of nature. However, at the beginning of the programme the forest itself was experienced as frightening, fears of dangerous animals and of getting lost were common and spending time alone in nature was felt to be confusing and stressful. These difficulties diminshed as the programme continued.

The Ecotherapy programme helped to promote improvements in daily and weekly routines, having a reason to get up and out of the house, something to look forward to and sleeping better all contributed to this, “I sleep better and it’s something I look forward to. So my week I think oh gosh, you know the weekend comes and I enjoy my weekend” (Wilson et al., 2010,p.9). Participants valued learning new skills and the possibility of transferring these to other activities. The novelty and variety of tasks compared to those offered within hospital and home settings was experienced as positive. Again, participants referred to the activities on this programme as work which appeared to increase the sense of purpose gained from accomplishing them. Feeling tired after a day’s activity generated a sense of achievement and feelings of pride, in addition to aiding ability to sleep well. Equal relationships were felt to be developed through staff taking part in activities and the programme was felt by participants to be a stepping stone to further invovlement in society after a period of isolation.

Discussion

The aim of this review was to draw together, evaluate and summarise qualitative research findings that illuminated participant experiences of green care interventions.

Secondly it aimed to highlight similarities and differences between experiences of different types of intervention. The eighteen studies included in the review evidenced that attendance at green care interventions afforded a wide range of benefits, derived from the social and environmental context, contact with nature and provision of meaningful tasks, which helped to bring about positive psychological effects.

Participants in all types of intervention experienced improved mood, increased self-esteem and increased confidence. Similarly, all types of intervention provided an increased sense of purpose and meaning that was felt to be beneficial. Precisely what provided this sense of meaning was not quite clear, although one study (Kogstad et al., 2014) did suggest it was associated with performing meaningful tasks. Studies of both horticultural (Fieldhouse, 2003) and care farm (Elings & Hassink, 2008; Granerud & Eriksson, 2014) interventions suggested that an increased awareness of the changing seasons was felt to be meaningful. Exactly how an awareness of seasonal change might promote meaning, however, was not explored. It is of interest that participants in the nature based therapeutic programmes did not experience this, and neither did those at all the horticultural or farm based interventions. One potential reason for this might be related to the duration of programmes, in that interventions of shorter duration did not span multiple seasons. Future research could helpfully explore how meaning might be derived through awareness of changing seasons and how common such an experience might be. Similarly experiences of feeling more connected to nature could be further explored to more fully understand what this might mean, particularly with regard to mental health. Findings may have significant implications for intervention design, particularly regarding their duration.

The restorative value of the natural environment was a common theme in all intervention types, with participants experiencing peace, tranquility and of being calmed by the natural setting. As might be expected, the Alnarp Garden and Forest programmes,

perhaps due to being less task based and including more quiet time alone in the natural setting, appeared to focus to a greater degree on sensory experiences such as birdsong and sounds of water, and to value the restorative effects of spending time in nature, supporting Attentional Restoration Theory. However, this was not exclusively the case, positive sensory experiences and benefits provided by the natural environment were also valued by those taking part in horticultural and care farm interventions. Varying degrees of activity or rest, time alone or with others are able to be accommodated by green care interventions. Again further research seeking to understand where the balance might best lie in terms of activity and social contact, for which client groups, may help design interventions that harness the restorative effects of the natural environment to the greatest degree.

Participants in all intervention types valued the social nature of the groups, with perhaps this being true to a lesser extent in the Forest programme (Sonntag-Öström et al., 2015) in which participants spent more time alone. Being with others with similar experiences of difficulty was experienced as normalising and participants in all intervention groups reported valuing social contact that felt accepting, non-judgmental and respectful. A sense of belonging, being included and part of a team were common experiences, particularly where work tasks were done in groups, most commonly in the horticultural, farming and ecotherapy interventions.

Relationships with non-human nature, such as plants, trees, birds and farm animals were reported as valued by those on horticultural, care farm and Alnarp Garden programmes. Contact with animals was a major feature of care farm experiences with participants valuing physical contact and emotional bonds with the animals. Being able to care for and meet the needs of animals, and experiencing being needed and appreciated was felt to be important. Similarly, those at horticultural and Alnarp Garden programmes valued being able to meet the needs of plants and contribute to them thriving. Relationships with non-human nature

were felt to be characterised by acceptance and lack of judgment, and were particularly valued by those who felt relationships with humans were more difficult.

Green care interventions offer a wide range of opportunities for developing relationships, whether with plants, animals or other people. Investigating whether such relationships develop automatically, perhaps due to an innate need to relate with living things as suggested by the Biophilia Hypothesis (Wilson, 1984), or whether they are more commonly a result of the adoption of a caring role may provide useful insights. This review suggests that the act of caring and engaging in activity for the benefit of plants and animals is closely associated with the development of caring relationships. It could be that developing a trusting and caring relationship with a plant or animal provides a helpful first step towards relating to people, for those who find people too difficult. Future research could helpfully explore possible associations between relating to plants, animals and other humans. Whilst animal assisted therapy has been evidenced as providing relational benefits (Nimer & Lundahl, 2015) the more informal use of this type of contact within green care interventions, particularly in relation to specific mental health difficulties is yet to be fully understood and utilised clinically.

Participants in the horticultural, care farm and ecotherapy intervention all reported the positive effects of having a reason to get out of the house, having a place to go and having something to do. This underlines the relationship between mental health difficulties and social exclusion (Morgan, Burns, Fitzpatrick, Pinfold, & Priebe, 2007). For these participants the interventions offered an opportunity to re-engage. The sense of normalisation was particularly striking in the care farm interventions, where participants valued the real life setting and being a coworker as opposed to a client. What seemed to be important was the distancing from an identity founded on mental health difficulties. This is consistent with

findings of Iancu (2014), demonstrating that care farm interventions provided a shift from a patient to worker identity to a greater degree than work or creative project programmes.

In contrast, participants in the nature based therapeutic programmes did not experience destigmatising effects in the same way. In part, this may be due to programmes being designed as 'therapeutic', focusing on symptom reduction, and arguably, explicitly placing participants in a 'sick' role. However, it should also be recgonised that these programmes were intended for a specific population, for whom a more active intervention may not have been appropriate. Despite this, destigmatising effects were nonetheless experienced by these participants, simply through being alongside others sharing similar difficulties. In addition, they also experienced many benefits afforded by other intervention types. This perhaps illustrates the importance of the most appropriate intervention, at the right point in a recovery journey and according to individual needs.

Attempting to provide mental health services that are distanced from traditional associations of ill health and stigma is a challenge. However, creative collaboration with third sector and local community organisations may provide helpful ways forward. Green care services present a unique opportunity to positively affect the lives of those experiencing a range of mental health difficulties. Arguably, their strength lies in their combination of elements relating to the natural environment, social context and range of activities available. There is currently a need to understand precisely how each element may contribute to increased mental well-being and how elements may be combined to the greatest benefit for varying types of difficulty. Similarly there is a lack of understanding as to how psychological processes might be affected by experiences at green care interventions to effect therapeutic change. Having established that green care interventions are felt to be beneficial by those taking part, future research could usefully begin to explore mechanisms of change within them.

Limitations

The review is limited by the small number of studies under each type of intervention and the small number of participants in each study, making it difficult to make generalisations across intervention types. Similarly, weaknesses in the research methodology of included studies are reflected in this review. The two most prominent weaknesses of studies within this review were potentially biased sampling strategies and a lack of evidence of reflexive process. Self-selection or hand picking research participants may well result in overly positive reports. Indeed, there were very few negative issues raised by the participants in these studies. Exploration as to why some users drop out of interventions and closer attention to negative experiences would perhaps help derive a more balanced view. A greater level of consideration of researcher position and pre-existing views would ensure that future research is not unduly influenced by these. Overall however the quality of the majority of research within this review was good, as shown by the relatively high scores on the CASP (Appendix C).

Conclusion

This review adds to our understanding of green care interventions, particularly the ways in which their component elements are experienced by those taking part, by drawing together existing qualitative research. Secondly, by comparing experiences of different type of intervention we consider how these interventions may differ from a user perspective and explore areas of convergence and divergence within green care interventions as a whole. It is hoped this may promote investigation as to which interventions may be most suitable, for which users, and how involvement in numerous types of green care intervention may be appropriate at differing stages of a single recovery journey. The review was limited by a

small number of studies in each intervention type, and may possibly represent overly positive experiences due to the sampling methods of included studies.

Attendance at green care interventions seems to offer similar psychological benefits of increased confidence, self-esteem and improved mood, regardless of type. Participants described particular experiences associated with the natural environment, activity levels, contact with non-human nature and the social context. There is a need for future research to understand how such experiences of the differing components within green care interventions may affect psychological processes to promote positive mental health change.

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Section B

"Participating in the natural order of things": A grounded theory of attendance at community gardening groups for people experiencing mental distress

For Submission to Ecopsychology

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Abstract

There is a growing body of evidence to suggest that community based horticultural projects can be effective interventions for people experiencing mental health difficulties. Such programmes have been shown to provide a wide range of benefits, including increased confidence and self-esteem, improved mood, extended social networks as well as the development of new skills and a circadian rhythm. Whilst there is now considerable evidence demonstrating the beneficial outcomes of group gardening, there is a lack of understanding as to how psychological processes that contribute towards therapeutic outcomes might be affected by these interventions.

This study explored experiences of community gardening programmes in order to better understand how attendance may affect the psychological health of people experiencing mental distress. In particular, it sought to understand the perceived impact of nature on psychological experience during group attendance. Eleven people experiencing mental health difficulties were interviewed about their experiences of attending community gardening groups. The study adopted an ethnomethodological approach to constructionist grounded theory, in order to develop a framework within which participant experiences could be understood.

Findings suggested that key processes of feeling safe, letting go, (re-)connecting and finding place provided mechanisms of positive psychological change. Fundamental to each process were changes in construal of, and relationships with, others, nature and importantly, the self, within the gardening group contexts. An increased sense of identification with other people and non-human nature, and the development of empathy and compassion, appeared to be key psychological processes which may account for the positive impact on participants' mental

health. Directions for future research and implications for future clinical interventions are suggested.

Key words: Community Gardening, Therapeutic Horticulture, Mental Health, Intervention, Green Care

"Participating in the natural order of things": A grounded theory of attendance at community gardening groups for people experiencing mental distress

In contemporary society there is an increasing disconnection from non-human nature, with people moving further away from the symbiotic relationship with nature that has until relatively recently defined human evolutionary history (Chalquist, 2009). The Biophilia Hypothesis (Wilson, 1984) states that through evolution we have developed a genetically ingrained relationship with nature, resulting in a predisposition to affiliate with life like processes and a fundamental human need to be in close relationship with the natural world.

Today, many people have no connection with any natural space, and little, if any, sense of themselves as a part of nature (Schultz, 2002). Many writers have proposed that this illusory separateness is responsible for our destruction of the natural resources of our planet (White, 2012; Worthy, 2008). Others have suggested that this disconnection from nature is detrimental to human psyche and well-being (Gullone, 2000; Kellert, 2012).

Attentional Restoration Theory (Kaplan & Kaplan, 1989; Kaplan, 1995) and Stress Reduction Theory (Ulrich et al., 1991) are the two most commonly referred to theories that seek to explain why spending time in the natural environment is beneficial. The construct of 'nature connectedness' has also been the subject of research relating to the positive effects of the natural environment. The Connectedness to Nature Scale (Mayer & Frantz, 2004) and the Nature Relatedness Scale (Nisbet, Zelenski, & Murphy, 2008) both operationalise and measure the extent to which people feel in community with nature. White (2012) describes the relationship of nature connectedness as:

> An immersive, relational, and loving one of being bonded and nurtured by nature, or some aspect of a natural area, characterised by a variety of positive cognitive, affective,

> and spiritual states that lead to increased awareness, perspective and an expanded sense of self and being-in-the-world. (p.351)

There is evidence to suggest that engaging with the natural environment can promote an emotional attachment to nature (Davis & Gatersleben, 2013; Passmore & Howell, 2014) and that such an attachment is a pre-cursor to experiencing oneself as part of nature (Richardson & Hallam, 2013). Feeling oneself to be part of, and experiencing affective connection with, nature are understood to be elements of nature connectedness, associated with positive factors such as increased well-being (Passmore & Howell, 2014; Wolsko & Lindberg, 2013), life satisfaction (Mayer & Frantz, 2004), vitality (Ryan et al., 2010) and positive affect (Hartig et al., 1991). If this sense of connectedness is a possible mechanism from which psychological benefits arise, then actively promoting a sense of nature connection within mental health interventions could usefully be a key part of their design.

In recent years there has been a dramatic increase in the number of horticultural interventions for mental health difficulties (Sempik, Aldridge, & Becker, 2005). Of course, these comprise other potentially valuable features in addition to accessing the natural environment. The social context allows for the extending of social networks and increased social inclusion (Barley et al., 2012; Kam & Siu, 2010; Parr, 2007) and increased activity levels have been associated with physical health benefits (Rappe et al., 2008).

Horticulturally based interventions have been shown to reduce symptoms of depression and anxiety (Barley et al., 2012; Fieldhouse, 2003; Son, Um, Kim & Song, 2004; Stepney & Davis, 2004), reduce stress (Rappe et al., 2008) and increase self-esteem (Barley et al., 2012; Son et al., 2004). However, there has been little research aimed at understanding precisely how these benefits may occur. Despite research around the construct of nature connectedness, whether this is an important factor for recovery within horticultural interventions is not known. It could be argued that without a better understanding of this, the

full potential of nature to promote healing and restore psychological well-being is not currently being harnessed.

Rationale

There is growing evidence for the efficacy of horticultural interventions for mental health (Clatworthy, Hinds, & Camic, 2013). However, at present there is a lack of understanding as to how psychological processes may be affected through attendance to effect therapeutic change. In particular, the role of nature within such interventions is not clear.

This study will attempt to understand how psychological processes may be affected by attendance at community gardening groups for people experiencing mental health difficulties. Developing a framework grounded in service user experience could not only help to design the most effective interventions, but may also further theoretical understanding of how the specific experience of being in a natural environment affects experience and mental health.

Research Questions

1: Does attending a gardening intervention effect mental health change for people experiencing mental distresss? – and if so, how?

2: Is being in the natural environment an important factor of such interventions?

Method

Design

A non-experimental, qualitative design was employed, adopting an ethnomethodological approach to social constructivist Grounded Theory (Charmaz, 2006).

The study aimed to explore and understand the meanings participants drew from their experiences at the gardening groups with regard to their mental health. A social constructivist position was therefore adopted, not to deny the existence of a reality, a common criticism of this stance (Andrews, 2012), but to emphasise the socially constructed nature of meaning.

It was felt to be important, as far as possible, to enter the social world of the gardening groups in order to enable a depth of communication between researcher and participants. Thus an ethnomethodological approach was taken, with the researcher attending the group gardening sessions a number of times before conducting interviews, and throughout the study. This afforded an immersion in the social world of the groups and the creation of relationships and shared experiences between the researcher and participants, facilitating the development of shared understanding and ease of interaction.

Grounded Theory was chosen as a methodology as it attempts to explain the phenomenon studied, as opposed to merely describing it. This was in keeping with the study's aims to not only understand whether participants felt their mental health had been affected by group attendance, but to understand if so, how this had occurred.

Ethical Considerations

Ethical approval for the study was granted by Salomons Research Ethics Panel at Canterbury Christ Church University. The Code of Ethics for Human Research (British Psychological Society, 2014) was used as an ethical guideline.

The research was carried out at two community gardening groups for people experiencing mental health difficulties (Table 8). Presentations were given at both groups to fully explain the study to potential participants and to give an opportunity to ask questions. Particular care was taken to explain the ethnomethodological approach and motivation behind its adoption. Central to ethical considerations was the desire to respect the group environments as therapeutic spaces and to avoid negatively impacting these in any way.

Consultation with group members was undertaken to explore feelings about researcher attendance at group sessions, determine mechanisms by which any discomfort due to researcher presence could be communicated and to determine the most appropriate way to indicate willingness to give an interview. Thus a relationship of consent was developed, aiming to comprise qualities of trust, honesty, caring, sensitivity and awareness of the subject's vulnerability, demonstrated to be important characteristics of such relationships (Katz & Fox, 2004). Prior to each interview consent forms were explained and signed, following a further opportunity to ask questions.

Sampling

There are conflicting views as to whether grounded theory studies should use heterogeneous or more homogenous, narrow samples (Cutcliffe, 2000). This study aimed to develop a theory grounded in personal experiences of community gardening in relation to mental distress. It therefore adopted a narrow, purposeful sampling strategy to include participants both attending a community group and experiencing mental distress. In order to achieve a degree of heterogeneity within the sample, the study sought to include participants from more than one gardening group, with differing lengths of group membership, and differing experiences of mental distress.

Grounded theory methods suggest that data are to be collected until theoretical saturation has been reached, the point "when gathering fresh data no longer sparks new theoretical insights, nor reveals new properties of your core theoretical categories" (Charmaz, 2006, p.113) . Achieving and recognising saturation, however, can be problematic (Charmaz, 2006; Dey, 1999; Thornberg, 2012). An arguably more realistic aim of theoretical sufficiency was adopted by this study, described as "the stage at which categories seem to cope adequately with new data without requiring continual extensions and modifications" Dey (1999,p.117).

Participants

Eleven participants, attending two gardening groups were interviewed. Participants described a range of mental health difficulties, including depression, obsessive thoughts, anxiety and psychosis. They attended the groups with varying frequencies, ranging from between 2 weeks and 4 years (Table 9).

Table 8: Community gardening group characteristics

	Group 1	**Group 2**
Number of members	Approximately 80 with between 5 – 20 attending per session	Approximately 20 with between 2 – 10 attending per session
Process of referral	Self-referral or referral via local charities, community organisations or community mental health teams.	Self-referral or referral via local charities, community organisations or community mental health teams.
Volunteers	Accepted volunteers with personal interests in gardening or working therapeutically in a natural setting.	Accepted volunteers with personal interests in gardening or working therapeutically in a natural setting.
Group availability	Five mornings per week 9am – 2pm.	Once morning per week 10am – 2pm.
Garden	Half an acre, growing a variety of vegetables, fruits and flowers. Has a small building used as an office and kitchen area with a table for crafts and to sit and drink tea/coffee together. Tables outside are used to relax and socialise together in warmer months.	Quarter of an acre, growing a variety of vegetables, fruits and flowers. Has an area surrounding a fire pit, with tree stump seats, used to sit together during coffee breaks and to sometimes cook soup or other meals from produce at the garden to eat together.
Garden Setting	The garden is a walled garden, accessible through a small gate. It is in the centre of a town, and therefore accessible by walking for most members, however some do drive from further afield.	The plot is demarcated by a line of trees on one side, fruit bushes/hedges on two sides and a pathway on the other side. The plot has a very *open* feel, with views across nearby fields and hills. The plot is out of town and group members access it via their own cars, by travelling with other members or via public transport.
Session Structure	Group members were able to choose which tasks to become involved with and able to stop, start and take breaks as and when they chose. Some members would come and simply drink tea and spend time talking with other members.	Group members were able to choose which tasks to become involved with and able to stop, start and take breaks as and when they chose.
Group Facilitators	Two members of permanent staff who joined in with work activities	One member of permanent staff who joined in with work activities

Table 9: Participant characteristics and historical data

Group	Sex	Age	Time attending group	Frequency visiting group	Type of mental health difficulty *	Length of time experiencing difficulty
1	Female	45-54	4 years	Most days Monday - Friday	Obsessive thoughts and Anxiety	25 years +
1	Male	35-44	1 year 9 months	Most days Monday – Friday	Depression	5 years
1	Male	35-44	1 year	3 days per week	Substance Abuse / Depression	25 years
2	Male	45 -54	4 months	1 day per week	Schizophrenia /Depression	5 years +
1	Male	45 – 54	7 years	4 days per week	Depression / Anxiety	9 years
2	Female	55-64	7 months	1 day per week	Depression	13 years
2	Female	45-54	5 months	1 day per week	Depression	10 years +
1	Male	55-64	9 months	1-3 days per week	OCD / Anxiety	8 years
1	Male	45-54	6 years	1-2 days per week	Schizophrenia / Social Anxiety	10 years
1	Male	55-64	2 weeks this time, previously for approx 3 years, 3 years ago	1 day per week	Psychosis / Depression	25 years +
1	Male	25-34	4 years	Most days Monday – Friday	Anxiety / Stress	3 years

**** As described by participant.***

Data Collection

Data were collected through semi-structured interviews. The aim was to explore as fully as possible, each participant's unique experience and understanding. Interviews were conducted, therefore, as an open conversation in which statements expressed were able to be questioned and explored further. Interviews were between 10 and 72 minutes in length.

Data Analysis

Consistent with Grounded Theory, data collection and analysis were conducted concurrently. The analysis process is described by the steps in Table 10.

Table 10: Step by step description of data analysis

Step	Description
1	The first 3 interviews were coded in detail using 'incident coding' (Charmaz, 2006) aiming to "capture action, feelings and processes in order to remain grounded in participant experience" (Charmaz, 2006, pg 120).
2	The most frequent or seemingly significant incident codes were then 'promoted' to form 'focussed codes'. Components of and relationships between codes were developed using memo writing, and tentative analytical categories were developed.
3	Further interviews were conducted, holding the focussed codes and tentative categories lightly in mind, aiming to gather additional data relating to them, either as and when the participant brought them to the conversation, or by explicitly asking about them if they did not.
4	After every two or three interviews the process of coding was returned to, concentrating not only on existing focussed codes and tentative categories, but also new incident codes, going back to previous interview data, comparing and contrasting incident and focussed codes, and further developing memos and analytic categories.
5	As the process of interviewing and analysing progressed, analytical categories were developed that began to encapsulate and explain the interview data. When focussed codes and categories were developed later in the process, earlier transcripts were examined for evidence of these, and in some cases participants were interviewed a second time, in order that they could be asked about these.
6	After 11 interviews, it was felt that theoretical sufficiency had been reached, and the data collection and analysis were considered complete.

Quality assurance

Reflexivity. Social constructivist approaches to grounded theory assert that far from denying or attempting to distance the researchers' pre-existing knowledge, ideas and beliefs, these can and should be creatively employed as an integral part of the research process (Charmaz, 2006; Cutcliffe, 2000; Lincoln & Guba, 1985).

Charmaz (2006, p.30) argues that sensitising concepts may be used as "points of departure*"*' to inform interviewing, thinking and data analysis. Awareness of such concepts, she argues, allows for the use of creative use of pre-existing knowledge and ideas, whilst ensuring adherence to the data. At the beginning of the study therefore, a reflective exercise in compiling a list of sensitising concepts was undertaken and developed further as the study progressed. These concepts included knowledge of existing research and theories around nature and wellbeing, horticultural interventions for mental health, interests in related concepts such as mindfulness and well-being, as well as personal experiences and enjoyment of natural environments.

Independent audit. Regular meetings were held between the authors to examine data and evaluate codes, categories and theory development, in order to ensure agreement findings 'fit' the data, and allow for alternative interpretations and viewpoints to be considered.

Theory checking. The developed theory was presented to participants and their views on this sought. Comments and ideas expressed by participants were incorporated into the final theory, ensuring that it represented their experiences as accurately as possible.

Results

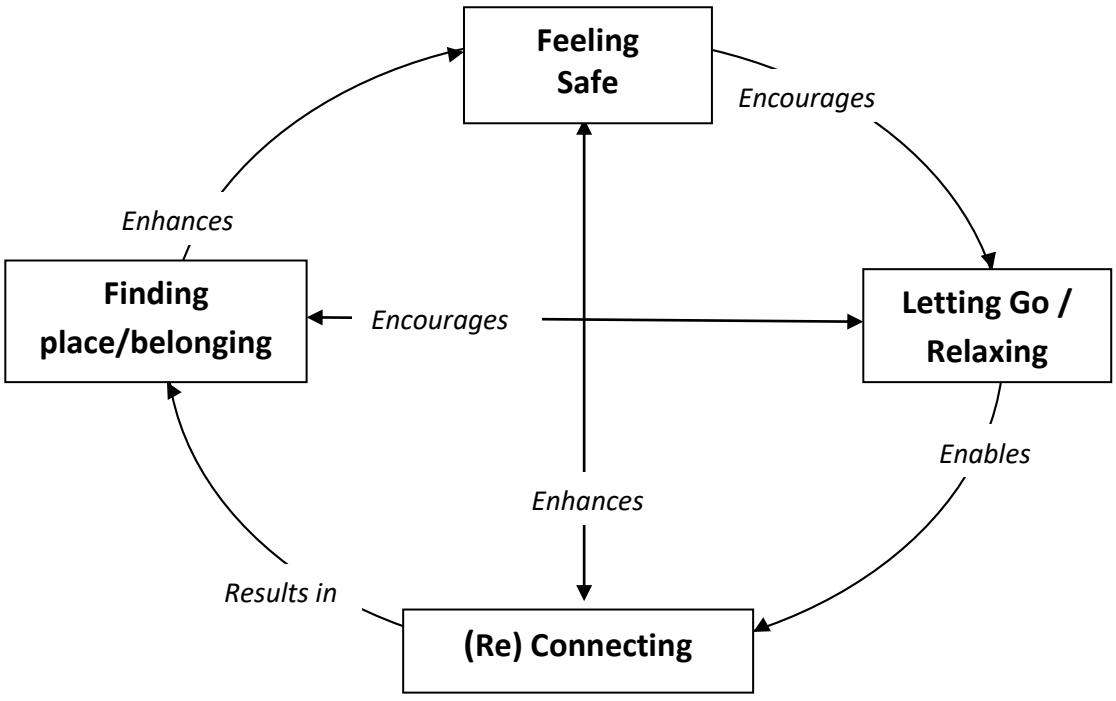
Model overview

Based on categories derived from the data and their interrelationships, a model representing experiences of attending the groups was constructed. A detailed consideration of component categories and their interrelationships is presented here, followed by an overview of the model as a whole.

Four main categories were derived from the data, each category representing a psychological experience or process: Feeling safe, Letting go, (Re-)Connecting and Finding place/belonging.

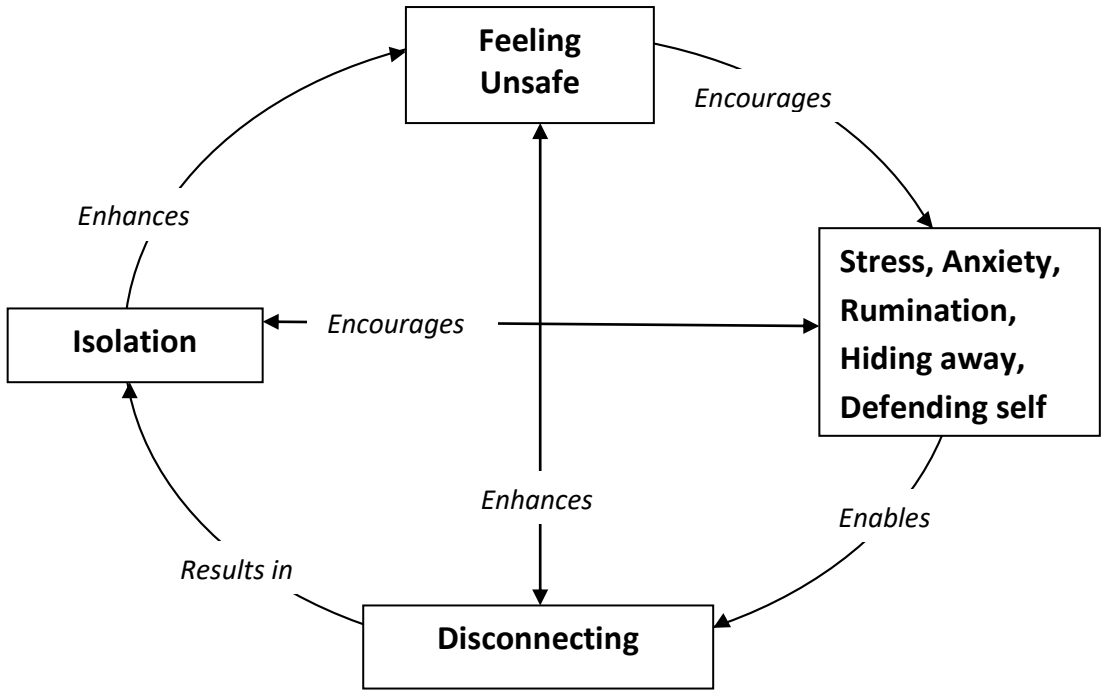
The four categories appeared to be interrelated in non-linear ways (Figure 3), and together provided the opportunity for a way of being within the community gardening groups that was in stark contrast to that outside of the groups.

Figure 3: Key processes affecting mental health through gardening group attendance



Participants described more negative experiences in the wider community, which exacerbated the experience of mental distress, Figure 4.

Figure 4: Key processes affecting mental health in the wider community



Participants spoke of the time they spent at the community garden as "getting away" (P4), like a "holiday" (P2) or "respite" (P1). This seemed to underline the fact that life and being at the garden operated in a different way than outside, and furthermore, that the general way of being at the garden was pleasant and restful, far away from everyday concerns and worries, "I could be a million miles from it, this could be another planet to me" (P6).

Feeling safe

The natural and social environments afforded a range of positive experiences that not only promoted a feeling of safety within environmental and social contexts, but additionally a sense of psychological safety.

Feeling safe – natural environment. All participants spoke of the natural environment as being peaceful, calming and offering positive sensory experiences. Participants spoke of the beauty of flowers, pleasing sounds of birdsong, frogs and insects and of enjoying the touch of the sun and wind, "Well, I like the um the sunshine on me… It gives me comfort and all that sort of thing, and um, it makes me feel relaxed**"** (P8).

These pleasant sensory experiences allowed for enjoyment of the natural environment and promoted positive emotional states. For some participants, the natural environment invoked a sense of awe and wonder, generating feelings associated with "paradise" (P1) and "heaven" (P3). These positive experiences seemed to lessen symptoms:

> I can be in paradise and at the same time those thoughts don't take away my ability to have that experience of being in paradise so they lose [their power] - they are not as powerful as they seem I suppose (P1).

The gentleness of sensory experiences in nature were, for eight participants soothing and calming, with five explicitly stating how this was a welcome contrast to "full on" (P4) and distressing symptoms.

The differing physical characteristics of the two gardens appeared to be reflected in the psychological experiences of participants. Three participants at Group 1 spoke of the feeling of containment that the enclosed garden with a small gate provided:

> … in here it's really different because that's a big wide world out there, and you've got here a completely enclosed garden with one small gate there, it may be open but it's small and it's got a very safe feeling to it (P5).

In contrast, the openness and spaciousness of the natural environment of Group 2 was reflected in corresponding psychological experiences for two participants, "It's almost like, sort of the bad things, the black stuff, almost disintegrates into this vast space" (P6).

At both groups, the positive mental effect afforded simply by being outside, in an open natural environment was salient for all participants, "I felt much safer being physically outside, and being inside I would have felt claustrophobic, I would have felt more examined" (P9).

The qualities of the natural environment appeared then, to facilitate a soothing of experience and a calming of mind for participants, promoting relaxation and feelings of safety. For those who described their mental distress as "a living hell' (P1) and "terrifying" (P4) this calm, spaciousness and tranquillity was tremendously valued.

Feeling safe – social environment. Nine participants explained how shared experiences of mental health difficulties were fundamental to the social environment being perceived as non-judgemental and accepting, and as such, safe and non-threatening. The feeling of safety was enhanced by the belief that other group members would be able to understand and tolerate experiences of mental distress, in a way that people outside were not:

> I suppose you're all in the same boat in a sense um you know that there's no stigma attached to it in here (P5).
>
> … even when you're with your own family and stuff you get the Mickey taken out of you, whereas people here tend not to do that, I think it's only with experience of mental problems that you learn to understand them (P11).

Participants' shared experience and understanding of mental health difficulties, together with cues from group facilitators, created a group culture that was described as founded on empathy, compassion and care, "…you might be suffering yourself but [there is] a bit of empathy and compassion for the other person who might be suffering a little bit more than you "(P2).

Nine participants spoke of compassion, empathy and caring as qualities of the social interaction within the groups. Two longer-standing members described this culture as something they were very conscious of and felt a responsibility to continue:

> P…it's almost like without realising it, it's a hand down you've received…..you're just handing over the baton to the next man.
>
> I… what is it that you're passing on?
>
> P: [decisively] Thought and care (P3).

A distinct lack of social demands, for six participants, contributed to a feeling of safety. There was no pressure to interact and members were mindfully aware that sometimes others might not want to speak with them. Care was taken to give people space when needed, appropriate interactions being guided by personal experiences of heightened distress. Similarly, participants felt no pressure to discuss their mental health difficulties, although they often did, and often found this helpful, "…they haven't shut us in a little room, and sort of began to talk to us about stuff you really don't want to be talking about… that makes it safe" (P6).

Societal indicators of success, such as job titles and material possessions appeared to become irrelevant at the gardens. There was a common understanding that as people who had experienced mental health difficulties, most people would have also suffered associated losses of work and income, and so questions and conversations about these rarely occurred:

> People come here um and they have had a breakdown of some kind… you know that's the case so them questions aren't, they're not required … if you're coming in here you're obviously not working (P3).

The lack of attention given to status markers, for five participants, contributed to feeling safe from judgement and promoted reduced competition and negative self-evaluation. Whereas participants felt different and negatively viewed outside the garden environments, within them they felt more the same as others, "… obviously in everyday life people are competing with each other …. they want the status …, but it's not like that, it's quite interesting here [people are] more the same in that they've all suffered" (P1).

Feeling safe - group organisation. The undemanding nature of the tasks, variety of tasks available and ability to exercise choice according to capacity, contributed to feeling safe. Nine participants described being able to work at one's own pace, without a predetermined outcome, as important for a relaxing and stress free experience, "What makes it peaceful? I think it's the drive just to be able to do what you want, like here, you don't have to have a product, it's the process, that's what's important" (P11).

On days when they felt less able, participants valued being able to attend the groups without doing any work activities, "You don't have to do anything if you don't want to do anything" (P7).

All participants described how group facilitators were important contributors to feelings of safety and containment. This was achieved through understanding, care and appropriate boundary setting. They provided a positive balance of control in otherwise very informal settings, "…although it's very free and easy, it is sort of controlled in that you can always go to [name] if you need to, because there's someone here that you know, the buck sort of stops with them" (P7).

Letting go

Feeling safe appeared to enable processes of letting go, and whilst not all participants let go of the same things, in the same way, all participants spoke of changes within themselves associated with relaxation of defences, loosening up of thinking, less reactive ways of behaving, and/or a generally more relaxed way of being, "… there is another way to exist that isn't all fraught and active and you know, there's a possibility of another way to be" (P1.)

Seven participants spoke of their experiences of life as fast, highly pressured and somewhat overwhelming. In contrast, the gardening activities, in tune with the seasons could not be hurried, there was a requirement to work at the pace of nature, "Yeah, time is very different here…we're working with nature here you know, in tune with it" (P6). This slower pace at the gardens seemed to be related to an ability to let go of modern day stresses, if only temporarily.

Participants reflected on how the pace of modern life could be detrimental to mental health and how time at the gardens felt like a return to historic ways of living that were more in tune with nature. Experiences at the gardens were described as being "like an indigenous tribe" (P2), "going back to our ancestral roots" (P5) and benefits being "something to do with um, the um human being er history way back, being outside foraging" (P4).

Four participants spoke of letting go of attachment to successful outcomes, describing becoming more accepting when things didn't go to plan, for example, when plants didn't grow, when seeds were eaten by birds or plants by animals. Letting go of a sense of control, and in one cases personal responsibility, decreased stress and anxiety, "I've learnt that here, that if something is a failure it's not necessarily the end of the world anymore, you know, it's not all going to be my fault ex cetera, you know" (P7).

Five participants spoke of being able to let go of identities associated with mental health difficulties whilst in the garden. Narratives associated with not being able or failing and negative self-judgement could be left outside the groups, freeing up new possibilities, "It's a threshold and you can leave your baggage at the gate … you leave it behind to a fair degree … and you're not even necessarily aware that you've done it" (P5).

Four participants described how feeling safe enabled them to drop defences, built up as a protection from perceived negative evaluation of others, "There isn't that kind of guard and because we understand what it feels like we don't have that false guard" (P6). Letting go of these defences enabled participants to relax with others and reduce efforts of presentation, allowing them to be more themselves.

(Re-)Connection

As participants were able to feel safe and let go of defences, processes of connecting with natural and social environments were facilitated. Additionally participants described re-connecting with a lost sense of self and new self-discoveries, a process one participant described as "re-invention" (P5):

> I just wanted to be left alone and I'm alright, but getting genuine concern, they broke the walls down with kindness and constant, consistent, eventually I felt obligated to engage. (P3)

> There isn't these barriers here … people discover how creative they can be, or rediscover things that maybe were there in their lives, but they have a period of you know, of being closed off and black and they're able then to rediscover things. (P6)

(Re-)Connection - natural environment. Six participants described how, over time, they developed relationships with nature, became more aware of the natural environment, and learnt about plants and other creatures sharing the garden spaces, "… a robin will come

…he's so close sometimes I have to stop what I'm doing, and he just watches me …there's something nice … when it's all trusting and everything is totally trusting" (P5).

Developing relationships with birds and animals in the gardens was particularly valued by those who felt relationships with people were overly challenging, especially when first joining the groups. Relationships with non-human nature were viewed as less demanding, less risky and helped form a bridge between being isolated and being more able to form relationships with other people:

> Um so I didn't have any relationships so that fact that I'm starting to engage with something, all be it wildlife, I'm starting to find a mindfulness …how do I not scare this bird away, it's actually quite nice… you can then carry that on, with people so I started to watch how I come across, … it's a natural progression. (P3)

There was a common sense of responsibility in caring for the gardens. For two participants this extended beyond the group sessions as they came to water the plants in between sessions, or simply held the garden in mind as a positive object in times of difficulty:

> … it's been really really hot and I thought that stuff in the green house, if I wait until Wednesday it's going to die, I have to go and water it! So I drive all the way here and I water it, and I think 'thank goodness I was here, cos it's all looking limp' and you know, it does become an important, important thing ….I haven't sort of known before, haven't known that you can care for a piece of land like this really. (P7)

The strong sense of connection to nature was felt by most, but not all of the participants. Two participants appreciated the beauty of the garden, but did not resonate with feelings of caring deeply for nature within the garden. Both of these participants however, did enjoy being in a natural environment and the positive emotional states it encouraged.

(Re-)Connection - social environment. Nine participants described how interactions and therefore the forming of relationships and friendships within the groups were easier than

outside. In part, this was felt to be due to increased levels of understanding through shared experience, increased empathy and efforts to be mindful of interacting in appropriate and helpful ways. Additionally, it was suggested that the soothing effects of the natural environment, in making people "calmer" (P1) or 'in a better mood' (P4) made others easier to get along with.

Within these caring and accepting environments, three participants were able try out new ways of interacting with others, resulting in increased confidence and closeness with others, "I've made a plan this time to try and er say what's really bothering me" (P10).

Sharing experiences of difficulty, advice and coping strategies was experienced as helpful within the groups. This could vary from learning new ways of interacting, exchanging practical information, as well as emotional support, "If you're stuck on something, and we all get stuck, if you can talking to someone, sometimes it's easier for them to point out what's holding you back" (P9).

Learning from each other was viewed as helpful, however what was salient was that developing relationships with others and sharing experiences promoted the feeling of not being alone, "… engaging with people, like-minded people that are suffering as well, you know, it's not just me, there are other people …that are suffering from mental health issues… … I didn't feel alone" (P2). Over time supportive friendships developed that not only afforded emotional connection and support, but also fun and enjoyment.

(Re-)Connection - with self. Nine participants explained how attending the groups had led them to rediscover, or learn about new aspects of themselves. For some this was about regaining lost creativity, motivation, or rediscovering enjoyment in previously enjoyed activities. For others, the reconnection was to a sense of self, with which they felt they had lost touch due to mental health difficulties, "I feel like a different person, well not like a

different person, I feel like more the person I used to be that I can, sort of link myself with myself much better" (P6).

Connection (or re-connection), whether it be to the natural environment, other people or a sense of self, was described by all participants. The degree or felt depth of this connection appeared to vary between participants. For example, all participants valued meeting other people at the groups. However, whilst some spoke of being with others as important, others described qualitatively deeper friendships and support. Similarly, some participants spoke of rediscovering lost interests and/or talents, whereas others appeared to have reconnected with a whole lost self, "I'm just trying to shake off the last of it, cos I've remembered who I am, I've remembered that that's good" (P11).

Finding place/belonging

Developing a greater sense of connection with oneself, other people and the natural environment appeared to lead, again in vary ways and forms, to a sense of' *finding one's* place or belonging. Nine participants gained a sense of themselves as no longer separate from, but rather part of nature and the social community. Six also described being able to be themselves and finding authentic ways of being, within the garden environments:

> I think, something very spiritual about this environment about being outside, but safe in a group, um, and being in tune with the whole environment, you're body then gets more in tune with yourself and that creates more peace um I guess, it's almost something religious about it. (P6)

Finding place - natural environment. Recognition of sharing processes such as living, dying, and struggling to survive, with plants and other creatures was expressed and felt to be important by seven participants, **"**Cos the flowers are living things, we're living things we are living things as well, they're all living things and they have to die off" (P8).

There was an understanding that nature and the processes within it were inherently "right" (P11) or "meant to be" (P2, P11).

Perhaps alluded to by other participants, the sense that feeling oneself to be part of natural cycles in a way made difficulties in life easier to bear, was articulated clearly by this participant:

> … it's beautiful you know things are living and dying … being a living thing is not peaceful, you know you're fighting for your survival all the time, and yet it is peaceful if you like, the effect of it is peace. (P1)

Recognising oneself as part of nature as opposed to separate from it, was something that felt quite profound in discussions with participants, and experienced as positive, "I don't feel separate from anything, so it's an inclusion, um with us as people but with the other animals around and all the creatures and all the trees and everything else" (P6).

The sense of connection with all of life, feeling part of a greater whole, was felt to provide a great sense of purpose and meaning. Every participant spoke in some way, of how attending the groups had led them to feel at one with, or belonging to the wider ecosystem:

> Well I feel like at one with the soil, what comes out of that soil is part of me now, it's had my blood my sweat, you know. (P3)

> It gives you a place, a place of belonging in the world really, because you are actually a part of it….. It gives you a purpose, a purpose, you're an integral part of something, you have a value, not just to other people but a value to the whole world kind of thing. (P5)

One participant was able to articulate very clearly for him, the therapy of the community garden was not about the tasks he was doing but about the being part of the natural world, "I'm not planting a plant as therapy, I'm a plant of the whole system as therapy, I'm a part of the ecosystem or whatever, you know?" (P5).

For five participants, the experience of belonging to a much larger whole generated feelings of wonder and awe, in a spiritual sense. One participant spoke of nature as a "tremendous power" (P1), and another described how an appreciation of nature helped to create feelings of faith when they felt a need to pray to something larger than themselves, "I was praying to the force of nature and the spirit of the universe" (P3).

Finding place - social environment. Finding a sense of belonging in the social world was, for all participants, extremely important. In stark contrast to the isolation they often felt in the outside community, within the garden environments participants were able to develop a sense of belonging. One participant spoke of finding their place as a surprise, something they were not aiming for by attending the group, but once noticed was highly valued, "I found my little place you know …. this is like an extended family to me … I didn't come here to find my little place … it just clicked, it just clicked" (P2).

Feeling a sense of belonging was described by five participants as absolutely key to feeling well. Despite experiencing mental health difficulties, feeling that there was a community of people to which they belonged was felt to lessen a great deal of the suffering associated with mental ill health, "If you know your place and you feel at ease, there is no bad mental health for me (P2)","… that collective feeling is really important and makes you feel belonging" (P6).

Finding place – with self. Feeling safe, dropping defences, and gaining a greater sense of connection within social and natural environments appeared to help participants feel more at ease and more able to be themselves, "You know that you can come here and be yourself" (P7). For two participants, social relationships and becoming part of a community, ultimately enabled them to discover an authentic sense of self:

I: Was there something about finding your little place,…that was helpful?

P:… finding out who I am, and what I'm about really. (P2)

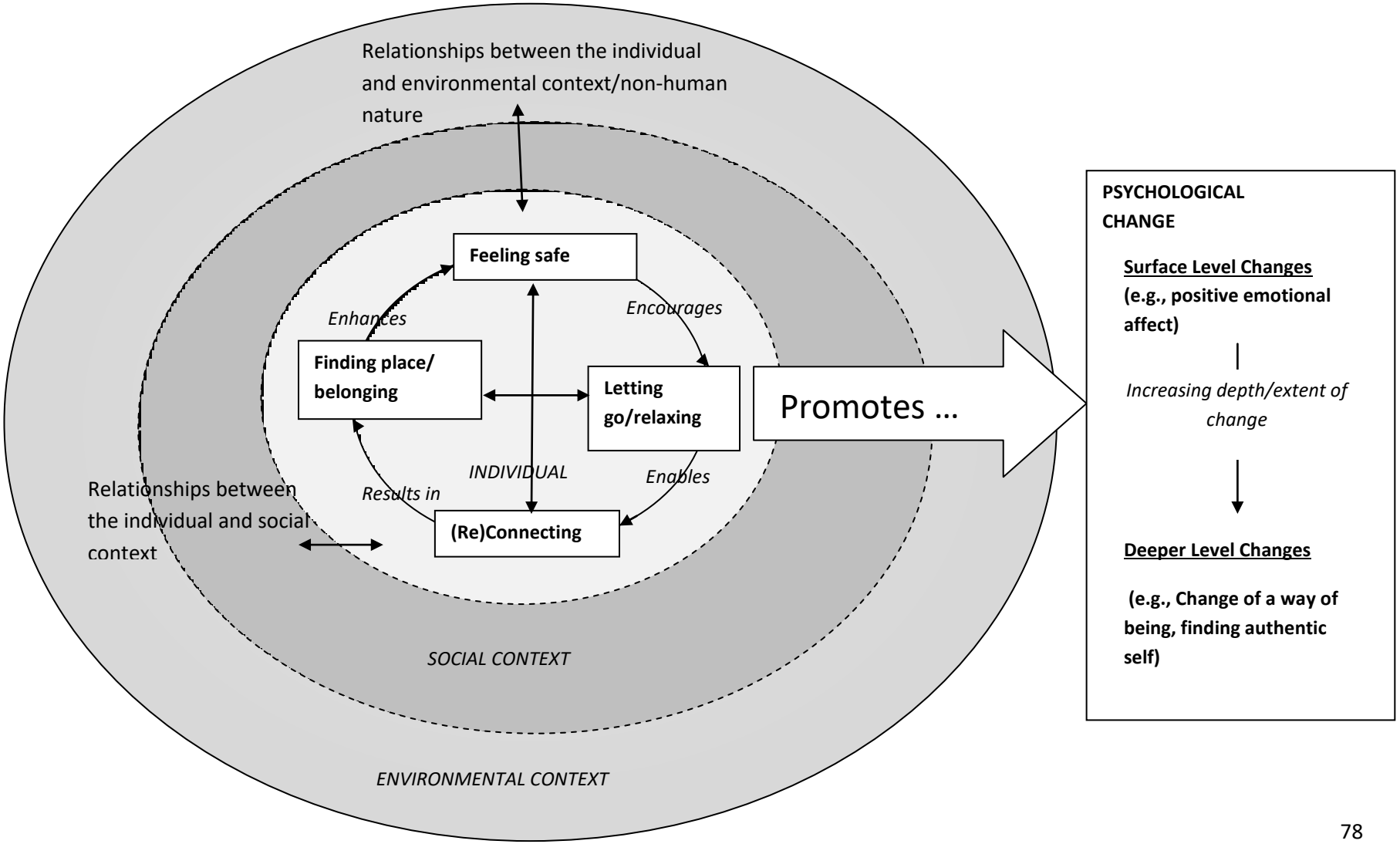
> They enabled me to find me, cos I can be a million and one people, because I've had to be, …whereas people here came at a level … asking me about me and you know what makes [name] tick, and that prompted a lot of thought because of, I did have to think about them questions. (P3)

Grounded theory model

The community gardening groups appeared to create a space in which the interactions between participants and their social and environmental contexts formed a culture which operated in stark contrast to that outside in the community. Thus individual experiences of feeling safe, letting go, re-connecting and finding place were facilitated, enabling participants to have positive experiences, learn new ways of interacting, challenge long held narratives about themselves, experience a sense of belonging and, ultimately, discover new ways of being.

The model as a whole therefore, attempts to represent the individual as part of a wider system. Relationships between the individual and their social and environmental contexts are included. Lines between the individual and the social and environmental contexts are broken, to represent interconnectedness between entities. Change is not easy to capture or quantify diagrammatically, but the model (Figure 5), attempts to represent this in the varying forms discussed by participants, from momentary positive emotional affects, enjoyment of a period of time or event, to deeper more longstanding changes in identity and ways of being.

Figure 5: Grounded Theory Model representing how community gardening attendance brought about positive mental health changes.



Discussion

The primary aim of the study was to understand how attending a gardening group may affect psychological processes of people experiencing mental distress. Through examination of how people were affected, as opposed to a consideration of the benefits of group attendance, a theoretical framework was able to be constructed that encompassed elements from the psychological, social and environmental contexts. The results demonstrated key processes of feeling safe, letting go, re-connecting and finding place, which, for these participants, provided mechanisms of positive psychological change. Fundamental to each of these processes were relationships with the self, others, and nature. Empathy and compassion were identified as key features of these relationships.

Interesting parallels can be seen between group attendance and the therapeutic process in individual psychotherapy, particularly with regard to requirement of safety in order to be free from defences within therapeutic, and subsequently wider, relationships (Rappoport, 1997).

The second research question aimed to understand if and how the particular experience of being in a natural environment impacted the psychological processes of those attending the group. The findings demonstrated that the natural environment impacted each element of the resultant theory. Of particular interest were the ways in which physical characteristics of the environment were reflected in psychological experiences, the value of relationships with non-human life, and the meaning associated with recognising one's place in a larger ecosystem.

Existing theories

Existing theories suggesting why contact with nature is beneficial seemed to receive some support in the study. The natural setting contributed to feelings of safety and relaxation due to a decrease in threatening stimuli, such as the noise, overcrowding, and perceived harshness of the surrounding urban environments. Such descriptions lend support for Stress

Reduction Theory (Ulrich et al., 1991). Whilst a full discussion of Attentional Restoration Theory (Kaplan & Kaplan, 1989; Kaplan, 1995) is beyond the scope of this discussion, participants did make reference to the four factors proposed to be necessary for an environment to be restorative: being away, fascination, extent and compatibility.

The benefits provided by these natural settings, however, appeared to extend beyond that of merely stress reduction and attentional restoration. Participants also spoke of deeper feelings of connectedness to and caring for nature, with associated changes in self-concept and the construal of identity which could perhaps better account for the positive effects on mental health experienced.

Expansion of identity

Participants described how, through attendance at the gardening groups they had come to care deeply about the nature around them, the land, plants and trees, the birds, insects and other small animals at the gardens. Furthermore, they had come to understand that they were in many ways similar to the non-human life at the garden, sharing processes of living and dying, needs for food, shelter and relationship. There was a common desire among participants to care for and nurture the gardens and life within them.

Such emotional resonance with, perceived similarity to and a desire to nurture elements of the non-human world are key features of what is described by the deep ecology movement as an ecological self. This has been described as "embracing an expansive or transpersonal sense of self" (Bragg,1996) to include non-human nature, a conceptual and affective identification. Expanding the construction of the self to include the natural world has similarly been described as the development of an environmental identity (Clayton, 2003).

This shift of self concept, in which the boundaries between participants and other elements within the gardens appeared to become conceptually dissolved, was evidenced by statements such as "I am a plant in the garden*"*" (P5) and *"*I am one with the soil" (P6).

This increased identification was not however, limited to the non-human world. Participants also, spoke of similar emotional resonance with and perceived similarity to other group members. Shared experiences of mental health difficulties appear to have been central to this identification. For these participants, group attendance not only facilitated the development of an ecological self, but a truly transpersonal one (Koltko-Rivera, 1998).

The development of a transpersonal self, in which identity becomes extended beyond the individual to include wider aspects of human and non-human kind, may help to explain how attendance at gardening groups such as those in this study, affect positive mental health change.

Expansion of identity as a possible mechanism for positive mental health change

The development away from an individualistic construal of self to one more identified with others seems to be associated with shifts away from social separateness, evaluation by means of social comparison and motivation to validate one's personal attributes, towards social connection, definition through relationships, and maintenance of harmony within the social context (Markus & Kitayama, 1991).

For people who experience the isolating and stigmatising effects of mental health such a shift may well offer alternative, more positive ways and means of relating to oneself. Indeed, participants in this study spoke of no longer feeling alone, feeling the same as others and being less affected by their own and societal negative evaluations of themselves with regard to socially defined measures of success, worthiness and value.

The role of compassion

The shift away from a separate and isolated sense of self, towards the sense of oneself as a part of a wider humanity is a key component necessary for the experience of self-compassion (Neff, 2003). Neff (2003) also suggests that such a shift is necessary for the cessation of over-identification with one's painful thoughts and feelings which can increase

the extent of suffering. Self-compassion is described as a process that requires engagement in:

> metacognitive activity that allows for recognition of the related experiences of self and other. This process tends to break the cycle of self-absorption and over-identification, thus decreasing ego-centric feelings of separation while increasing feelings of interconnectedness (Neff, 2003, p.224).

Participants in this study clearly articulated how group attendance enabled them to feel a greater sense of identification and connection with others, as well as facilitating a reduction in rumination and identification with difficulty. This is consistent with evidence suggesting that self-compassion is negatively associated with rumination and positively with psychological well-being (Neff, 2003; Raes & Williams, 2010).

Participants emphasised kindness, compassion and understanding as key features of the relationships within the groups. Whilst more commonly participants spoke of the compassion they felt towards others, as opposed to themselves, there is some evidence to suggest a common neurological process associated with both self and general compassion (Longe et al., 2010) as well as between compassion towards the self and that towards others (Hofmann, Grossman, & Hinton, 2011; Neff & Pommier, 2012).

It is not clear from this study whether participants did indeed experience an increase in feelings of self-compassion. There does however, seem to be significant areas of overlap in terms of a shift from feelings of separation to those of interconnectedness, increased feelings of being a part of a wider humanity, and the generation of kindness and compassion towards others, which suggest this may be a possible mechanism of psychological change.

Future research could usefully investigate the suggestion that attendance at gardening groups such as those in this study, enables the development of a transpersonal self, identified with both human and non-human nature, and the ways in which this may affect mental health.

Secondly, it may be helpful to understand whether identification with others is sufficient for the development of compassion towards others, and furthermore whether the development of compassion towards others automatically results in the extension of self-compassion towards the self, with resulting psychological benefits.

Neff (2003) suggests that it is recognition of one's basic humanity that results in the positive self-affect resulting from feelings of compassion and kindness directed towards the self. This study suggests that spending time in a natural environment can help develop a felt sense of one's place in a wider ecosystem and therefore arguably more human. Again, the mental health benefits derived from a sense of belonging and being an element of nature may be helpful for future research to explore.

Clinical implications

This study suggests that attendance at a gardening group may affect psychological processes that positively affect mental health in a number of ways. This has implications for the ways in which such interventions are designed, organised and accessed.

Both these groups operated on an ongoing basis, and could be attended as and when chosen by the participants. This is in contrast to many interventions that run for a set number of weeks and where missed sessions often result in being discharged from the service or group. Similarly, participants valued being able to work as they chose and not being given set tasks or under any pressure to complete them.

This study suggests that rather than a limited number of group sessions, allowing more flexible and longer term attendance may prove to be more beneficial. Similarly, unstructured sessions in which people can participate as they and when they choose may preferable to structured activities. Of primary importance was that group members held a sense of agency and control over group attendance and participation, described by one participant as

"empowering" (P6). Future research may help to establish whether this sense of autonomy within interventions is helpful.

Accounts suggest that there may be important clinical implications when choosing suitable locations for gardening (and other) outdoor interventions, as characteristics of the environment in this study were reflected in participant experiences. Further research could investigate whether certain types of natural spaces were more suited to particular experiences of mental distress than others.

This study underlined the negative effects of stigma and marginalisation experienced by those suffering mental health difficulties (Morgan et al., 2007). Whilst it may be helpful to consider how to best design interventions that enable the experiences of connecting with nature and others to alleviate symptoms what may be more beneficial (and more cost effective) could be the creation of spaces within our communities where those commonly excluded can participate (Yates, Holmes, & Priest, 2012). Having a place to go, being able to contribute and having a sense of oneself as part of a social community and natural ecosystem, greatly affected the extent to which participants in this study felt affected by their mental health difficulties. As one participant clearly stated:

> I thought therapy was when you did something that actually helped you, like you went to see a counsellor or something, but we're not doing that we're putting plants in the ground, so is that really therapy in itself? And I came to the conclusion that it isn't in the sense because it's just participating in the natural order of things which perhaps is the therapy (P5).

Limitations

Unfortunately, it was only possible to interview participants who had been attending the groups for some time. The resulting theory therefore is specific to people who felt the

groups had been helpful to them, and does not include information from those who did not find attending the groups helpful.

A lack of negative cases may be viewed as a methodological limitation as processes occurring for those who do not seek out, or who attend for a few sessions or less, are absent from this study. Both gardening groups did have people who attended for only one, or a few sessions only, the implication being that these people did not enjoy or find being at the group beneficial. This study could have usefully included these experiences.

Although efforts were made to lessen the effect of researcher bias, the author's own feelings that nature can positively affect mental health could have influenced interviewing style and interpretation of data.

Conclusion

The participants in this study illustrated how their experiences of mental distress were positively affected by attendance at community gardening groups. Factors from both the social and environmental contexts contributed to key processes which, over time, facilitated positive psychological change. Key to these processes were new or altered relationships with other people, the natural environment, and sense of personal identity. Central to these relationships were increased feelings of identification, empathy and compassion, suggesting that an expansion of identity to include both other people and non-human nature may help explain the positive mental health changes experienced.

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Section C
Appendices and Supporting Material

Appendix A: Original themes and comprising data from included studies

Paper	Theme	Brief indication of theme content
Adevi & Martensson (2013)	The garden and me – sensuous, moods and symbolism of nature	Participants find favorite places in the garden, enjoy sensory experiences and enjoy the gardening work. Natural environment felt to be calming, colour tones softer than man-made environments, ability to speak to garden without fear of response. Participants enjoyed positively influencing the growth of plants and reported a sense of meaning to give life to something. Moving at a slower pace and reflections on themselves as needing nurturing and patience.
	Together in a garden – the garden, the caregivers and the group	Garden was the backdrop to social life, and a provider of varied activities that could not be done indoors. Participants stressed the importance of moving around the garden as they chose, and to try out new ways of relating to others. They described how they learnt to use time in nature for their wellbeing after the intervention. Being part of a group of people experiencing similar difficulties was important
Barley, Robinson & Sikorski (2012)	Joining and motivations	Participants recalled nervousness when joining the group, as well as positive feelings and hopes for what could occur such as relaxation and increased ability to cope with mental health symptoms.
	Improved wellbeing	Benefits included, not being judged, lack of pressure, a sense of purpose, engagement in pleasurable activities, improved mood, something to look forward to and an escape from life's pressures. Increased self-worth and self-confidence were reported. Dramatic lifestyle changes such as stopping taking

		antidepressants or alcohol.
	Relationships	Personal relationships were key to most interviews and social contact highly valued by participants. Relationships characterised by equality, collaboration, care and empathy.
	Ownership	Discussed in terms of being able to contribute and having a sense of belonging. In a minority this appeared to be difficult when their ideas were not taken on board.
	Being outdoors	Participants enjoyed being outdoors, however for those more interested in the arts group this was season dependent. The garden was seen as peaceful, relaxing, facilitating reflection, seeing and being in touch with nature.
	Transferable skills	Participants reported learning new skills
Elings & Hassink (2008)	What did participants expect?	Participants stated they wanted 'something to do' and to have a means to structure their day, to have contact with others and 'not be alone', drug and alcohol users in particular were looking for distraction
	How do participants experience the work on a green care farm?	The 'majority' appreciated working on the farms, particularly the social contact and 'space/freedom' and being outside. Being able to choose activities and work at own pace was valued as was doing useful (essential) activities such as caring for the animals and plants.
	To what extent do green care farms influence future plans?	Variety of responses from wanting to 'fully normalise' and have paid work, a family and so on, to wanting to consolidate the present situation. Almost all participants had difficulty thinking of future plans and ways to realise them. Fears of

		high work pressure and not being able to cope were common. Working on care farm helped contribute to future plans by giving opportunities to get used to a daily routine, discipline, responsibility and group work.
	Effects on quality of life	Physical wellbeing – working on care farms helped increased daily routine, fitness, generated satisfaction and tiredness at the end of the day. Mental wellbeing - provides a distraction from drug and alcohol abuse, increased satisfaction and self-respect from doing useful work with visible results. Participants were able to be themselves as 'everyone is in the same boat' and due to experiencing acceptance. Those with mental health difficulties stressed 'getting to know yourself' and gaining insight and acceptance of their difficulties and increased self-confidence. Social well-being – the farms were viewed as a helpful first step from illness or addiction and appreciating that others are not all 'normal'.
	Community	Mutual respect and acceptance of difficulties was valued, lack of judgment of past problems and no pressure to behave other than how one is feeling. Participants felt 'belonging somewhere' to be a positive experience.
Ellingsen-Dalskau et al. (2015)	Structure and flexibility	Participants gained a structure to their day/week, for example getting up in the morning and attending the programme five days per week. The structure of the work also facilitated the development of social skills and relationships.
	Having choices and being challenged	The variety of tasks enabled participants to make choices and be challenged to an appropriate degree, which was important to

		participants.
	Understanding and acknowledgement	Participants spoke of being understood and acknowledged by the farmer and other clients, relationships were accepting and non-judgmental.
	Guidance and positive feedback	Guidance and positive feedback were experienced as motivating and encouraging.
	Nature and animals	Participants experienced calmness and inner peace within the natural environment. Being able to give care to the animals was felt to be important.
	Reflections of personal functioning and thoughts about the future	Participants experienced positive psychological benefits such as improved mood, more positive thoughts and being able to face difficulties. Additionally increased vitality and motivation were described. Participants felt more able to think about and plan for the future.
Eriksson, Westerberg & Jonsson (2011)	Being in the atmosphere of acceptance	Participants described the garden as a place separated from everyday life, this was experienced as soothing, all feelings were felt to be accepted in the garden, elements of the natural environment were felt to be calming, participants experienced being 'worthy' of attention and care, safe, accepted and valued.
	Being absorbed in the present	Participants focused on their own 'being' in the environment and engagement in activities, stimulating reflection. Self-confidence was improved from accomplishment of non-demanding tasks, metaphors between plants and self were evoked e.g. new beginnings and growth.
	Worries about connecting experiences to everyday life.	Participants began to connect their reflections to everyday life and changes they would like to make, although worried if they would be able to take changes to make

		differences in habitual patterns. The wish to continue with enjoyable activities after the programme was expressed.
	Bridging Rehabilitation to everyday life	Participants struggled to make use of insights in everyday life, and used strategies to try to do so, to continue to acknowledge themselves and engage in pleasurable activities.
Fieldhouse (2003)	Dimensions of the environment	Participants valued the natural environment as it promoted a sense of peace, by being away from usual stressors, the built environment was described in contrast as fast paced, noisy polluted etc. Engagement in 'real life' activity was felt to be de-stigmatising.
	Dimensions of individual's subjective experience	The social milieu was felt to be accepting, safe and supportive, shared experience and common purpose helped an easy flow of communication. Thinking: participants described a 'clearer head' at the allotment, fascination with growing plants and sense of agency. Emotional responses: Participants described appreciation of beauty and responsive and caring relationships they had with plants. They felt attached to the group, and felt 'different' at the group for example, enhanced mood and increased relaxation. Aspects of being: A heighted awareness of sensory experiences, increased physicality offered new perspectives of capabilities and a destigmatised identity. Participants felt more in tune with seasonal changes and more 'present' promoting reflection. Becoming engaged, in contrast to

	Dimensions of occupational performance	being isolated and inactive. Reflection promoted the arising of personal goals. Social contact provided valued friendship and reciprocal support.
Granerud & Eriksson (2014)	A meaningful life	Participants gained a more active and meaningful life, essential was a regular 24-hour rhythm and being needed. Participants revealed hopes for a brighter future and positive changes in self image.
	Contact with animals	Participants learnt to care for animals and in some cases overcome their fears of animals. Some participants developed emotional bonds with animals, important was lack of relational pressure or judgment from animals and felt to be 'less complicated' than human relationships. Also important was the animals' dependence on humans for their care.
	A 'natural' type of work	Experiencing change of seasons was felt to be meaningful, participants worked at their own pace, actively participating in the community, and were physically tired at the end of the day. Having activity and being tired, enabled the gaining of a normal rhythm and continuity of everyday life, strengthened by the fact they felt someone was waiting for them and their efforts were needed.
	Leadership and group process	Participants were active and accomplished tasks as a group. There were opportunities to speak with other group members as well as supervisors about personal or general issues.
	Challenges and Mastery	Personal success was experienced by doing the work, and being able to wake up and get to the centre on time. Inner strength was developed by mastering challenges. Mastery of new situations improved self respect

		and a feeling of personal growth.
	Sense of community and belonging	Participants stressed the importance of the social group and social interaction. Social cohesion was reinforced by performing activities together, eating meals and attending gatherings together. A sense of belonging to the farm generated surplus energy and confidence to re-establish social and family relationships outside the group. A negative factor was a shortage of time possible to spend receiving green care, thus limiting potential for positive change.
Hassink et al. (2010) This paper included participants experiences from a number of client groups. Only data relating to the client group experiencing mental health difficulties was included in this review.	Community Life	This was highly valued, clients felt safe, at home, accepted and respected. The small groups and possibility of making new contacts was valued, this was felt to be assisted by the informality and stability of the groups.
	Attitude of the farmers	Being treated as a 'normal person' as opposed to a 'patient', without prejudice and with respect was valued.
	Non-care context	Being in a regular setting as opposed to a care context and having a 'normal' job was felt to be destigmatising.
	Work	Being able to work at one's own pace and being able to rest when having a 'bad day' was valued. Attendance supported the development of daily structure. Animals were felt to be non-judgmental and accepting of difficulties.
	Green Environment	The quietness and space of the natural environment was valued, with opportunities to be alone. Participants enjoyed sensory experiences of nature.

Iancu et al. (2014)	Life before attending the services	Participants described 'occupational disruption' in the form of symptoms led to 'isolation' resulting in a 'lack of activities' and 'pre-occupation with the disorder', resulting in 'disorganised lives'.
	Goals	Participants had goals of 'having something to do' and described aims to increase functioning, develop social participation and improve social skills. Those on care farms also spoke of a desire to be in nature and affinity for plants and animals.
	Life after attending the service	Participants described a gradual process of transitioning from isolated and inactive lives to the active schedules at programmes. Increased motivation was associated with meaningful activities, being useful and being able to work at one's own pace. Having responsibility and being able to contribute to others' lives was important. Social contact with others, both farmers and peers created feelings of belonging and community.
Kogstad, Agdal & Hopfenbeck (2014)	The leader and group atmosphere	Leaders created safe environments charactersised by recognition, kindness and honesty. Personal qualities of leaders were emphasised including personal experiences of hardship and in-depth knowledge of and engagement with the group they are working with. Doing a regular job that was felt to be meaningful, increased dignity and counteracts stigmatization.
	Building self-efficacy through individually adapted meaningful tasks.	Farms provided sufficient tasks to cater for all levels of ability. Participants felt good being tired at the end of a day having done valued work.
	Animals and nature	Participants expressed relationships with animals as important, especially when those

		with people feel difficult and enjoyed giving the animals something of value and seeing that they thrive. The natural environment was highlighted, providing opportunities for silence and being alone. Conversations in the natural setting, around a fire or by horse drawn carriage provided the opportunity for informal yet important conversations about personal and important issues.
Palsdottir, Grahn & Persson (2013)	Slower pace in everyday life on one's own terms	After the programme participants were more aware of, and made efforts to meet, their own needs. Daily occupations were done at a slower pace, took more breaks, and tried not to rush things. They multi-tasked less, doing one thing at a time.
	Everyday occupations more often related to nature	Participants spent more time in nature, as they felt it to be restorative, and consciously attempted to slow their pace and achieve mental recovery by spending time in nature.
	Social interaction	Participants were more socially active, actively seeking friends to share leisure activities with.
	Creative occupations	After the programme many participants had resumed old creative occupations or taken up new ones. They consciously chose activities that would contribute to improved health and felt these had a positive effect on their inner strength.
Palsdottir, Persson, Persson & Grahn (2014)	Prelude	Alliance: *Establishing contact* – the gate to the garden marked the border between hazardous everyday life and a place of seclusion and security. Garden became a neutral meeting place where the garden was the common ground. The staff team made participants feel safe

		and secure, shared experiences of mental health difficulties were felt to make participants a group of equals which meant they could relax. Permissiveness: *Armor off*: Participants noticed what they felt as permissiveness in the more natural and wild parts of the garden whereas the more structured parts of the garden were felt to be more demanding. Partisans spoke of 'just being' and as if they didn't have to achieve anything. Participants enjoyed being able to work as they pleased, for pleasure as opposed to meeting work demands. The staff teams' non-judgmental attitude contributed to the feeling of permissiveness.
	Recuperating	Restoration: *Being present* – engagement with sensory experiences helped maintain present moment awareness. *Being one with nature* – Many participants expressed the feeling of re-connecting with nature, slowing to the pace of nature and described evolutionary roots in nature and an underlying need to be in contact with nature. In contrast, participants reflected on modern day urbanisation. *Peace and tranquility* – Sensory experiences were felt to be soft and gentle, soothing and calming. The absence of others in moments of solitude was felt to be important for engaging with nature.
	Empowerment	*Awakening and Processing* – Feelings of being supported and embraced by nature when processing strong feelings and a trust in nature, wanting places of solitude to express emotion. Participants reflected on metaphors in nature and how they related to their own lives. Moving on: Challenging oneself: Participants

		described an inner strength to be who they are rather than having to live up to expectations, challenging their own mental boundaries,
Parkinson, Lowe & Vecsey (2011)	Personal Appeal	The benefits of horticulture were directly linked to the interest of the individual, i.e. through social and individual attribution of meaning. Participants spoke of gardening as relaxing, aesthetically pleasing, and that they enjoyed the process of being at the groups as opposed to the end results.
	Social benefits	Participants spoke very positively of the social contact at the groups. The need for group leaders to help facilitate the groups in terms of structure and social engagement was highlighted.
Pedersen, Ihlebaek & Kirkevold (2012)	Ordinary Life	Participants stated it was important to have an experience of an ordinary life, to be considered an ordinary co-worker (in contrast to their illness). *Ordinary work*: It was important and positive that farm work was considered an ordinary setting, that they experienced doing something useful, and a reason to get out of the house. Being physically tired helped sleep. *Being appreciated*: Being appreciated and needed both by the animals and farmer was important, as was the opportunity to care for and interact with the animals. *Being a colleague:* Participants felt themselves to be part of the ordinary work force, feeling included and respected as an ordinary worker. The focus was not on their illness or treatment but on the tasks and life at the farm. Working as part of a team was valued. *Being sick*: It was felt to be

		important that the farmer had an understanding of their condition, the intervention however helped to create distance between the person and their problems. *Considerate relations*: It was important to be able to be open about their condition. *Closeness, warmth and calmness*: The physical closeness with animals was important, as was a sense of affection. Contact with the animals was comforting on bad days, helped participants feel less alone, and make the majority of participants feel calmer. *Forget my difficulties*: The farm work provided an opportunity to forget every day worries and be distracted from tiresome rumination. *Kept me going*: The intervention helped participants feel stronger by having more energy and as help through difficult periods. *Flexibility:* It was important that participants could adjust their daily work according to their daily conditions. An appropriate level of demands and lack of pressure to work at a particular speed was important. *Coping*: Participants experienced coping at the farms, being able to accomplish tasks leading to increased confidence and self esteem, achieving goals and learning new skills.
Sonntag-Ostrom et al (2015)	Striving for serenity	Participants wanted peace of mind and experienced the forest environments as restorative.
	Frustration in adaptation to nature	Captures experiences of feeling insecure in the forest including: feeling uncomfortable with solitude and being left alone with ones feelings, the forest was seen as an anxiety provoking place for

		some (fear of dangerous animals, getting lost, adverse weather conditions)
	Choosing a favorite place	Participants chose favorite places based on their current mood, requirements for reflection, need for privacy and earlier experiences of nature.
	Peace of mind	Sights and sounds of nature (colours and forms in vegetation, listening to water, birdsong) contributed to experiences of peace of mind (mental presence and physical relaxation which led to feelings of well being).
	Reflective thinking	Being alone in the forest promoted feelings of ease, rest, self-confidence and self-esteem, leading to a positive attitude which encouraged reflecting on one's life.
	Ambition for change	Participants had a desire to change at the end of the programme. Initiative taking and desire to engage in further improvement strategies was demonstrated. Fear of failure was also expressed.
Wilson et al. (2010)	<u>Client outcomes:</u>	
	Improvements to mental well-being	Increased confidence: 10 participants reported increased confidence.
		Increased self-esteem/pride/sense of achievement: Reported by 10 participants.
	Improvements to physical health	8 participants reported improvements to their physical health including, feeling fitter, improved respiration, loss of weight and reduction of body pain.
	Provision of daily structure/routine	12 participants reported improvements in daily routine such as getting out of bed earlier, getting out of the house, sleeping better, activity on what would

	otherwise have been an uneventful day. 7 participants reported improved knowledge of and interest in nature and outdoor activities.
Transferable knowledge and skill acquisition	12 participants reported learning new skills.
Increased social networking and social skills development	12 participants reported benefits to social skills and/or increased levels of socialization.
<u>Service logistics:</u> Team building and social inclusion	Staff took part in activities which seemed to make relationships feel more equal. The resulted in clients taking their own initiative more often and contributed to increased self-esteem.
Contrast of environments	The programme was perceived as providing different activities than clients are usually offered, the variety of tasks, contrast with hospital and household routines, and the inclusive nature of activities, were considered to improve a sense of routine and physical fitness.
Work and recognition	Activity at the group was experienced as 'work' with a 'purpose', increasing the sense of achievement and self-esteem. The informal nature of groups reduced fear of failure and encouraged taking of initiative. This resulted in positive reinforcement through praise and recognition of achievements.
Stepping stone to further community engagement	For some clients the programme seemed to bridge the gap between self-imposed isolation and re-introduction into wider society, particularly due to increased confidence.

Appendix B: Scoring criteria derived from the CASP

This scoring aid is based on the CASP Qualitative Checklist (Public Health Research Unit, 2006) to ensure consistent scoring across multiple studies.

1: Is there a clear statement of the aims of the research?

- Is the aim clearly stated?
- Why is the research important? – is the research grounded in the context of previous research?
- Is it addressing a gap in current knowledge/understanding?
- Is there a clearly stated need for this research?

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

2: Is a qualitative methodology appropriate?

- Does it seek to interpret or illuminate the actions and/or experiences of research participants?
- Is qualitative research the right methodology for addressing the research goal?

2 points – yes to both of the above

1 point – if the goal is unclear, and it is difficult to assess whether qualitative methodology is most appropriate.

0 points – no to both of the above. In this case the study will be rejected at this point.

3: Is the research design appropriate to address the aims of the research?

- Has the researcher justified the research design?
- Is there some discussion about how the approach Is chosen and why?
- Does the description of the design cover both data collection and analysis? – and is this description adequate? NB- A vague reference to themes and codes counts as 'no', a properly 'branded' type of analysis should at least be mentioned.

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

4: Is the recruitment strategy appropriate?

- Is there an explanation of how the participants were selected and where they came from i.e. from a service, a group home etc?
- Is there an explanation of why the selected participants were the most appropriate?
- Is there demographic information about the participants?
- Is there information as to the living situation of participants? (For this review, living situation is considered important and helps make sense of the research findings).

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

5: Is the data collected in a way that addressed the research issue?

- Is it clear how data were collected (e.g. focus group, interview etc)?
- Are the methods explicit? e.g. for interview is there an indication of how they were conducted, or did they use a topic guide?

- If methods were modified during the study, Is it explained how and why?
- Is the form of data clear (e.g. tape recordings, notes etc)?

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

6: Has the relationship between researcher and participants been adequately considered?

- Is there some indication that the researcher examined their own role, potential bias and influence during
  a) Formulation of the research questions
  b) Data collection, including sample recruitment and choice of location?
- Is there any indication of reflection on the relationship between the researcher and participants?

2 points – a clear examination of researcher role, interests, or relationship with participants.

1 point – a minor reference to research role, interests or relationship with participants.

0 points – no explicit discussion as to researcher role at any stage of the research.

7: Have ethical issues been taken into consideration/

- Is there sufficient explanation of how the research Is explained to participants for the reader to assess whether ethical standards were maintained?
- Has the researcher discussed issues raised by the study (i.e. around informed consent/confidentiality, or how they have handled the effects of the study on participants during and after the study)?
- Is it clear that approval has been sought from the appropriate ethics committee?

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

8: Is the data analysis rigorous enough?

- Is there an in-depth description of the analysis process?
- Is it clear how the categories/themes were derived from the data?
- Is sufficient data presented to support the findings?

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

(also consider to what extent contradictory data are taken into account, whether the researcher critically evaluates their own role, potential bias and influence during analysis and selection of data for presentations, whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process – however these items are not scored).

9: Is there a clear statement of findings?

- Are the findings explicit – and does this go beyond simply presenting the data with appropriate theme headings?
- Is there adequate discussion of the evidence for and against the researcher's arguments?
- Has the researcher discussed the credibility of their findings? e.g. triangulation, respondent validation, more than one analyst?
- Are the findings discussed in relations to the original research question?

2 points – yes to all of the above

1 point – no to any one of the above

0 points – no to all of the above.

10: Oriented in research field? (NB this title has changes as ‘value of the research’ was felt to be difficult to determine using the considerations below. Instead, the extent to which the authors oriented their research into the current body of knowledge/understanding, both past and future, is considered here.)

- Is there a discussion of the contribution the study makes to existing knowledge/understanding e.g. are findings considered in relation to current practice or policy? Or relevant research-based literature?
- Do they identify new areas where research is necessary?

2 points – yes to both of the above

1 point – no to any one of the above

0 points – no to all of the above.

Appendix C: Scoring for studies included within the review

Author (Year)	Adevi & Martensson (2013)	Barley, Robinson & Sikorski (2012)	Elings & Hassink (2008)	Ellingsen-Dalskau et al. (2015)	Eriksson, Karlstrom, Jonsson & Tham (2010)	Eriksoon, Westerberg & Jonsson (2011)	Fieldhouse (2003)	Granerud & Eriksson (2014)
CASP Scoring Item								
1	2	2	1	2	2	2	2	2
2	2	2	2	2	2	2	2	2
3	2	1	1	2	1	2	1	1
4	1	2	1	1	1	1	1	1
5	2	2	2	2	2	2	2	1
6	0	0	0	0	0	0	1	0
7	1	1	0	1	1	2	2	1
8	1	2	0	2	2	2	2	1
9	1	2	1	2	2	2	2	2
10	2	2	0	2	2	2	2	2
Total	**14**	**16**	**8**	**16**	**15**	**17**	**17**	**13**

Author (Year)	Hassink et al. (2010)	Iancu et al. (2014)	Kam & Siu (2010)	Kogstad, Agdal & Hopfenbeck (2014)	Palsdottir, Grahn & Persson (2013)	Palsdottir, Persson, Persson & Grahn (2014)	Parkinson, Lowe & Vecsey (2011)	Pedersen, Ihlebaek & Kirkevold (2012)
CASP Scoring Item								
1	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2
3	1	2	1	1	1	2	1	1
4	1	1	1	2	1	1	1	1
5	2	2	2	2	1	2	1	2
6	0	0	0	0	0	1	0	1
7	1	2	2	2	2	1	1	1
8	2	2	0	2	1	2	0	2
9	2	1	1	2	1	2	1	2
10	2	2	2	2	2	2	1	2
Total	**15**	**16**	**13**	**17**	**13**	**17**	**10**	**16**

Author (Year)	Sonntag-Ostrom et al (2015)	Wilson et al. (2010)
CASP Scoring Item		
1	2	2
2	2	2
3	2	1
4	2	1
5	2	2
6	0	1
7	1	2
8	2	1
9	2	2
10	2	2
Total	**17**	**16**

Appendix D: Abridged research diary

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Appendix E: Consent form

Salomons Centre for Applied Psychology
Canterbury Christ Church University
Runcie Court
David Salomons Estate
Broomhill Road
Tunbridge Wells
TN3 0TF

17/02/2015

Consent Form Participant Identification Number: _____

Title of Project: **Exploring the role of nature for psychological well-being of community gardeners.**

1. I confirm that I have read and understand the information sheet dated 17/02/2015 ☐

for the above study. I have had the opportunity to ask the researcher questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without my participation at the garden or current services being affected. ☐

3. I agree to answer the questionnaire as explained to me in the information sheet. ☐

4. I agree to take part in an interview, as explained in the information sheet. ☐

5: I agree for my interview to be audio recorded and understand the recording will be destroyed as soon as the interview is typed up. ☐

6. I agree that the anonymised findings from this study will be published as a doctoral thesis and possibly published in a research journal. ☐

I would like to receive a copy of the summary of findings of the research ☐

Name of Participant Date Signature

Name of Researcher Date Signature

Appendix F: Participant information sheet

Salomons Centre for Applied Psychology
Canterbury Christ Church University
Runcie Court
David Salomons Estate
Broomhill Road
Tunbridge Wells
TN3 0TF

17/02/2015
Participant Information Sheet
Title of Project: **Exploring the role of nature for psychological well-being of community gardeners.**

My name is Lisa Wood, I am a trainee clinical psychologist, and I would like to invite you to take part in this research study. The study is part of my training as a clinical psychologist at Canterbury Christ Church University. I am working with [organisation name] for this study. Before you decide I would like you to understand why the research is being done and what it would involve for you.
Part 1 tells you the purpose of this study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study.

Please ask me if there is anything that is not clear.

Part 1
What is the purpose of the study?
The aim of the study is to discover whether, and if so how the physical environment affects mental health. This may help us understand more about the ways in which therapeutic horticulture can benefit mental health, and help us to develop future groups in a way that maximises benefit for those taking part.

Why have I been invited?
You have been invited because you take part in gardening activities at [Charity name].

Do I have to participate?
No. It is entirely up to you to decide whether or not you take part.
If you decide to take part, you will be free to withdraw at any time without giving a reason. If you decide not to take part, or if you change your mind about taking part, neither your work at the garden nor your access to usual supports or services, will be affected in any way.

What will happen to me if I take part?
If you agree to take part I will ask you to complete a short questionnaire, and to have a recorded conversation with me, about your experience of working in the natural environment at [Charity name].

What are the risks and benefits of taking part?
I don't believe there will be any risks to taking part in this study. I will ask you questions about your mental health in relation to your experience at [Charity name], which could potentially be upsetting. However, I will not ask you to talk about anything that you do not feel comfortable talking about. The benefit of taking part is that you may help improve nature based therapy interventions for others suffering mental distress.

Part 2
Will my participation be kept confidential?
Yes. Both your participation in the study, and data collected from you will be kept confidential.
Only Lisa Wood and her supervisor, Joe Hinds will have access to the questionnaire you complete and the audio recording of your interview.

This means everything you tell me will be kept confidential. The only exception to this is if you tell me anything that makes me worry about your safety, the safety of others, or any information related to any criminal activity – in these cases I am obliged to inform the relevant agencies, for example, your care team (if you are currently under the care of a mental health team).

All information which is collected about you during the course of the research will be kept strictly confidential. Any personal data, and information you give as part of your interview will have your name removed and a code number attached instead so that you will not be able to be identified.

The audio recording will be destroyed as soon as it has been typed up. The data will then only exist as document from which all information that could identify you will have been removed. It might be important to look at the data in years to come, so we will keep it for 10 years and then it will be destroyed. All data use is strictly within the terms of the Data Protection Act (DPA 1998).

What will happen if I don't want to carry on with the study?
You can withdraw from the study at anytime, without giving a reason.

Access to clinical records
We will not need to access your records for this study.

What will happen to the results of the research study?
The results of the study will be written up into a report, and then published in a scientific journal. The report will include anonymised data from the questionnaire and anonymised quotes from the interviews. No one will be able to identify you in the write up of the report, and you are welcome to receive a copy of the final report. A brief easy to read summary of the report will also be written and available to interested participants.

Who is organising and funding this research?
The research is conducted as part of my training in Clinical Psychology at Canterbury Christ Church University.

Has the research been reviewed by an appropriate research ethics committee?
All research conducted by the University is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Salomons Ethics Panel, Canterbury Christ Church University.

What happens if you would like more information about the study?
You will be able to contact me, or my supervisor, to discuss the study during its duration. If you would like to ask any questions or receive more information about the study then please contact one of us:

Researcher:
Lisa Wood
Salomons Centre for Applied Psychology
Canterbury Christ Church University
Runcie Court
David Salomons Estate
Broomhill Road
Tunbridge Wells
TN3 0TF
Tel: 0333 011 7070

Supervisor:
Dr Joe Hinds
Laud Building, Room LF17
Canterbury Christ Church University
North Holmes Road
Canterbury
CT1 1QU
Tel: 01227 767700 ext 3767

What if there is a problem?
If you have a concern about any aspect of this study, you should ask to speak to me and I will do my best to answer your questions. If you remain unhappy and wish to complain formally, you can speak to the Research Director at The Salomons Centre for Applied Psychology:

Prof Paul Camic
Salomons Centre for Applied Psychology
Canterbury Christ Church University

Runcie Court
David Salomons Estate
Broomhill Road
Tunbridge Wells
TN3 0TF
Tel: 0333 011 7114

Thank you for reading this information sheet

Appendix G: Ethics approval letter 1

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Appendix H: Ethics approval letter 2

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Appendix I: Interview schedule

The interview will be semi-structured, aiming to elicit participants' experience of attendance at the gardening group and the natural environment as related to their mental health. Questions will aim to follow the participant's line of thinking and may not necessarily be asked in the order or exact phrasing as shown below. The overall aim is to ensure these questions have been answered by the end of the interview.

1: What has coming to this garden been like for you?

2: What has been your experience of this natural environment?

3: Has the natural environment had any effect on your mental health?

4: If so, what is/was the effect, and how exactly did it do this?

5: Has the natural environment had any effect on the way you feel?

6:If so, what is/was the effect, and how exactly did it do this?

7:If you were doing a useful activity indoors, with other people, would it feel the same?

8: If not, how would it be different?

9: What was it like in the beginning, before you knew anyone?

Prompts: Can you tell me more about that?, How does that happen?, What qualities of this environment allow that to happen?, Does that feel important?, What makes that important? Why is that?

Appendix J: Coded transcript

This has been removed from the electronic copy.

Appendix K: Theme development

1) Initial focused codes grouped into loose categories

Nature	Psychological	Social	Work	Wider themes
Appealing	A different way to be	Acceptance	Being productive	Having to go home
Attachment	Acceptance	As it should be	Contributing	Indoor vs Outdoor
Beauty	Achievement	Attachment	Doing useful work	Loss
Being a part of nature	Authenticity	Being uplifted	Easy to do jobs	Modern life
Birdsong	Breaking defences	Caring	Producing food	Negative experiences in 'outside world'
Caring	Caring	Change of status markers		Older simpler ways of life
Continuity	Creativity	Compassion	Work	Positive experiences 'in here'
Doing what it should	Dealing with problems	Contributing	Being productive	Problems having locations
Emotion	Discovering new things about self	Empathy	Contributing	Self and environment as tied
Feeling small	Finding purpose	Enjoying being with others	Doing useful work	Societal factors causing distress
Garden as good	Finding out who I am	Exchanging skills	Easy to do jobs	Transformation
God/Spiritual/Awe	Having a break	Having a place or belonging	Producing food	Visions of a different society
Having a place/belonging	Having defences	Having a valued role		
Leveler	Interest	Helping others		
Relationships with nature	Not focusing on problems	Learning new ways to relate		
Natural Cycles	Nurturing	Learning knowledge		
Nature doing something positive	Ongoing difficulty	Leveler		
Nurturing	Peace	Making relationships with others		
Pace	Problems losing power	Nice people		
Peace	Reflection	No demands		

Problems losing power	Regaining parts of self	No judgment	
Relaxing	Relax or let go	Not feeling alone	
Remembering past nature	Resilience	People as difficult	Societal factors causing distress
Resilience	Re-examining values	Safety	Transformation
Safety	Safety	Shared experience of mental health difficulties	Visions of a different society
Sharing positive experiences of nature	Shedding baggage	Sharing problems	
Support	Sleep	Stigma	
Taking a break	Taking a break	Support	
Universal Effect		Welcoming or understanding	
Wildlife			

2) Developing Categories and codes

Sensory/Emotional	**Safety**	**Relationship**	**Nature**	**Misc**	**Change**	**Having a place/belonging**
Beauty	Attachment	Caring	Being a part of nature		A different way to be	Having a valued role
Birdsong	Peace	Having a place/belonging	Continuity	Resilience	Achievement	Contributing
Emotional affect of nature	Problems losing power	Leveler	God/Spiritual/Awe	Taking a break	Authenticity	
Being uplifted	Not focusing on problems	Relationships with nature	Natural Cycles	Dealing with problems	Breaking defences	
	Relax or let go	Nurturing nature and people	Nature doing something positive	Sleep	Creativity	
	No demands	Sharing		Learning knowledge	Discovering new things about self	
	Shared experiences of mental health difficulties	Support		Stigma	Finding purpose	
	Easy to do jobs	Acceptance		Being productive	Finding out who I am	
	Pace of nature	Authenticity			Re-examining values	
	Relaxing	Regaining parts of self			Shedding baggage	

Change of status markers	Doing useful work
Contributing	
Empathy	
Enjoying being with others	
Helping others	
Learning new ways to relate	
Making relationships with others	
No judgment	
Not feeling alone	
Welcoming/understanding	

3) Final categories

Feeling safe	**Relaxing/letting go**	**Connecting/re-connecting (to self/others/nature)**	**Finding place/belonging**
Positive sensory experiences	Slowing pace	Regaining parts of self	Finding a place in social community
Positive emotions	Dropping defences	Discovering new things about self	Finding place in nature
Problems losing power	Shedding baggage	Making relationships with others	Finding purpose
No demands	Relaxing	Making relationships with nature	Finding authentic sense of self
Shared experiences of mental health difficulties			
Change of status markers			
Caring			
Empathy			
Acceptance			

Appendix L: Author guidelines for the journal Ecopsychology

Structure and approach

Scientific research must begin with a defined research question, which results in a well designed research protocol that plans the overall approach. This foundation should lead to a set of data from which the manuscript can be constructed. Manuscripts submitted to journals for consideration for publication typically have the following components:

Title page

A title page should be included. State the title of the manuscript, which should be short and simple, as well as authors and author affiliations. Indicate the journal to which the manuscript is being submitted. Provide approximately 5 key words, as well as a short title (sometimes referred to as a running title) for the manuscript. Finally, provide complete contact information for the corresponding author.

Abstract

The abstract is typically a single paragraph. The abstract should be considered as an independent document, so that the abstract does not rely upon any material in the body of the report and, similarly, the body of the report does not rely upon any material in the abstract. The first sentence should clearly state the objective of the experiment. If the experiment is based upon a hypothesis, which is greatly preferred, the hypothesis should be stated and followed with statements describing its basis and evaluation. The subsequent sentences describe how the investigation was carried out. The following sentences describe, with as much precision as possible without being verbose, the results of the experiment. The final sentences describe the significance of the results and the impact of this work on the general field of study.

Introduction

The introduction requires a short review of the literature pertaining to the research topic. The introduction is then best constructed as a descriptive funnel, starting with broad topics and slowly focusing on the work at hand. Perhaps three to four paragraphs are needed. One approach may be to start with one or two paragraphs that introduce the reader to the general

field of study. The subsequent paragraphs then describe how an aspect of this field could be improved. The final paragraph is critical. It clearly states, most likely in the first sentence of the paragraph, what experimental question will be answered by the present study. The hypothesis is then stated. Next, briefly describe the approach that was taken to test the hypothesis. Finally, a summary sentence may be added stating how the answer of your question will contribute to the overall field of study.

Methods

This section should be a straightforward description of the methods used in your study. Each method should be described in a separate section. Begin, in a single section, with a statement of the materials used in the study, indicating the vendor and vendor contact information for each material. This information is critical so that readers have the capability to repeat the work in their own institutions. Next describe, in separate sections, each key procedure and technique used in the study. Keep explanations brief and concise. If a specific experimental design is utilized, describe this design in the second section of the Methods, after the materials section. Similarly, if a theoretical or modelling component is utilized, it should also be incorporated in the initial portion of the Methods. Finally, remember to describe the statistical analysis methods that were utilized to analyze the results, most likely in the final section of the Methods section. Although it is typically not recommended, the use of the passive voice is probably appropriate in the Methods section.

Results

The Results section presents the experimental data to the reader, and is not a place for discussion or interpretation of the data. The data itself should be presented in tables and figures (see below). Introduce each group of tables and figures in a separate paragraph where the overall trends and data points of particular interest are noted. You may want to indicate the placement of a particular table or figure in the text. For experimental studies, key statistics such as the number of samples (n), the index of dispersion (SD, SEM), and the index of central tendency (mean, median or mode) must be stated. Include any statistical analysis that was performed, and make sure to indicate specific statistical data, such as p-values. Note that each table and figure in the paper must be referred to in the Results section. Be succinct.

Discussion

The discussion section, often the most difficult to write, should be relatively easy if the previous suggestions have been followed. In particular, look to the last paragraph of the introduction. If the work has characterized a phenomenon by studying specific effects, use the results to describe each effect in separate paragraphs. If the work has presented a hypothesis, use the results to construct a logical argument that supports or rejects your hypothesis. If the work has identified three main objectives for the work, use the results to address each of these objectives. A well-defined study that is described in the Introduction, along with supporting results that are presented in the Results section, should ease the construction of the Discussion section.

Begin the Discussion section with a brief paragraph that again gives an overview to the work. Summarize the most important findings and, if applicable, accept or reject the proposed hypothesis. Next, identify the most interesting, significant, remarkable findings that were presented in the Results section, and contrast these findings in light of other studies reported in the literature. It is often informative if a discussion of the potential weaknesses of the interpretation is also included. Finally, at the end of the Discussion section, consider the other works in the literature that address this topic and how this work contributes to the overall field of study.

Conclusions

Again, first introduce the work and then briefly state the major results. Then state the major points of the discussion. Finally, end with a statement of how this work contributes to the overall field of study.

Acknowledgements

Provide a brief statement acknowledging the efforts of any participants or consultants who are not included as authors of the manuscript. State all of the funding sources for the work, ensuring that the statement adheres to the guidelines provided by the funding institution.

References

Include all references that have been cited in the text. The references should be well considered, so that they contain all key sources in the field as well as previous studies that support or motivate the present work. However, do not include extraneous references in an effort to simply cite particular authors or journals. It may be appropriate to cite previous publications from your own laboratory, but this should be done judiciously.
You must use the reference format that is mandated by the journal to which you are submitting the manuscript. Software packages make citing literature particularly easy.

Tables and table captions

Tables should generally be included in a separate section after the References section. The tables should be headed with a caption and title in bold (i.e., Table 1: Material Properties), followed by a sentence or two that describes the content and impact of the data included in the table. The table itself should be formatted so that the data is clearly presented and easily interpreted by the reviewer, however the table is likely to be reformatted by journal to conform to its standards. Make sure that each table is referred to in the manuscript text; this will most likely occur in the Results section, but may also occur in the Introduction, Methods, or Discussion sections.

Figures and figure captions

As with the tables, figures can also be placed in a separate section after the References section. Again, clarity is the key factor, especially with images and graphs. All images should be as large as possible, and include accurate scale bars. The graphs should be large, with data points and axis labels in a large font. Legends can be included within the graph or in the caption. All figures need a caption. The caption should identify the figure in bold (i.e., Figure 3), state a brief title to the figure, succinctly present the significant result or interpretation that may be made from the figure (this may be modified from the Results or Discussion section text), and finally state the number of repetitions within the experiment (i.e., n=5) as well as what the data point actually represents (i.e., the data are means and the associated error bars represent standard deviations). As with the tables, make sure that each figure is referred to in the manuscript text.

Authorship and originality

Finally, we have assembled some points to consider in regards to authorship and originality of manuscripts submitted for publication

• Plagiarism is unfortunately a major concern among editors and publishers. Therefore, be certain of the sources of all data and text. If the article is based upon prior work, be sure to reference that prior work properly. An original research paper cannot contain previously published data in any form without a proper citation.

• Authorship and the order of authorship must be agreed upon by all of the authors and any other personnel who participated in the work but are not included as an author.

• It is not permissible to submit a work that is a translation of a previously published paper.

Appendix M: End of study/summary letter to ethics panel

This has been removed from the electronic copy.

Appendix N: End of study report for participants

Exploring the role of nature for psychological well-being of community gardeners

Dear Participant

Firstly, I'd like to thank you again for taking part in my research project, as part of my training as a Clinical Psychologist. The project has now been completed. This summary report is to let you know the outcomes of the study.

Background

In recent years there has been a growing interest in the use of nature based projects for well-being and mental health. When people suffer from mental health difficulties, they often find that they are at home by themselves, and that they become isolated, with little to do, and this makes them feel even worse. Group gardening projects can offer people the opportunity to spend time with others, doing useful activity, in a natural environment. These types of projects have been shown to greatly benefit people experiencing mental distress.

Aims of this study

This study aimed to understand how people with experience of mental health difficulties found taking part in group gardening projects. The study hoped to find out how attending this type of project affected people's mental health.

Method

Eleven people from two different gardening groups were interviewed for this study. The interviews were typed up and compared with each other, to help get an overall picture of what was important to people. When everyone had been interviewed I tried to put together a picture to represent what people had told me. I went back to the groups and checked out this picture with some of the group members. They told me that the picture felt like a good way to understand what being at the gardens had been like.

Findings

The study found that there were four important things that people were able to feel when they attended the gardening groups:

1: Feeling safe: The importance of the 'right time' in attending the groups was highlighted, however everyone in the study explained how they felt safe at the groups, and how this was very important for them. This feeling came from being in a natural environment, away from the town with noise and many people. In the gardens the beautiful sights and sounds of nature were felt to be calming and peaceful. This helped people relax and for some, their difficult mental health symptoms felt less powerful at the gardens.

People also felt very safe with the other people in the groups. The groups were felt to be non-judgmental and very accepting of whatever difficulties people came with.

Finally, being able to do whatever tasks people wanted to, and to take breaks when they wanted to, as well as only having to go to the groups when they felt like going, helped to create a feeling of safety.

2: Letting go: As people felt safe at the groups, it was easier for them to be themselves. They were able to 'let their guard down' and didn't have to hide their feelings if they were having a bad day. This was a relief, as many people found that sometimes people close to them didn't really understand what they were going through. Other people at the group however, were felt to be more understanding and to sometime share the same types of difficulty. At the groups people were more able to 'let go' and relax, and also to 'let go' of negative ideas they had developed about themselves due to experiencing mental health difficulties. At the groups they were able to feel better about themselves as they were able to do something useful, to learn new skills and knowledge, and have a valued role in caring for the gardens.

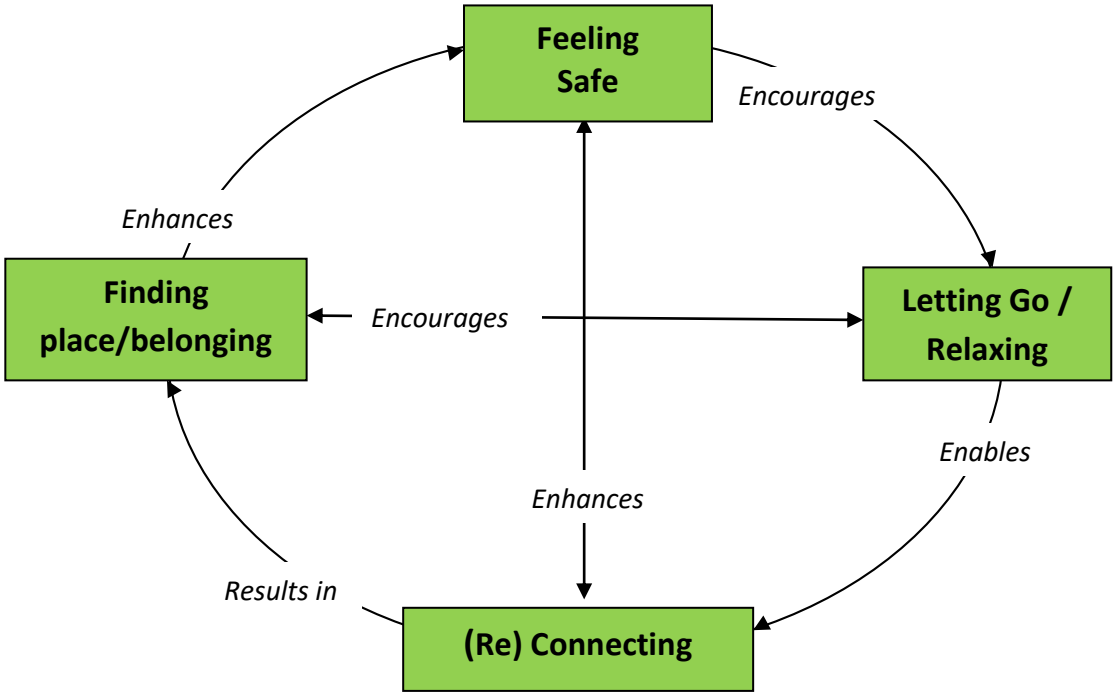
3: (Re) Connecting: People found that at the groups they developed relationships with the nature around them. Many came to care deeply about the plants, birds and trees at the sites. These relationships with nature were especially important at times when other people felt too overwhelming to be with. Group members also valued the social life at the groups very

much. They made relationships in which they could support and help each other, and were also able to share good times and have fun together. For some people, being at the groups helped them to remember things they used to enjoy, or to find out new things about themselves, for example, some people found out they were quite creative through going to the groups. It was suggested this process could also be about 're-inventing' oneself, as new things were learnt.

4: Belonging: Many people told me how they had come to feel a sense of belonging at the groups. Not only did they find themselves belonging as part of a social community, they also came to recognise that they also belonged in nature, and were part of the 'circle of life'. This made people feel good as they recognised they were part of the wider ecosystem.

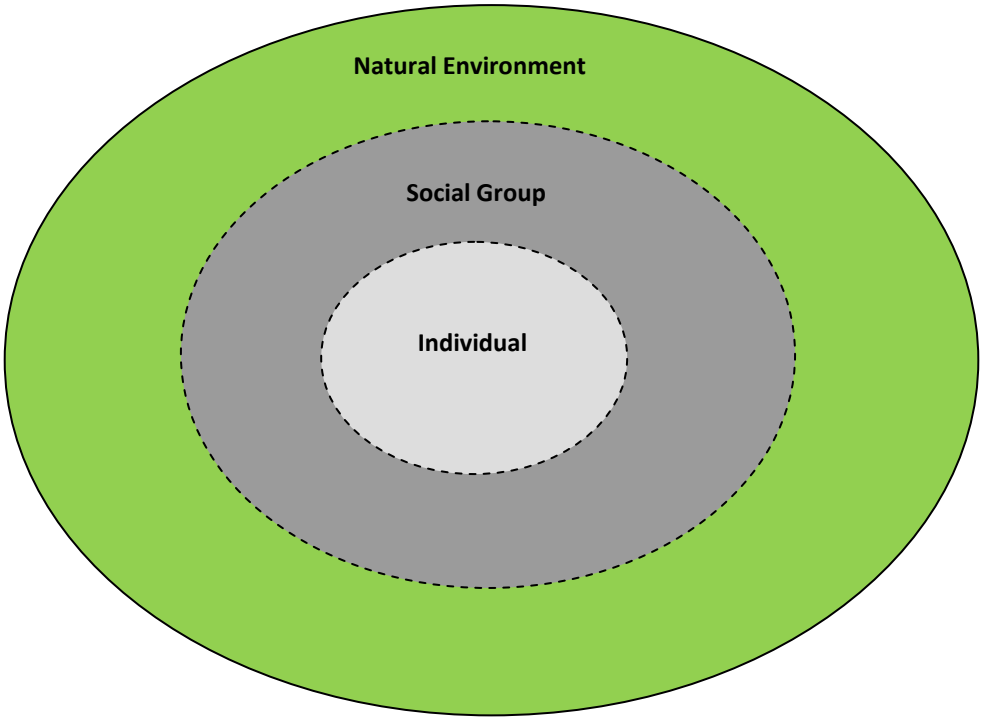
Overall, these processes seemed to work together. For example, feeling safe helped people drop their guard, and then dropping their guard helped them make relationships, to be themselves and feel belonging – and this made them feel even safer. It might be helpful to see these elements as related, like in the diagram below:

Key processes affecting mental health through gardening group attendance



Everyone in the study emphasised how before they came to the groups they were isolated at home, and even on days when they went to the groups, they had to go home again, which some people continued to find difficult. To show how important the social and natural environments were to people in the study, it might be helpful to think about the individual person, within a social environment, and everyone within the natural environment, like in the diagram below.

To show the individual within the social and natural environments



Conclusion

The study showed how community gardening groups can benefit people experiencing mental health difficulties. People attending the groups felt more connected with other people in the groups as well as with the natural environment. What many people explained was important, was that by coming to the groups they no longer felt alone. In the future it may be helpful to find ways to provide more groups such as these within our communities. It is important that there are opportunities for people to engage with and to feel part of their communities, whatever difficulties they may be experiencing.

I hope this report has been interesting to read. I have really enjoyed working with you at the gardens, and it has been a real privilege to share your thoughts and understandings of the groups. Thank you very much indeed for making me feel so welcome at your groups, for you time, and for your openness in our conversations, this project would not have been able to happen without you.

Very best wishes

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