JANE CLATWORTHY BSc PhD

GARDENING AND WELLBEING

Section A: Gardening as a mental health intervention: A review of the evidence and its theoretical underpinnings
Word Count: 5,316

Section B: Exploring the relationship between suburban allotment gardening and wellbeing: An interpretative phenomenological analysis
Word Count: 8,122

Section C: Critical appraisal
Word Count: 1,990

Overall Word Count: 15,428

A thesis submitted in partial fulfilment of the requirements of Canterbury Christ Church University for the degree of Doctor of Clinical Psychology

SEPTEMBER 2012

SALOMONS
CANTERBURY CHRIST CHURCH UNIVERSITY

Acknowledgements

I would like to thank my two supervisors for their support, enthusiasm and advice - Professor Paul Camic, who opened my eyes to the world of qualitative research and Dr Joe Hinds, whose knowledge and humour were a source of inspiration over the course of the project.

I am indebted to the phenomenal Mansion Library team at Salomons – Kathy, Moira and Angela. I am extremely grateful for their tolerance and speed in processing my copious requests for weird and wonderful articles from the realm of therapeutic horticulture.

Finally, I would like thank the allotment gardeners who participated in my research, sharing not only their personal experiences of allotment gardening, but also some invaluable gardening tips – my allotment is a better place as a result!

Summary of this portfolio of work

This work considers the role of gardening in promoting mental health and wellbeing.

Section A is a literature review, exploring the psychological theories behind gardening-based mental health interventions and providing an overview of the current evidence to support their use. It builds on the last comprehensive review conducted in 2003, finding that the evidence-base has developed considerably over the past decade but that there is still a need for higher quality research in this field.

Section B considers the value of gardening in promoting wellbeing in a non-clinical sample. A qualitative study is presented in which allotment-holders completed in-depth interviews about their allotment gardening and its perceived impact on their wellbeing. The themes that emerged represented a wide range of emotional, physical, social and ideological benefits of allotment gardening and parallels were drawn with Maslow's hierarchy of needs. While each participant talked to some extent about all of the themes, a different theme was dominant for each individual, suggesting that allotments are flexible environments that may enable people to meet their individual needs, in order to enhance wellbeing. Implications for clinical and community psychology are discussed.

Section C offers reflections on this research process, with consideration given to the learning that has taken place and both the clinical and research implications of the work.

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Section A

Gardening as a mental health intervention: A review of the evidence and its theoretical underpinnings

Word Count: 5,316

(See Appendix 1 for manuscript requirements)

Abstract

Purpose – The number of gardening-based mental health interventions is increasing, yet when the literature was last reviewed in 2003, limited evidence of their effectiveness was identified. The aim of this review was to explore the current theoretical and empirical rationale for gardening-based mental health interventions.

Methodology – Studies evaluating the effectiveness of gardening-based interventions for adults experiencing mental health difficulties were identified through an electronic database search. Information on the content and theoretical foundations of the interventions, their effectiveness and the study methodology was extracted and synthesised.

Findings – Ten papers published since 2003 met the inclusion criteria. All reported positive effects of gardening as a mental health intervention. Overall the research was of a considerably higher quality than that reviewed in 2003, providing more convincing evidence in support of gardening-based interventions. However, none of the studies employed a gold-standard randomised controlled trial design. Furthermore, some of the analyses were conducted unconventionally, highlighting lack of research expertise by some of the authors.

Research implications – There is a need for further high-quality research in this field. A large number of gardening-based mental health interventions are currently being established in the UK. It would be prudent for trained researchers to be involved in ensuring adequate measures are in place to evaluate these programmes effectively.

Originality/value – This paper provides an up-to-date critique of the evidence for gardening-based mental health interventions, highlighting their potential clinical value.

Introduction

Context

Gardening has long been considered therapeutic for people experiencing mental distress. In the late eighteenth century, Dr Benjamin Rush (1746-1813) - considered to be the first psychiatrist - reported beneficial effects of horticulture for people with mental health difficulties, informing practice in American and European psychiatric hospitals (Davis, 1998). In recent years, there has been renewed interest in gardening as a mental health intervention. A survey of projects registered with Thrive, a charity that promotes and supports the use of therapeutic horticulture, revealed that the number of UK horticultural projects for vulnerable people (including those experiencing mental health difficulties) has increased dramatically from 45 in the mid-1980s to over 900 (Sempik, Aldridge, & Becker, 2005).

Increasing attention on therapeutic gardening reflects a broader current interest in the role of nature in enhancing health and wellbeing. Over the past five years, several reports have been published in the UK from different perspectives, each acknowledging the potential psychological benefits of exposure to natural environments (Faculty of Public Health, 2010; Greenspace Scotland, 2008; Mind, 2007). In their report entitled “Ecotherapy – the green agenda for mental health”, Mind, a leading mental health charity, stated that ”Ecotherapy should be recognised as a clinically valid treatment for mental distress” (Mind, 2007; p. 3). Using money obtained through the Big Lottery Fund’s Changing Spaces scheme launched in 2005, MIND has funded over 130 ‘green’ mental health projects throughout England, through their Ecominds programme. These include many gardening-based interventions. The aim of this paper is to explore the theoretical and empirical rationale for such gardening- based mental health initiatives.

Theoretical perspectives

Two dominant theories considered helpful in understanding the impact of gardening on mental health are attention restoration theory (Kaplan & Kaplan, 1989; Kaplan, 1995) and psycho-physiological stress reduction theory (Ulrich, 1983). Both are psycho-evolutionary theories, based on the biophilia hypothesis – the idea that humans have an innate need to affiliate with the natural environment within which they have evolved (Wilson, 1984). There is considerable evidence that people have a preference for and a predisposition to respond to natural stimuli (see Gullone (2000) for a review). However, in recent history people have become increasingly removed from the natural environment. Indeed it is estimated that people typically spend 95-99% of their time indoors (Chalquist, 2009). Both attention restoration theory and psycho-physiological stress reduction theory suggest that interaction with the natural environment can serve a restorative function but through different mechanisms.

Attention restoration theory is primarily concerned with cognitive functioning. Kaplan and Kaplan (1989) suggest that people have two types of attention: directed attention (requiring effort, e.g. when we problem solve) and fascination (non-goal oriented and effortless attention). They propose that directed attention is a limited resource that can be overloaded (causing stress) and that people need to use the alternative system – fascination – to restore it. Fascination is thought to be dominant in natural environments, such as gardens, where there are captivating stimuli to hold attention. In addition to providing opportunities for fascination, gardens often have three further qualities suggested to contribute to a restorative environment: being away (allowing a person to mentally and physically move to a different space), extent (providing a sense of being connected to a larger world) and compatibility (the ability of an environment to meet the needs and interests of the person) (Kaplan & Kaplan, 1989). There is extensive experimental evidence that natural environments that provide these conditions can help to restore attention (see Kaplan & Berman (2010) for a review). This restorative quality of gardens may be particularly relevant to people experiencing mental

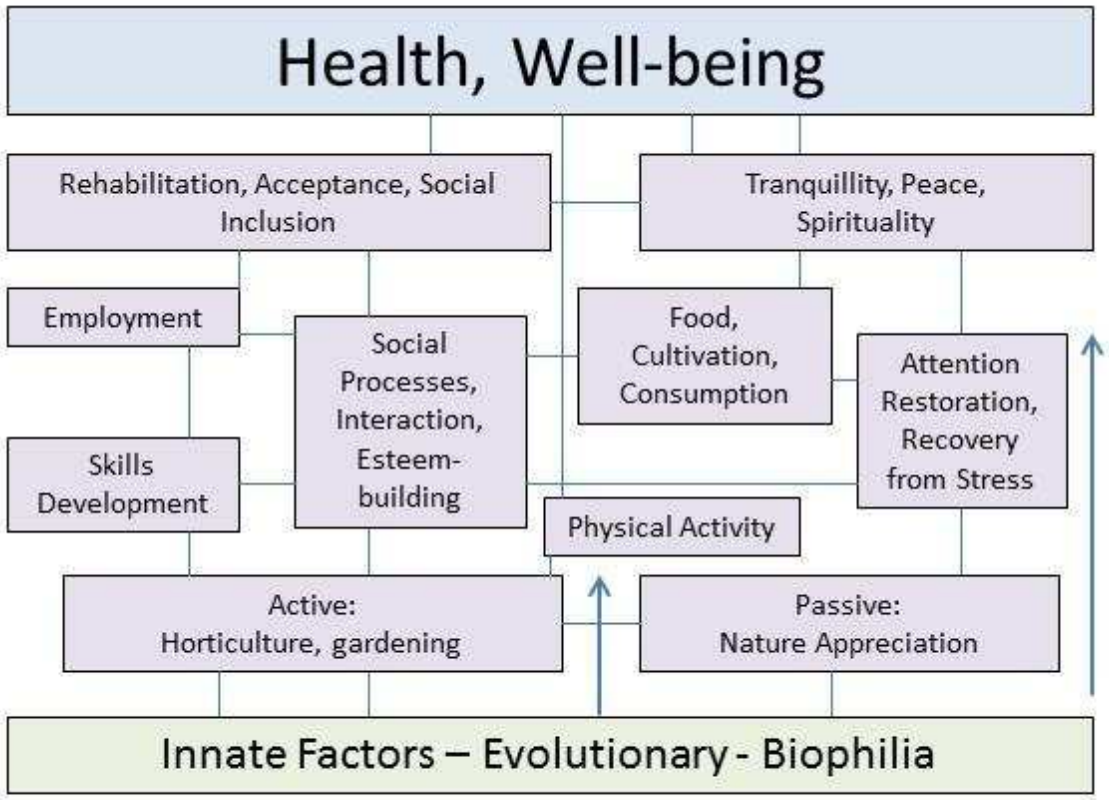
health difficulties, as cognitive problems such as poor attention, memory and problem solving ability are commonly reported symptoms associated with mental distress (Adhemar, 2008).

While Kaplan's model is concerned with the restorative effect of nature on cognitive functioning, Ulrich's (1983) psycho-physiological stress reduction theory is primarily concerned with the effect of nature on emotional and physiological functioning. He suggests that we are predisposed to find (non-threatening) natural stimuli relaxing, and that exposure to these stimuli has an immediate impact on affect and triggers a parasympathetic nervous system response leading to feelings of enhanced wellbeing and relaxation. Again, there is considerable experimental evidence to support this theory. For example, using measures of affect and physiological functioning (e.g. heart rate, skin conductance), people recovered more quickly and completely from a stressful event (watching a distressing film) when viewing images of natural rather than urban environments (Ulrich et al., 1991).

The theories outlined above address mechanisms for how contact with natural environments may impact on immediate wellbeing. Gardening interventions, however, offer more than simply contact with nature. They are usually social interventions, providing opportunities for people to interact with others. They also enable people to engage in a meaningful activity, developing specific knowledge and skills. These social and occupational factors may play a key role in promoting a sense of belonging and enhancing social inclusion for people experiencing mental health difficulties (Diamant & Waterhouse, 2010). Gardening interventions also involve physical exercise, recognised as helpful in the treatment of common mental health difficulties (Dunn & Jewell, 2010). These interventions therefore have the potential to impact on mental, physical and social wellbeing (Abraham, Sommerhalder, & Abel, 2010). Holistic interventions such as gardening-based programmes appear to fit within the ethos of the recovery model of mental health (Jacobson & Greenley, 2001).

In an effort to draw together theories of how therapeutic horticulture impacts on health and well-being, Sempik, Aldridge and Becker (2003) developed a model, presented in Figure 1.

Figure 1: Sempik et al.'s (2003) model of the processes, activities and outcomes of social and therapeutic horticulture (adapted from p. 46)



While this model offers a helpful summary of many potential benefits of gardening-based interventions, it neglects the more psychotherapeutic aspect of gardening which may be particularly relevant for people experiencing psychological distress. For example, Stigsdotter et al. (2011) refer to nature as a 'co-therapist', with the potential to help people to work through their own psychological difficulties. The Scope of Meaning/Scope of Action Theory (Grahn, Tenngart Ivarsson, Stigsdotter, & Bengtsson, 2010) (also known as the Supportive Environment Theory (Adevi, 2012)) has recently been developed by the team at a gardening project for people who have experienced long-term depression or burnout in Sweden. Based on psychodynamic principles, they propose that for people experiencing psychological distress, who may not feel able to meet the demands of the human world, sensory contact

with the natural environment enables connection and communication on a simpler, safer level. This may in turn lead to opportunities to begin to confront personal difficulties. Relf (1981), for example, described how sex and death, two potentially threatening subjects, are encountered frequently in the garden environment (e.g. through plant propagation and the loss of plants) and that through this benign contact it may become easier to address the more complex areas of human sexuality and death.

The use of metaphor is considered a powerful clinical tool across treatment modalities (Kopp, 1995). Many clinicians using nature-based approaches to mental health intervention speak of the power of metaphor in the natural environment in helping people to move forward. For example, Linden and Grut (2002), who developed a gardening-based intervention for refugees and asylum seekers, state “Metaphor is at the heart of the work at the Natural Growth Project, and parallels are drawn between the cycle of the natural world, with its successes and failures, and the world of the refugee client” (p. 42). They talk about the language used to describe plants and the obvious parallels with their clients’ lives (e.g. “being uprooted”, “putting out new shoots”). Similarly, Page (2008) talks of the phenomenon of hope which may be fostered through gardening (e.g. the hope associated with planting a seed), considered important for the recovery of people with severe and enduring mental health difficulties.

While these theories regarding the potential psychotherapeutic benefits of working with plants appear to have some face validity, they have not been empirically tested in the same way as Kaplan and Ulrich’s restoration models. This may be an issue of operationalization. For example, while there are validated measures of assessing the degree to which an environment meets the Kaplan’s restorative conditions (e.g. The Perceived Restorativeness Scale; Hartig, Mang, & Evans, 1991) and there are numerous established methods of assessing attention capacity, it is much more difficult to assess the degree to which a person has been affected by metaphor drawn from nature.

Empirical research

Having explored theories underlying potential therapeutic benefits of gardening for people experiencing mental health difficulties, attention will now turn to empirical research to support its use. A major review of the evidence for horticultural-based interventions was conducted in 2003 (Sempik et al., 2003). The review included both evaluations of horticultural therapy (i.e. where plants are used by a trained professional as a means of achieving clinical goals) and therapeutic horticulture (i.e. interventions designed to enhance wellbeing through the use of plants and horticulture). Interestingly it included both active (e.g. physical gardening) and passive interventions (e.g. observing flowers indoors), although it could be argued that the theoretical foundations underpinning these may be different (e.g. many of Kaplan's (1995) features of restorative environments would not be applicable to a vase of flowers). The review considered the evidence for the use of therapeutic horticulture for a variety of clinical groups, including people with dementia, children with mental health problems, people with learning disabilities, people undergoing physical rehabilitation and adults with mental health difficulties. Despite stating "there has been a great deal of work on horticulture and mental health" (p. 7), Sempik et al. (2003) identified just 12 studies evaluating horticulture-based interventions for adults with mental health difficulties (see Table 1 for a summary of these studies).

The literature broadly supported the view that gardening can be beneficial for adults experiencing mental distress, with perceived benefits including reduced symptoms (O'Reilly & Handforth, 1955; Spelfogel & Modrzakowski, 1980), improved social interaction/ networks (Fieldhouse, 2003; Prema, Devarajaiah, & Gopinath, 1986) and acquisition of skills (Vaccaro, Cousino, & Vatcher, 1992). However, many of the studies reviewed had serious methodological limitations. The outcomes were frequently based on the researchers' observations, a potential source of bias. Indeed, none of the studies included objective, validated outcome measures to explore the impact of a gardening-based intervention. Furthermore, there were no controlled trials or even pre-post evaluations conducted.

Table 1: A summary of the horticultural interventions reviewed by Sempik et al. (2003) – original table.

Study	Location	Participants	Intervention type	Methodology	Main results
Fieldhouse (2003)	UK	Nine allotment group members with mental health difficulties	Active allotment group	In-depth interviews/ focus group	Participants valued the restorative nature of the environment, the destigmatising impact of the group and the social network.
Perrins-Margalis et al. (2000)	USA	Ten patients with chronic mental health difficulties, within a rehabilitation clubhouse	Active horticultural activities	Qualitative action research	The authors identified seven aspects of the experience associated with quality of life: group, sharing, learning, sensory, creative, emotional and reminiscent experiences.
Seller et al. (1999)	UK	Allotment group members with mental health difficulties	Active allotment group	Questionnaires	Service users reported that the allotment group had helped them communicate, enhanced their skills, increased self-confidence and increased concentration.
Matsuo et al. (1997)	Japan	Unable to provide information as the paper is in Japanese and minimal information is given in Sempik et al.'s (2003) report. The study appears to have involved a survey of patient satisfaction with a range of hospital-based horticulture projects in Japan.			
Vaccaro et al. (1992)	USA	Psychiatric patients – mainly outpatients	Active horticultural workshops	Descriptive/ Observation	The authors report that participants developed work and social skills, useful in future employment.
Goodban & Goodban (1990a, 1990b)	UK	Psychiatric patients	Active horticultural programme	Description/ Case studies	Authors comment on the development of a horticultural programme and the response of two participants.
Williams (1989)	Canada	Short term psychiatric inpatients	Active intervention - caring for plants	Observation/ Survey	The authors reported that caring for plants gave participants a sense of achievement, pride and satisfaction. 75% found group enjoyable.
Prema et al. (1986)	India	Ten male patients diagnosed with schizophrenia	Active horticultural programme	Observation	The authors observed improved social skills and relationships within the group.
Lloyd (1986)	UK	Long term psychiatric patients	Active horticulture workshop as part of a larger work-scheme	Description/ Observation	The author suggests a range of benefits such as increased satisfaction, self-esteem and sense of identity.
Spelfogel & Modrzakowski (1980)	USA	Two psychiatric inpatients - obsessional characteristics	Active horticultural activities	Case studies	The authors suggest that working with plants helped the participants to overcome their obsessional difficulties.
Talbott et al. (1976)	USA	Psychiatric inpatients	Passive – flowers in dining room	Observation	Participants spent longer in the dining room, spoke more and consumed more food.
O'Reilly & Handforth (1955)	Canada	14 female psychiatric inpatients	Active horticultural programme	Case studies	The authors reported that 13 of the 14 participants showed improvement - "better adapted to the hospital environment" (p.766).

While Sempik et al. (2003) expressed some disappointment at “the scant amount of ‘hard evidence’ that exists in support of therapeutic horticulture” (p. 47), they did not appear to have very high expectations for the research, stating at the outset “It is important to remember that clinical research is both expensive and time-consuming and that to expect controlled trials of horticultural therapy in the manner of clinical trials for new drugs is entirely unrealistic” (p.4). It is arguable, however, that for horticultural based interventions to be recognised as a serious, fundable intervention option for people experiencing mental health difficulties, there is a need to provide more convincing evidence, including controlled trials. Indeed, others have called for a more rigorous approach to evaluating gardening-based interventions (Frumkin, 2004; Relf, 2006).

Almost a decade has passed since Sempik et al.’s (2003) review. During this time a systematic review of nature-assisted therapy has been published (Annerstedt & Wahrborg, 2011). However this was a broad review, concerned with all types of nature-assisted therapy (e.g. wilderness therapy, adventure-based therapy) and a wide range of clinical populations (dementia, addiction, physical health difficulties, mental health). Furthermore it only included gardening-based interventions that involved a therapist (i.e. horticultural therapy rather than therapeutic horticulture). A need was therefore identified to explore whether there is now any ‘hard evidence’ to support the use of gardening as a mental health intervention.

Methods

Search strategy

Papers were identified through a search of online electronic databases using the terms listed in Box 1. The search was restricted to papers published from 2003 onwards (following the publication of Sempik et al.'s review). The following databases were searched:

- Ovid Platform: PsycINFO
  Medline
- ProQuest Platform: British Nursing Index
  Applied Social Sciences Index and Abstracts
- EBSCO Host Platform: CINHAL
- Web of Knowledge: Web of Science

Box 1: Search terms (* indicates truncation)

Garden* OR Horticultur*	AND	Intervention OR Project OR Therap* OR Group OR Program*	AND	Psychiatr* OR Mental* OR Depress* OR Anxi* OR Psychosis OR Schizophren* OR Bipolar OR Trauma*

In order to identify any other material not captured by the database searches, reference lists of relevant papers were searched for potentially appropriate papers. Following inspection of the abstracts, papers that appeared to be relevant to this review were obtained in full and assessed in relation to the review selection criteria.

Selection criteria

Papers were selected for review if:

- They included an empirical evaluation of an intervention involving active horticulture (gardening).
- Participants were adults experiencing functional mental health difficulties (i.e. non-organic).
- They were published in a peer-reviewed journal.
- They were written in English.

Data extraction and analysis

A data extraction form was developed to facilitate the process of reviewing the papers and synthesising the data (Appendix 2). This was completed for each study meeting the selection criteria. Consideration was given to the types of intervention developed, the theoretical rationale for the interventions, the settings in which the interventions have been used, the study methodology and the effect of the interventions on mental distress.

Results and Discussion

Overview of selected papers

The OVID search resulted in 156 references (see Appendix 3), 20 of which appeared relevant following examination of the abstracts. The ProQuest search resulted in 72 references (see Appendix 4), with 11 additional potential papers identified. The EBSCO Host CINAHL search resulted in 81 journal articles (see Appendix 5), with 3 further potential papers identified. The Web of Science search resulted in 111 journal articles (Appendix 6), with 6 more potential papers identified. Full text versions of the 40 relevant papers were obtained and reviewed against the review selection criteria (see Appendix 7). No additional papers were identified through the reference list search.

Ten papers met the inclusion criteria for the review (see Table 2 for an overview), all reporting beneficial effects of gardening-based interventions for people experiencing mental health difficulties. Four of the papers were written by the same research team in Norway, based on the doctoral research of Marianne Gonzalez (Gonzalez, Hartig, Patil, Martinsen, & Kirkevold, 2009, 2010, 2011a, 2011b). Each paper presented different data and they are all therefore included in this review. The remaining interventions were based in the UK (Parkinson, Lowe, & Vecsey, 2011; Parr, 2007; Stepney & Davis, 2004), Finland (Rappe, Koivunen, & Korpela, 2008), Korea (Son, Um, Kim, & Song, 2004) and Hong Kong (Kam & Siu, 2010). The authors came from a diverse range of occupational groups, including nursing, occupational therapy, social work, horticultural therapy and social geography.

Table 2: An overview of the studies included in the review

Study	Location	Author perspective	Type of gardening intervention	Sample size	Sample characteristics	Methodology	Main results
Gonzalez et al. (2011a)	Norway	Nursing	Farm-based horticultural intervention	46	Age range: 25-65 yrs % female: 78 Diagnosis: Depression	Questionnaires – repeated measures	Significant reduction in depression, maintained at 3-month follow-up. No significant increase in existential outcome measure. Positive feedback from clients.
Gonzalez et al. (2011b)	Norway	Nursing	Farm-based horticultural intervention	46	Age range: 25-65 yrs % female: 78 Diagnosis: Depression	Questionnaires – repeated measures	Significant reduction in depression, anxiety and stress – only the reduction in depression maintained at follow-up. The group quickly established cohesiveness.
Parkinson et al. (2011)	UK	Occupational Therapy	Variety of gardening-based interventions	50	Age range: 20s – 70s % female: 34 Diagnosis: Mixed	Interviews and observations	Participants reported that they were motivated by an interest in gardening, interaction with staff members and a desire for excellence and commitment.
Gonzalez et al. (2010)	Norway	Nursing	Farm-based horticultural intervention	28	Age range: 25-64 yrs % female: 75 Diagnosis: Depression	Questionnaires – repeated measures	Significant reduction in depression and brooding and significant increase in perceived attentional capacity.
Kam & Siu (2010)	Hong Kong, China	Occupational Therapy	Horticultural programme as part of work skills training	24	Mean age: 44.3 yrs % female: 29 Diagnosis: Mixed	Controlled trial – questionnaire and interviews	Horticultural group experienced a sig. greater reduction in depression than control. No sig. differences in wellbeing/ work behaviour.
Gonzalez et al. (2009)	Norway	Nursing	Farm-based horticultural intervention	18	Age range: 27-65 yrs % female: 83 Diagnosis: Depression	Questionnaires – repeated measures	Sig. reduction in depression scores, maintained at follow-up. Trend (p=.06) for increase in attentional capacity.
Rappe et al. (2008)	Finland	Applied Biology	Allotment-based intervention	5 'clients' 5 support workers	Age range: 41-64 yrs % female: 90 Diagnosis: Not stated	Questionnaires, diaries, photos	Participants said that they felt calmer/ better able to concentrate after visiting the plot.
Parr (2007).	UK	Social Geography	Two gardening projects	15 'clients' 17 staff members	Age range: Not stated % female: Not stated Diagnosis: Not stated	Interviews/ ethnography	Clients and staff reported benefits including enhanced mood, sense of belonging, meaningful work. One project facilitated greater social inclusion than the other.
Stepney & Davis (2004)	UK	Social Work	Intervention at a horticultural site	10	Age range: 32-50 yrs % female: 10 Diagnosis: Mixed	Mixed methods – quasi-experimental	Reduction in anxiety and depression. No relationship between diagnosis and performance.
Son et al. (2004)	Korea	Horticultural Therapy	Horticultural therapy programme	50	Age range: Not stated % female: Not stated Diagnosis: Schizophrenia	Controlled trial	Significant increase in self-esteem, interpersonal relationships and social behaviour and decrease in depression/ anxiety only in intervention group.

Theoretical Perspectives

Attention restoration theory was the most frequently reported theoretical influence, with the majority of the studies citing Kaplan and Kaplan (1989) or Kaplan (1995). Only Gonzalez et al. (2009, 2010), however, attempted to measure participants' perceived attentional function and the degree to which the environment was perceived to be restorative. The other papers by Gonzalez drew on different theoretical models, with one focussing on social models of depression and the potential role of group cohesiveness in mediating the impact of gardening on depression (Gonzalez et al., 2011b) and the other considering existential theories of depression, drawing on salutogenic orientation of coherence theory (Antonovsky, 1987), exploring whether the gardening intervention increased perceived meaningfulness (Gonzalez et al., 2011a).

The interventions did not always have a particularly strong theoretical basis. Stepney and Davis' (2004) intervention, for example, was instead driven by the political agenda regarding welfare to work.

Content and delivery of the interventions

Details of the gardening-based interventions conducted are presented in Appendix 8. They were conducted in a variety of settings, including on farms (Gonzalez et al., 2009, 2010, 2011a, 2011b), community allotments (Parkinson et al., 2011; Parr, 2007; Rappe et al., 2008) and within hospitals/ residential settings (Parkinson et al., 2011; Son et al., 2004). Some of the evaluations were of time-limited gardening programmes (Gonzalez et al., 2009, 2010, 2011a, 2011b; Kam & Siu, 2010; Son et al., 2004), with the number of hours of involvement ranging from 10 (Kam & Siu, 2010) to 72 (Gonzalez et al., 2009, 2010, 2011a, 2011b), while others were long-term on-going gardening projects (Parkinson et al., 2011; Parr, 2007; Rappe et al., 2008; Stepney & Davis, 2004). Only two of the interventions appeared to meet a definition of

horticultural therapy, involving trained professionals with clear clinical goals (Kam & Siu, 2010; Son et al., 2004). The remaining interventions had a greater emphasis on the horticultural experience rather than therapy and would be considered therapeutic horticulture. It was not always clear from the papers who facilitated the intervention groups, although some were facilitated by farmers (Gonzalez et al., 2009, 2010, 2011a, 2011b) and others appeared to be more service-user led (Rappe et al., 2008). There is a growing recognition in the literature of the need for training and regulation of practitioners of social and therapeutic horticulture (Fieldhouse & Sempik, 2007).

Several of the studies provided very few details of the intervention, making them difficult to evaluate or replicate (Parkinson et al., 2011; Stepney & Davis, 2004).

Study design

In contrast to the studies reviewed by Sempik et al. (2003), most of the studies used questionnaires in an effort to get quantitative 'hard data' on the effectiveness of the interventions. Two exceptions were Parr (2007) who used interviews within an ethnographic framework to attempt to understand the experiences of service users and staff and Parkinson et al. (2011) who collected quantitative data on services users' motivation to engage with different tasks through structured interviews and observations.

Two of the studies conducted a controlled trial, where half of the participants received the horticultural intervention and half received treatment as usual (Kam & Siu, 2010; Son et al., 2004). This design has been criticised, as it is likely that some form of additional attention and treatment will be more effective (regardless of its content) than the treatment as usual condition (Behar & Borkovec, 2003). Moreover, neither study randomised participants to the conditions, introducing the potential for bias.

None of the other studies included a control group, making it difficult to establish whether the changes that occurred following the gardening intervention would have occurred over time in

the absence of the intervention. In an attempt to compensate for the lack of control group, Gonzales et al. (2009, 2010, 2011a, 2011b) collected baseline data at more than one time point (e.g. at recruitment and again before the start of the intervention) and demonstrated no significant change over this time (implying that symptoms were not simply going to decrease without intervention). They do not specify, however, the length of this period of time (i.e. it could have been just several days). Stepney and Davis (2004) used what they termed a 'hypothetical control', whereby a panel of clinicians made predictions about how they thought the participants would respond to the intervention based on 'diagnostic information' and each participant's actual response was then compared with this prediction. It is not clear how much information was given to the panel, but it would appear unreasonable to expect clinicians to be able to accurately predict outcome based on diagnosis alone. Furthermore, it was not clear whether the panel was independent from the research team. If not, there would have been the potential for bias, as the panel could have under-estimated the predicted degree of change in order for the intervention to look particularly effective.

Selection of study participants

Details of the selection criteria are presented in Appendix 9. Many of the studies used volunteers, likely to have had a particular interest in gardening. Care should therefore be taken not to generalise the benefits of such projects to all people experiencing mental health difficulties.

Many of the papers did not document the other forms of treatment that the participants were receiving. Exceptions were the studies conducted by Gonzalez et al. (2009, 2010, 2011a, 2011b) where the vast majority of participants were also receiving medication and/ or individual therapy. It is important to recognise that these gardening-based interventions appear to have been tested as an adjunct rather than alternative to mainstream treatment options.

Outcome Measurement

Appendix 10 provides details of the outcome measures used in the evaluations and the timing of the measurement. The most commonly assessed outcome was depression. The majority of the quantitative studies used appropriate validated measures to meet their study aims. An exception was the study by Rappe et al. (2004) who developed their own questionnaire rather than using existing validated measures. They provide insufficient information on the questionnaire to evaluate here, however they concluded that "it came to our attention that questionnaires and diaries were not the most proper methods to study the opinions of those who had difficulties in verbal and written expression" (p.282), indicating that use of this questionnaire was problematic for some of the participants.

Of the studies evaluating time-limited interventions, only those conducted by Gonzalez et al. (2009, 2010, 2011a, 2011b) included a follow-up assessment to explore whether the beneficial effects of the intervention had been maintained. It is possible that the positive effects observed in the studies would not have been maintained when the interventions came to an end. Indeed in Gonzalez's studies, only scores on the Beck Depression Inventory (Beck, 1968) remained significantly lower than baseline scores by the three-month follow-up, and these had increased (i.e. symptoms of depression had got worse) following the end of the intervention. At present there is therefore insufficient evidence that relatively brief gardening-based interventions can have long term effects for people experiencing mental health difficulties.

Analysis

Several of the papers included unconventional means of analysing data that appeared to stem from a lack of experience/ training in the field. Parkinson et al. (2011), for example, began their analysis section by stating, "One limitation of this study stems from a lack of experience in formal analytical methods on the part of those involved" (p. 528). Stepney and Davis (2004) claimed that participants were "significantly less anxious and depressed" following

involvement in the project (p. 380), yet this appears to have been based simply on eyeballing individuals' pre- and post-intervention questionnaire scores rather than any formal statistical assessment. Where inferential statistics had been used, usual conventions were often not followed. For example, while Gonzalez et al. (2009, 2010, 2011a, 2011b) correctly chose to use a repeated measures ANOVA to compare change in outcome variables across the time points, they appear to have conducted a series of separate ANOVAs for each pair of time points (rather than including all the time points in one analysis), increasing the risk of a Type 1 error.

None of the studies included a power calculation. While the sample sizes of the studies reviewed were larger than those of the studies featured in Sempik et al.'s (2003) review, they were still relatively small (range n=10-50) and it is likely that they would only have been powered to detect large effect sizes. While all of the studies conducting inferential statistics found a significant improvement in at least one outcome measure following the gardening intervention, most also reported some non-significant results. In these cases it was unclear whether there was truly no difference in the variable in question, or whether the study was simply not powered to detect the difference. This was particularly relevant in Gonzalez et al.'s studies (2009, 2010, 2011a, 2011b) where they were keen to explore variables that could mediate the relationship between participating in the gardening intervention and reduction in depression (e.g. sense of cohesiveness, existential variables). In these instances they reported several non-significant results as 'trends'. While it was encouraging that there had been some attempt to explore the active components of the intervention, this was over ambitious given the sample size.

Conclusions and future directions

There is now a substantial body of research demonstrating that gardening-based interventions can benefit people experiencing mental health difficulties. Participants have reported reduced depression and anxiety, improved concentration and enhanced social interaction. Gardening interventions have been evaluated in a variety of settings in Europe, Asia and America, and across a range of diagnostic groups, including participants experiencing depression and psychosis. While there is evidence that participants may benefit while engaged in the interventions, there is insufficient evidence to suggest that the benefits persist once the interventions end.

Clinically, gardening-based interventions could be a welcome adjunct to mainstream treatment options for people experiencing mental health difficulties. While in some settings it may be appropriate for staff to consider setting up gardening projects (e.g. in inpatient units), there may also be charity- or community-funded projects in existence locally that clinicians could refer clients to. It is important that clinicians are made aware of such initiatives, as they are in a prime position to connect people to these potentially valuable resources. Organisations such as Thrive, Ecominds and the National Care Farming Initiative would be good points of contact. (The Ecominds website has a searchable map of their UK gardening projects and referral information.) There have also been calls for 'green' interventions to be more formally built into the health and social care referral system (Hine, Peacock, & Pretty, 2008).

While there has been a marked improvement in the quality of the research since Sempik et al.'s (2003) review, there is still room for further progress. As yet there have been no randomised controlled trials of gardening-based interventions. Furthermore, there is a lack of research exploring the active components of the interventions. Ideally MRC guidelines for developing and evaluating complex interventions to improve health should be followed (Craig et al., 2008).

When conducting this review, many papers did not meet the inclusion criteria because they simply described a gardening-based intervention without providing any empirical evaluation of its effectiveness. At this time when an unprecedented number of 'green' interventions are being set up, it is of vital importance that they are appropriately evaluated to add to the existing evidence base and to justify future funding. Clinical psychologists would be well-placed to conduct such evaluations given their research training.

While this review has focused on the potential benefits of gardening for people experiencing mental health difficulties, many of the observed outcomes such as enhanced mood, concentration and social networks would clearly also be valued in non-clinical populations. It has been noted that there is currently a paucity of research exploring the psychological benefits of gardening in non-clinical populations (Partridge, 2010), making this a priority area for future research. Furthermore, it is likely that a greater understanding of the benefits of gardening in non-clinical samples may help to inform clinical interventions.

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Section B

Exploring the relationship between suburban allotment gardening and wellbeing: An interpretative phenomenological analysis

Word Count: 8,122

(See Appendix 11 for manuscript requirements)

Abstract

Background: There is a paucity of empirical research exploring the psychological impact of gardening in non-clinical samples. Not only may such research contribute to our understanding of wellbeing, but it may also help to inform clinical interventions to improve wellbeing in those experiencing psychological distress. The aim of this study was to explore the relationship between allotment gardening and wellbeing from the suburban allotment-holder's perspective.

Methods: Six suburban allotment gardeners were each interviewed on two occasions to elicit their personal experiences of allotment gardening and its impact on their wellbeing. Transcripts were subjected to Interpretative Phenomenological Analysis (IPA).

Results: Seven main themes emerged from the data: fundamental importance of food, protection and safety, feeling connected, esteem, pleasure of being in nature, development and values. Parallels were drawn between these themes and Maslow's hierarchy of needs. While all participants spoke to some extent to all of the themes, dominant themes differed between individuals.

Conclusions: Allotments are flexible environments that may enable people to meet a wide range of individual needs, in order to enhance wellbeing. They may be a particularly valuable resource for the promotion of wellbeing in urban and suburban areas, where people may feel detached from nature and a sense of community.

Keywords: Wellbeing, allotments, community gardens

Introduction

In recent years there has been a shift in the proposed ethos of mental health services in the UK, from a focus on the diagnosis and treatment of mental disorder to a broader consideration of positive mental health and wellbeing for all (British Psychological Society, 2009). Promotion of wellbeing is now central to the government's mental health strategy (Department of Health, 2011) and the wellbeing of the general population is to be routinely monitored by the Office of National Statistics (New Economics Foundation, 2011).

The psychological literature distinguishes between two types of wellbeing – hedonic and eudaimonic (Ryan & Deci, 2001; Waterman, 1993). Hedonic wellbeing is the subjective experience of pleasure and positive affect (e.g. happiness) (Kahneman, Diener, & Schwarz, 1999). Eudaimonic wellbeing is a more complex concept drawing on the work of both humanistic-existential psychologists/ psychotherapists (e.g. Frankl, 1984; Maslow, 1968) and positive psychology theorists (e.g. Csikszentmihalyi, 1990), describing the extent to which an individual is fulfilling their potential (Waterman, 1993). Two contemporary models of eudaimonic wellbeing are self-determination theory (Deci & Ryan, 2000) and Ryff's multicomponent model (Ryff, 1989; Ryff & Singer, 2008). Self-determination theory states that wellbeing is dependent on meeting three needs – autonomy, competence and relatedness (Deci & Ryan, 2000). Ryff's multicomponent model suggests that in addition to autonomy, environmental mastery and positive relations with others (broadly mapping onto Deci and Ryan's three dimensions), self-acceptance, personal growth, and purpose in life are important aspects of eudaimonic wellbeing (Ryff, 1989; Ryff & Singer, 2008).

A growing body of evidence suggests that contact with natural environments is positively associated with wellbeing (Burls, 2007; Greenspace Scotland, 2008; Maller, Townsend, Pryor, Brown, & St Leger, 2006). Psycho-evolutionary theories that help explain the relationship between contact with nature and hedonic wellbeing include Ulrich's stress reduction theory, highlighting the positive impact of natural stimuli on the parasympathetic nervous system (Ulrich et al., 1991) and Kaplan's Attention Restoration Theory, focussing on

the cognitive restorative qualities of the natural environment (Kaplan, 1995). Natural environments may also provide opportunities to increase eudaimonic wellbeing. For example, it has been suggested that contact with nature can enhance feelings of autonomy and relatedness (Weinstein, Przybylski, & Ryan, 2009). However, with approximately 80 per cent of the population in England now living in urban areas, there is concern that people are becoming disconnected from nature (Commission for Architecture and the Built Environment, 2010). One means of having contact with nature in urban environments is through allotments and community gardens. In 1950, Carl Jung spoke passionately about the potential of allotment gardening to increase wellbeing in urban populations:

> We all need nourishment for our psyche. It is impossible to find such nourishment in urban tenements without a patch of green or a blossoming tree. We need a relationship with nature… our workers can return [to nature]. We see them doing it in the allotment gardens in and around our cities: these gardens are an expression of love for nature and for one's own plot of land … I am fully committed to the idea that human existence should be rooted in the earth." (Cited in Sabini, 2002, p. 155-156).

There is a paucity of empirical research exploring the value of gardening in enhancing wellbeing in non-clinical populations (Partridge, 2010). Such research may deepen our understanding of wellbeing and inform clinical interventions to enhance wellbeing in those experiencing psychological distress. One research programme entitled "Vitamin G: effects of green space on health, well-being and social safety" is currently underway in the Netherlands (Groenewegen, van den Berg, de Vries, & Verheij, 2006). Initial findings suggest that allotment gardening is significantly more effective than reading at reducing stress (measured through cortisol levels and self-reported mood) (van den Berg & Custers, 2011) and that allotment gardeners report higher levels of life satisfaction than their non-allotment holding neighbours (van den Berg, van Winsum-Westra, de Vries, & van Dillen, 2010).

Only a few studies have directly asked allotment/ community gardeners about their experiences of gardening and the impact on their wellbeing (Kingsley, Townsend, &

Henderson-Wilson, 2009; Milligan, Gatrell, & Bingley, 2004; Wakefield, Yeudall, Taron, Reynolds, & Skinner, 2007). Across these studies, gardening has been associated with a range of positive effects, with common themes including access to better food, physical exercise, relaxation, social interaction and a sense of achievement. However, none of these studies has taken a psychological perspective; they are conducted from social geography/ public health positions. Moreover, the studies have not attempted to explore the mechanisms underpinning the relationship between gardening and aspects of wellbeing (e.g. How does gardening make people feel more relaxed?). The aim of this research was to attempt to understand the experience of gardening from the allotment gardener's perspective, drawing on psychological theory to help deepen understanding of the relationship between allotment gardening and wellbeing.

Methods

Design

This qualitative study used in-depth semi-structured interviews to enable participants to provide rich accounts of their allotment gardening experiences, which were then subjected to interpretative phenomenological analysis (IPA) (Smith, Flowers, & Larkin, 2009). This idiographic, phenomenological approach was selected because the aim of the research was to explore how individuals understood the relationship between their lived experiences of allotment gardening and their wellbeing. Participants were each interviewed on two occasions, approximately one month apart, as it was anticipated that the first interview would stimulate further thought on the topic that could be captured in a second interview.

Participants

Participants were six allotment gardeners with a minimum of one year of allotment gardening experience, recruited from two adjacent suburban allotment sites (see Table 1 in Results for details). Small sample sizes are optimal for IPA research, as in-depth interviews and analysis are central to the success of the approach and may be compromised if there are a large number of interviews (Smith, 2004).

Interviews

Semi-structured interview schedules were developed to elicit allotment gardeners' personal experiences of allotment gardening and how they made sense of the relationship between gardening and wellbeing (Appendix 12). The first interview was designed to explore participants' views about the impact of allotment gardening on their wellbeing. The second interview was designed to give participants an opportunity to voice any additional thoughts they had on the topic following the first interview and to give feedback on the preliminary

analysis of the first interview. It also enabled participants to expand on any of the information shared in the first interview and to reflect on the experience of participating in the study.

Procedure

Following permission from the council department responsible for two study allotment sites, study posters inviting participants (Appendix 13) were displayed in the respective allotment trading huts (where allotment holders buy their gardening supplies). The researcher also visited the allotment huts during trading hours to introduce the study and answer questions. Allotment holders interested in finding out more about the study were invited to take a study recruitment pack, which included an information sheet (Appendix 14), consent form (Appendix 15) and demographic information form (Appendix 16). Completed forms were returned directly to the researcher in a stamped addressed envelope provided.

On receipt of the forms, the researcher contacted potential participants to answer any questions and arrange the first interview. Participants were given the choice of being interviewed on their allotment plot (in line with calls to develop experiential qualitative research that gets closer to the lived experience (Smith et al., 2009)) or at their home. Only one participant chose to be interviewed on their plot. At the end of the first interview, an appointment was made for the second interview approximately one month later.

Interviews were conducted between August and November 2011. They were digitally recorded and transcribed verbatim. First interviews lasted approximately an hour (mean duration 57 minutes) and second interviews approximately forty-five minutes (mean duration 47 minutes).

Analysis

The interviews were subjected to IPA, following published guidance (Smith et al. 2009). There were six key stages:

Familiarisation with the data and initial noting. This was achieved through transcribing each interview verbatim, re-listening to the interview (while checking the transcript) and repeatedly reading the transcript, noting any observations that came to mind in the right margin. As suggested by Smith et al. (2009), consideration was given to three levels of analysis when making initial notes - descriptive (describing what the participant has said), linguistic (consideration of the language used, such as the use of metaphor and the delivery of the speech) and conceptual (more interpretative analysis, hypothesising about deeper meaning).

Identifying emergent themes. The initial notes were scrutinised and themes that captured the essence of the notes were recorded in the left margin (see Appendix 17 for an example of a coded transcript).

Obtaining feedback from participants on the preliminary analysis. Themes identified in the first interview were fed back to each participant at their second interview. None of the participants disagreed with a theme that had been identified. During the second interview, participants often expanded on the themes identified in their first interview and occasionally new themes emerged. The second interview was transcribed and analysed in the same way as the first, as detailed above.

Bringing structure to the themes. For each participant, themes that had been identified were written on sticky notes. In order to stay as close to the participant's account as possible, the sections of the transcript relating to each theme were physically arranged under the corresponding sticky note. Patterns in themes became apparent during this process and themes were grouped/ divided into sub-themes/ renamed accordingly.

Summarising the allotment experience for each participant. In order to ensure that each participant's individual voice was kept alive when the group results were presented, a summary of each participant's personal allotment experience was written at this stage, while immersed in the individual's data (see Appendix 18 for these individual accounts).

Finding patterns in themes across cases. When all participants' transcripts had been analysed in the individual manner outlined above, the themes and corresponding sections of transcript for all participants were arranged together. Each participant's interviews were printed on a different coloured paper to make them easily identifiable and to be able to clearly see areas of convergence and divergence across the interviews. A table of themes was compiled based on this final analysis structure, providing an overview of each theme and detailing the location of examples in the transcripts (Appendix 19).

Quality Assurance

Prior to conducting the project, guidelines for conducting qualitative research were consulted (Elliott, Fischer, & Rennie, 1999; Smith et al., 2009; Williams & Morrow, 2009; Yardley, 2008) and a number of measures taken to support the validity of the work:

Bracketing. When conducting qualitative research it is important for the researcher to be aware of their own view of the topic and its potential influence on the research process (reflexivity): "It is not possible to view without viewing from somewhere. We do our best to become aware of what that somewhere is, questioning it, owning it or changing it, and including it in our reports" (Fischer, 2009, pg. 584). As a suburban allotment gardener myself, I was aware that I had knowledge and insight into the topic that could help me to understand and empathise with the experiences of the participants but could also potentially make me less open to views and experiences that differed from my own. In an effort to become more aware of my own position on allotment gardening and wellbeing, I was interviewed by a colleague using my interview schedule to elicit both my personal views and the responses I anticipated from participants, prior to beginning the research interviews. The interview was recorded and my views were extracted (listed in Appendix 20). My position on allotment gardening inevitably evolved throughout the course of the project and I kept a record of significant changes in my thinking (incorporated into Appendix 20).

Credibility check. Themes identified through the analysis of each participant's first interview were fed back to them in the second interview and their comments sought. All participants reported that the themes captured their understanding of how their allotment gardening affects them, supporting the validity of the study.

Independent data audit. Each stage of the analysis was systematically recorded and filed. The records and a coded transcript were sent to an academic with experience of IPA research (lead supervisor) who reviewed the material and was satisfied that the interpretation of the data and the conclusions drawn were plausible.

Ethical Considerations

Approval to conduct the study was sought from Canterbury Christ Church University Salomons Ethics Panel (Appendix 21). Consideration was given to the provision of clear information for participants, the anonymisation and storage of data, the development of a lone worker policy (the majority of interviews were conducted in participants' own homes), issues of confidentiality when interviewing in a public place (i.e. the allotment site) and the proposed course of action should a participant become distressed during the interview. The panel approved the study on 11th May 2011 (reference MMC/V75, Appendix 22). A final report was sent to the ethics panel on 16th July 2012 (Appendix 23).

Results

Overview of Themes and Idiographic Consideration

Seven main themes emerged from the data: fundamental importance of food, protection and safety, feeling connected, esteem, pleasure of being in nature, development and values. While all participants spoke to some extent to all of the themes, each appeared to have a different emphasis. It was clear that the allotment gardening experience meant something different to each of the participants. Summaries of the individual participants' relationship with allotment gardening are presented in Appendix 18 and the dominant themes for each participant are presented in Table 1, alongside demographic information.

Theme 1: Fundamental Importance of Food

All participants described a satisfaction in being able to meet the basic need of providing food, as described by Ann:

> You're going back to basics aren't you with gardening … Food growing is the first in the chain isn't it … if you've not got food then nothing else happens does it – so if you're not eating you would starve. (First interview, p.10)

This theme was particularly strong amongst the older participants. While all acknowledged that food was now readily available and affordable in the shops (negating the necessity to grow it), Alan, Ann and John spoke of times during their childhoods in post-war Britain when this was not the case and concerns over having enough food were more salient. For example, Alan said:

> I mentioned that I was four years old with my father [when I started allotment gardening] – in those days it was very much growing things to eat and helping the country's effort and so on and reducing imports and what have you. (First interview, p.4)

Table 1: Details of the study participants and their dominant themes

Pseudonym	Ethnicity/ Age	Years of allotment experience	Dominant themes	Example quote
Alan	White British/ 60s	40	PLEASURE OF BEING IN NATURE SAFETY AND PROTECTION (protecting the mind)	*"To have nature going on around you – plants, animals, birds and so on – I get great pleasure from that"*
John	White British/ 60s	14	VALUES	*"We have a particular philosophy of life and the allotment enables us to develop that"*
Ann	White British/ 60s	18	ESTEEM (pride in produce, elite group membership)	*"Not being big-headed, but I think quite a lot of people are jealous because they don't have the stamina to be able to do it themselves"*
Clare	White British/ 40s	2	ESTEEM (agency/ empowerment, pride in produce) FEELING CONNECTED (connected to others)	*"I enjoy going there – it makes me feel better about myself"*
Vanessa	White British/ 40s	3	SAFETY AND PROTECTION (sanctuary, protecting the mind) FEELING CONNECTED (connected to the past)	*"It's pure escapism over there… a bit of a sanctuary I suppose"*
Denise	White Northern Irish/ 60s	1	ESTEEM (role replacement, agency/ empowerment) DEVELOPMENT (problem solving/continued learning)	*"Now I've retired… you tend to … you've lost that identity as someone who worked … and you have to kind of acquire a new one, so I suppose having the allotment has kind of added to that."*

Alan described the transition in the ethos of allotments during his lifetime, from a strict focus on food production to the more recreational emphasis today. The product of allotment gardening remained extremely important to all participants though, albeit as more of a luxury than a necessity in this middle-class group. For example, participants described the specialist vegetables they were growing that were not readily available in the shops (e.g. miniature beetroot, rainbow chard) and commented on the superior quality and freshness of their home grown vegetables. Several participants felt that allotment gardening had changed their relationship with food. As Clare said, “It makes me think more carefully about food” (First interview, p. 6).

Theme 2: Protection and Safety

Protecting the mind. All of the participants believed that the allotment could help to reduce stress and mental distress. Often the allotment environment was positioned in contrast to the real world pressures faced by the participants, particularly at work. For example, Alan described how he had worked for many years in an extremely high-pressure job and repeatedly referred to the allotment as a “safety valve” that allowed the pressure to escape. This use of language implied that the allotment protected Alan from potentially catastrophic consequences of work stress. When asked about this in the second interview, Alan described how he had seen a colleague, who did not have systems in place to relieve the pressure, experience a “nervous breakdown”.

Two key mechanisms for reducing stress were described. The first, reported by all participants, was the calming quality of a repetitive task such as weeding, described here by Ann:

> You’re just concentrating on one simple task, which is pulling out a weed, out of the ground. You’re watching what you’re doing obviously ‘cos otherwise you could pull up your plants as well as your weeds and the total concentration is on that so your mind is

clear … you're not thinking "Oh I must do this, I must do that" - you're just doing that. (First interview, p. 1)

This deliberate focus of attention on a task in the present moment is a key component of mindfulness based cognitive therapy, a recommended intervention in the prevention of recurrent depression (NICE, 2009). Mindfulness-based interventions have also been found to reduce stress in non-clinical samples (Chiesa & Serretti, 2009).

Two of the participants (Denise and John) also reported that they felt the physical exercise could help prevent or treat mental distress. For example, John said, "I seriously believe that physical exercise is good for relieving stress and depression and anything else" (First interview, p. 6). There is considerable evidence that physical exercise can be helpful in the prevention and treatment of common mental health difficulties (Dunn & Jewell, 2010) and physical activity is also recommended in UK depression treatment guidelines (NICE, 2009).

Protecting the body. All of the participants acknowledged the physical benefits of the exercise obtained through having an allotment. For one participant, Denise, the desire to give up her gym membership and seek a more pleasant form of exercise was a key factor in her decision to apply for an allotment: "I was never a very keen gym member – a sense of 'I should do this, it's good for me' … being outdoors is much more pleasant than being indoors exercising" (First interview, p. 4). For most, however, physical exercise did not appear to be central to their motivation to garden, rather it was a positive by-product. Kingsley et al. (2009) also reported that physical exercise was not as important to gardeners as anticipated.

Sanctuary. For one participant, Vanessa, there was a strong sub-theme of the allotment being a safe place to retreat to:

It's a place of escape, erm, and I suppose that's the biggest thing. It's a place to escape to when you're not feeling a hundred per cent … it's very quiet, it's very calming and very de-stressing … and it doesn't matter if you want to go over there and have a good cry over something, you can do if you're not feeling brilliant. It's sort of a

bit of a sanctuary I suppose … I suppose that's the biggest thing, it's quite a sanctuary. (First interview, p. 5)

Vanessa had experienced considerable distress in recent years, particularly in relation to the poor health of her mother, and the allotment provided a safe, easily accessible place for her to retreat and express emotion, which perhaps she had not felt able to express in front of her teenage son at home. While other allotment holders did not directly refer to the allotment as a sanctuary in the same way as Vanessa, it was often positioned as an alternative to some of the difficulties of the outside world, implying it had a role as a safe place of escape.

Theme 3: Feeling Connected

Connected to others. Positive relationships with others/relatedness are key components of Ryff's (1989)/Deci and Ryan's (2000) models of wellbeing. All participants acknowledged the social opportunities offered by the allotment. As described by Alan, growing vegetables provided a safe 'common ground' from which to initiate relationships:

There's quite a social side to it as well, in a gentle way….you've always got a topic to talk about, you've always got the allotment – what's going on, what you're doing and so on - and then it spreads to other topics as well. (First interview, p. 4)

While all participants recognised that there were social opportunities at the allotment, the extent to which these were utilised varied considerably between the two allotment sites, as one site had a much more active social committee than the other. There was also considerable variation between individual participants. For example, while Ann felt that she had ample social contact from other aspects of her life and therefore did not need to seek social opportunities at the allotment, for Clare, a single woman in her forties, the easily accessible social community at the allotment was very important to her in the context of changes in her personal circumstances:

> Q: At one point [in the last interview] I asked how the allotment affects you and you said that it gives you a purpose for getting up on a Sunday – I didn't know if that meant that you felt there was something lacking in your life before?
>
> Clare: That's a good point actually I suppose because - because I'm single - I don't have that sort of social life where I go out - I don't go to pubs and clubs and stuff like that … like they're older now the children … they go to their dad's at the weekend and it did get to a point where I was thinking "Well what do I do now?" and especially being a single person and a large proportion of my friends are with partners and families and things and I think I can't just barge in on somebody else's weekend. (Second interview, p.1)

Alan and John described how suburbia could be a very lonely place, making the allotment community a particularly valuable social resource in these areas. As John stated:

> I think it's of paramount importance that people feel that they belong to a place and suburbia is a very easy place not to belong to anybody – because you can shut your door and you can get the bus without speaking to anybody, you can go to the supermarket and not speak to anybody and you can be a very lonely person in suburbia … it's very easy just to be your own person, watch the tele and do nothing else to do with the community. We [John and his wife] have actively worked at that – we think that's what the soil out there offers - everybody has a shared interest in making stuff grow. (First interview, p. 12)

There was recognition that allotments may provide an opportunity for people to interact with those who they may not come into contact with through other social circles and that this might produce interesting learning opportunities. For example, Denise said, "You meet people you wouldn't necessarily meet in normal life – it sort of broadens your experience of who you talk to...everyone has their own outlook and it's just interesting to hear what other people think" (First interview, p. 7). This experience of engaging with people from a diverse range of backgrounds appeared to be quite novel and at times even surprising, as Alan stated, "What is

so strange is that there is this interconnection, erm, and yet, erm, there's a tremendous difference between people" (Second interview, p. 10). Differences discussed during the interviews included ethnicity, gender, age, type of job and criminal offending history (one of the sites included a plot worked by offenders). Drawing on social psychology theories, the conditions of contact provided at an allotment (e.g. common goals and values, sustained regular contact, opportunities to self-disclose), would appear conducive to enhancing social inclusion and cohesion amongst groups who perceive themselves to be different (Abrams, 2010; Moored, 2006; Shinew, Glover, & Parry, 2004).

Connected to the past. All participants reported a family history of gardening and/or childhood memories of growing and the experience of allotment gardening appeared to serve a function in rooting them within their family tradition. As Ann said, "How did I become to be an allotment gardener? Well, my father had one, my grandfather had one … everybody had one … I can't think of anybody that I know who didn't have an allotment" (First interview, p. 1). For many of the participants growing vegetables on the allotment evoked fond memories of people who were no longer alive. For example Vanessa expressed sadness at the failure of her cucumber crop, as they represented an emotional connection to her grandfather:

> I was a little bit disappointed with the cucumbers 'cos they are my absolute favourite and I've always loved them and that stems from my granddad – he always used to grow them for me when I was little … He grew them for me! So that's why I have to grow them, for him, as well as me. Even though he's been gone ten, twelve years, I still have to - I still grow them - we were very close. (First interview, p. 13)

Research suggests that childhood experiences of natural environments predict later affiliation and engagement with nature (Hinds & Sparks, 2008).

Connected to the earth. In addition to feeling connected to people, past and present, there was a broader sense of connection to the planet that came across in the interviews. The biophilia hypothesis suggests that having evolved within natural environments, humans have an innate need to affiliate with nature (Wilson, 1984). As Alan said, "It's a place where you feel

– it's hard to say – sort of like attached to the earth" (First interview, p. 2). He clearly got great pleasure from feeling connected to nature:

> You've got a very tame robin down there and you have to look where you put your foot because it'll be around you. It's actually perched on my shoe at one time! And you see that and the pleasure that you get from seeing something that's wild so close to you and sort of being able to accept you and you know - I find that very – [I get] tremendous pleasure with that. (First interview, p. 14)

The allotment also appeared to give participants a greater sense of both their role and responsibility as a person on the planet, and also their dependency on other organisms (e.g. needing bees for pollination). As John said, "You see where you fit in as a human being into the whole picture" (First interview, p.18). There is a growing ecopsychology movement in Europe, based on the principle that this human connection to the earth is vital, both for the wellbeing of individuals and the survival of the planet (see Burls, 2007).

Theme 4: Esteem

Pride in the produce. All participants were proud of the vegetables that they had grown. For example Clare expressed real excitement about her gardening successes, "I dug up my first potatoes ever and I was just like a child – I was jumping around going 'I've grown potatoes!'" (First interview, p. 3). Participants were particularly pleased to be able to share their produce and get approval from others, as Ann described:

> It's a thing I'm proud of – that I've produced food – that I've produced things – and you can give stuff away … you know if you've got a glut of anything you give it away so I've got quite a few little ladies that can't grow things themselves and they love it when it's runner bean time! (Interview 1, p. 4)

Pride in elite group membership. There was a sense from all participants that they were proud to have demonstrated that they could 'cut it' as an allotment gardener. This was

particularly evident when participants were asked how they thought others would perceive their allotment gardening. For example Clare said, “I think they’re quite impressed that I actually do it, that I manage to do it” (First interview, p. 6) and Ann said, “I’m not being big headed but I think quite a lot are jealous really because they haven’t got the stamina to be able to do it themselves, and they would like to” (First interview, p. 5).

Being able to succeed as an allotment gardener represented much more than simply having gardening skills. Participants described essential characteristics such as being patient (in contrast to requiring instant gratification) and being hard working, committed and tolerant. Many had witnessed others who had taken on allotments and not succeeded. As John said, “They come here, they can’t do the work, they find it bloody hard, the plot gets a mess, they get an unworked plot letter and off they go” (First interview, p. 17). Similarly, Alan estimated that there was a 50 per cent failure rate at his allotment site. Social comparison theories suggest that people enhance their self-esteem through comparison with those who are less successful (Suls & Wheeler, 2012). Through allotment gardening, participant appeared to achieve a sense of ‘competence’ (Deci & Ryan, 2000) and ‘environmental mastery (Ryff, 1989).

Transferable skills/ role replacement. Four of the participants had retired (Denise, Alan, John and Ann). Denise had deliberately taken up allotment gardening at the point of retirement, and felt that it was becoming an important aspect of her identity, “Now I’ve retired… you tend to … you’ve lost that identity as someone who worked … and you have to kind of acquire a new one, so I suppose having the allotment has kind of added to that” (First interview, p.9).

Alan, John and Ann had all been allotment gardeners prior to retiring but it was clear that their relationship with the allotment had changed following retirement. Alan, for example, had been able to take up a position on the council board of allotment representatives following retirement and increased the amount of time spent on the allotment. The allotment experience offered more than simply filling in spare time. It appeared to give participants a flexible

opportunity to use their existing personal and professional qualities. It was surprising to hear from participants how many transferable skills they brought to the allotment. For example, John, a former teacher, held educational events on organic farming methods at the allotment. He spoke of another allotment holder at his site with a mechanical background who looked after the shared lawnmowers and tools. The allotments therefore appeared to offer a wide variety of opportunities for people to maintain existing roles and status.

For Vanessa, the major role that she had lost was that of being a mother (her son had grown up) and she talked about the allotment providing opportunities for her to use her nurturing skills, stating "You need something to almost replace the children" (First interview, p. 12). She compared the experience of nurturing plants to that of nurturing children and animals.

Agency/ autonomy. A sense of control and autonomy over the allotment experience appeared to be extremely important to all participants. On one level there was control over the use of the land (choosing seeds, planning the layout, decisions over whether to use pesticides), as explained by Vanessa:

> It's your own little piece of land - even though it belongs to the council - it's your own little piece of land that you can do what you like with and grow what you like – there's no restrictions or anything – you're just free to do what you want to do. (First interview, pg. 1)

Participants also had control over how they chose to spend their time on the allotment. For Denise and Alan, who had both had jobs where they were under pressure to meet external deadlines, this freedom presented quite a contrast, as explained by Denise, "In IT you're always on deadlines and there was pressure to hit those deadlines – on the allotment I'm entirely my own boss – if I don't plant it today, it doesn't matter" (Second interview, p.1).

In John's interview, concerns about aging were apparent, and having control over giving up the allotment land when it became too much appeared to provide some comfort and satisfaction: "People who've got big gardens struggle eventually don't they…We're just going

to give the land back to the council and say 'thank you very much we've had twenty odd years of it and it's been very nice'" (First interview, p. 27).

The allotment environment also gave participants some control over social contact and relationships. Vanessa described how by adjusting the time of visiting the allotment she could get as much or as little social contact as she wanted:

> You can be with people if you want to, depending on the time of day that you go, or if you just want a bit of peace and quiet, go over there in the evening and you can just be lost over there. (First interview, p.1)

For Clare the allotment provided an opportunity for her to take some control in her relationship with her parents, who chose to help her on the allotment:

> Q: What is it about the time that you spend with your parents on the allotment that's different from other time you might spend with them?
>
> Clare: I suppose because I'm in charge, so that's different and they have to – not defer to me all the time but they – in a lot of other aspects of like being the parent-child relationship, erm, they say "Well this is what we're going to do" or "We want to do this so we're doing it", whereas there they have to say "Oooh what about this idea, shall we do this?" and a couple of times I've turned around and said "No"! (First interview, p. 8)

The importance of autonomy as an aspect of eudaimonic wellbeing is well-recognised (e.g. Deci & Ryan, 2000; Ryff & Singer, 2008).

Theme 5: Pleasure of Being in Nature

All participants reported that they benefited from the hedonic feel-good factor of being outside in nature, which often appeared difficult to fully explain. For example, Clare said, "It's just nice. It's just nice to be outside" (First interview, p. 9). The allotment was perceived to be a particular valuable resource in suburbia, as it provided easy access to a natural environment. Both Ann and Vanessa reported that they were "addicted" to the allotment,

perhaps indicating a dependence on being outside in nature. Vanessa described how she would use the allotment as a 'pick me up' after work:

> I could come home from work feeling like I just want to go to bed and I think "No – I'll go over the allotment" and it's quite rejuvenating and very refreshing. And I'll come back thinking I am tired but not in the same way as I was…it is sort of like a booster – it's like I have - I don't know - with a drink or something – to get you going. (First interview, p. 11)

This quote appears to support attention restoration theory (Kaplan, 1995), which is grounded in experimental evidence that spending time in nature can improve attention and concentration.

Ann, Clare and Denise described a spiritual quality to the allotment experience with a sense of wonder and fascination at how things grow. Denise said:

> I mean I still find it amazing that you can buy a pack of seeds and from these seeds you get you know a million leeks! You know, it's just a kind of miracle of nature I suppose and I never quite believe they're going to grow. (First interview, p. 4)

Theme 6: Development

Acceptance. Across all participants there was evidence of an attitude of acceptance when things did not go to plan on the allotment. This was considered to be an essential quality of an allotment gardener, as illustrated by Alan:

> You do one thing and you think "Oh those cabbage plants are growing very nicely" and suddenly pigeons go on them and within 24 hours they're gone! There's just bare stalks standing up in there. You've got to be prepared to accept that – "Oh blow". (First interview, p. 3)

Participants described how they had developed an acceptance of nature as a force beyond personal control, as described by John: "You can't change the weather. You can't

change the activity of the bees. Those are just things that you have to go with" (First interview, p.20). Acceptance is increasingly being recognised as an important psychological concept, central to contemporary third wave cognitive behavioural therapies such as mindfulness based cognitive therapy and acceptance and commitment therapy (Herbert, Forman, & England, 2009). Allotment gardening appears to provide regular experiential opportunities to practice acceptance.

Problem solving / continued learning. All participants talked about the challenges of allotment gardening (e.g. coping with weather, pests and diseases, gluts, different soil types) and the need to problem solve situations that arose. This sub-theme was closely linked to Acceptance, with participants suggesting that it was possible to problem solve to a certain extent but ultimately it was often necessary to simply accept that things do not always go to plan, as stated by Clare:

> You just have to go "Okay, did I do something wrong – did I not prune properly, did I water at the wrong time?" – you know – and there are some things that are beyond your control and you just have to accept that – like white fly. (Second interview, p. 4)

Denise, the least experienced allotment gardener, felt that she still had a lot to learn, "As I say, we're very much beginners so we need to find out how to really deter all of the bugs and insects and things organically" (First interview, p. 10). It was clear, however, that even the most experienced gardeners were still learning. For example, Alan, with over 40 years of experience, described how he could learn from people from different cultural backgrounds: "We're nosy – we like to see what's going on! You see something different and you think 'Oooh, I hadn't thought of that, that's a good idea'" (First interview, p. 6). Similarly, John relished new opportunities to learn:

> John: The continuation of learning is very important – you know I'm struggling still to learn how to do it better - you know I'll go and talk to [name removed] occasionally and pick his brains…

Q: Is continued learning important for wellbeing?

John: Yes, very definitely. I think that if you turn your brain off, it's like any other muscle – it wastes. (Second interview, p. 11)

Theme 7: Values

Helping the environment. With the exception of Alan, all participants described how the allotment fitted with their 'green' values. These included the importance of growing organic, local food and recycling materials. For example, Denise said:

I've always been quite aware of green issues and I do think [allotments] are very green – cos you know we use everything – plastic bottles that we have here I take them down there to cover seedlings and all that sort of thing. My husband built me two big compost bins just out of pallets that people were chucking. So it's a very recycling friendly environment as well. (First interview, p. 14)

Helping others. All participants voiced dissatisfaction with elements of current society. There was a belief that communities had broken down, and that people were becoming increasingly materialistic, individualistic, narcissistic and omnipotent. The strength of this theme may reflect the timing of the interviews, immediately after a period of rioting and looting in the local area, which had highlighted social problems. Participants felt that the allotment environment supported alternative values that could benefit society.

While this theme was present in all of the interviews, John's interview stood out as being dominated by ideas about helping to develop the local community. Indeed, in contrast to the other interviews, John rarely spoke in the first person about his own allotment experiences, instead talking more generally about the potential value of the allotment for others. He and his wife appeared to have a 'master plan' to develop the community through the allotment:

> We have a particular philosophy of life and the allotment enables us to kind of er develop that – you know – we didn't set out to do that but when we kind of went out to the allotment and saw how it was – and could be- a huge magnet for other people, you know, to get that feel good factor of belonging somewhere. (First interview, p. 11)

The plan centred on helping others to feel connected to a community. They ran a very active social group at their allotment site and were extremely committed to including people at risk of social isolation (e.g. those from minority ethnic groups, those who had been widowed). John and his wife were concerned about narcissism and omnipotence in society and felt that the challenges posed by nature could help to bring people back 'down to earth':

> You are fighting against nature out there because it's you against Mother Nature and unless you learn about Mother Nature and start working with her, you're not really going to win. And the people who walk off the plot with a trug that's got rhubarb in it, and beetroot, and potatoes, they've worked bloody hard and they've got in step with Mother Nature – if you're going to negate that and just think that you can be a person in your own right and get on with it and do what you want to do, you're not going to be successful. (First interview, p.19)

The desire to help others certainly appeared to give John and his wife a purpose in life, a key aspect of Ryff's (1989) multidimensional model of psychological wellbeing. It is well documented that helping others through voluntary and community work can enhance well-being (Thoits & Hewitt, 2001).

Parallels with Maslow's Hierarchy of Needs

During the analysis, parallels between the emerging themes and Maslow's (1968) hierarchy of needs theory became apparent. Maslow's theory of motivation originally comprised five needs (physiological, safety, love/ belonging, esteem and self-actualisation) (Maslow, 1968) but he later described aesthetic needs, cognitive needs and self-

transcendence, which are now often incorporated into the hierarchy (Koltko-Rivera, 2006; Ward & Lasen, 2009). The perceived links between the themes identified in this study and Maslow's extended hierarchy are displayed in Table 2. Allotment gardening appeared to enable the participants to meet human needs across the spectrum of Maslow's hierarchy.

Table 2: Themes and sub-themes identified in the data: Parallels with Maslow's hierarchy of needs

THEMES/ sub-themes	**Maslow's hierarchy of needs**
7. VALUES Helping the environment Helping others	Self-Transcendence
6. DEVELOPMENT Acceptance Problem solving/ continued learning	Self-Actualisation (incorporating Cognitive Needs)
5. PLEASURE OF BEING IN NATURE	Aesthetic Needs
4. ESTEEM Pride in the produce Pride in elite group membership Role replacement/ transferable skills Agency/ autonomy	Esteem Needs
3. FEELING CONNECTED Connected to others Connected to the past Connected to the earth	Belonging and Love Needs
2. PROTECTION AND SAFETY Protecting the mind Protecting the body Sanctuary	Safety Needs
1. FUNDAMENTAL IMPORTANCE OF FOOD	Physiological Needs

Discussion

For the six allotment-holders interviewed, allotment gardening was perceived to enhance wellbeing, both from a hedonic perspective (e.g. the pleasure of being outside in nature) and a eudaimonic perspective (e.g. leading a more fulfilled life through continued learning, helping others, autonomy). While Maslow's (1968) hierarchy of needs is not usually presented as a theory of wellbeing (rather a theory of motivation), it offered a useful framework for making sense of the experiences of the participants. Furthermore, this framework incorporated the components of contemporary models of wellbeing, such as autonomy, relatedness and competence (i.e. it appeared to offer a more comprehensive understanding of wellbeing than contemporary models).

Previous research had identified various beneficial aspects of allotment gardening (e.g. social interaction, exercise), yet had not applied psychological theory to help further understanding of the relationship between gardening and wellbeing. Furthermore, existing research had primarily taken a nomothetic approach, forming generalisations about the benefits of gardening. The methodology used here enabled a more idiographic exploration, revealing that while there were common themes across all participants, the relative importance of the themes differed greatly between individuals. The allotment appeared to be a flexible environment that provided opportunities for the participants to meet their own personal needs in order to achieve greater wellbeing. This has important clinical implications, as those experiencing mental health difficulties may be able to meet some of their individual recovery needs through a gardening intervention, in line with a holistic model of recovery (Jacobson & Greenley, 2001). Indeed, this research suggests that allotment gardening has the potential to provide benefits across most of the ten dimensions of the mental health recovery star, frequently used in the UK (Dickens, Weleminsky, Onifade & Sugarman, 2012), including physical health, identity, managing mental health, social networks and relationships. Further research could use the recovery star as a means of assessing the holistic impact of a gardening-based intervention in a clinical recovery setting.

The accounts of participants who had been allotment gardening for many years suggested that the role of the allotment may have changed over the years to meet their different needs (e.g. playing a greater psychologically protective role when people were working, and providing more opportunities to help others when people had retired). Further longitudinal or large-scale cross-sectional research could investigate changes in the role of the allotment across the life-span. It would also be interesting to explore whether taking up other activities (such as joining a golf club) could have a comparable impact on wellbeing. A randomised controlled trial could be conducted to compare changes in wellbeing between participants randomised to a gardening-based intervention and those randomised to a sports-based intervention. Such research could also further understanding of the 'active ingredients' of community interventions. For example, both a gardening- and a golf-based intervention would give participants exposure to natural environments, but it could be hypothesised that those in the gardening intervention would feel more closely connected to nature (given the emphasis on nurturing plants) which may enhance perceived wellbeing.

The small sample size of this study was crucial for enabling an in-depth exploration of the personal experiences of the participants. However, as with all small-sample research, caution needs to be exercised when generalising from the study findings. It would certainly not be appropriate to conclude that everyone's wellbeing would be enhanced if they had an allotment. All of the participants had a long-standing interest in nature and gardening. They were also relatively successful allotment gardeners, in that they had maintained their allotments for at least a year (as participants reported, many who enthusiastically take on allotments are not able to sustain them). Furthermore, while many of the participants talked about cultural diversity on their allotment site, the sample drawn was not very diverse, comprising solely white, middle-class allotment-holders. Further research would be required to see whether the framework of understanding the relationship between gardening and wellbeing identified here is helpful in understanding the experiences of people from different cultural groups.

Despite these caveats, it appears that allotments may offer opportunities for some people to flexibly enhance their wellbeing on a number of levels. They may be particularly valuable in urban and suburban environments, where people may feel disconnected from both nature and a sense of community. The amount of time and work required to sustain an allotment may prevent some people from accessing this resource, as may long waiting lists in some areas. This has implications for community psychology interventions that may enable people to engage in social gardening in a more supported way (e.g. sharing a plot to reduce the work load), allowing a larger number of people to benefit.

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Section C

Critical Appraisal

Word Count: 1,990

Reflections on my learning

I came to this training programme with quantitative research experience but minimal qualitative experience. Qualitative methods were not taught on my undergraduate course fifteen years ago and were something of a mystery to me. I had dabbled with interview-based studies in more recent years, largely as a means of generating questionnaire items for quantitative studies - known as 'little q' rather than 'big Q' qualitative research (Walsh-Bowers, 2002). I will admit to having been fairly dismissive of qualitative work, baffled by how something so subjective could be of any value (other than to inform or support 'proper' (quantitative) research). I realise now that I was simply viewing qualitative research through a positivist lens, apparently a common phenomenon among psychologists (Ponterotto, 2005), but I was then totally ignorant with regard to philosophy of science. The research teaching at Salomons began to open up this world to me and I became aware of alternative research paradigms. It felt important to use the Major Research Project as an opportunity to explore these further, and so I attempted to embrace a constructivist-interpretivist stance and embarked on a journey as a qualitative researcher - a position I had once ridiculed.

In addition to learning more about the philosophy of science to provide a context for the study, I learnt specifically about the Interpretative Phenomenological Analysis (IPA) approach. This learning was partly achieved through reading key text books and IPA-based research papers and through the development of an IPA peer-study group at Salomons, which was really helpful for thinking about the approach and sharing ideas. Much of my learning has simply been experiential. Conducting this project has been a totally new research experience for me and I was constantly forced to challenge my preconceptions about what makes 'good' research. One of the most interesting and challenging aspects was recognising that the research had an impact on me; my views about allotments changed, my relationship with my own allotment changed, my relationship with the local community changed. This felt very alien,

as my previous research model had involved going in, doing the research and getting out, largely unaffected.

My qualitative research journey is far from complete. I have only experienced IPA and I am aware that there are a whole range of qualitative approaches to explore. I am still very much influenced by my positivist training, although I think I am becoming increasingly aware of this bias. Overall, through the process of conducting this research I feel that I have developed much more respect for qualitative research as a legitimate means of furthering psychological science. (I am also more respectful of qualitative researchers, as I have experienced first-hand the torturous state of 'data immersion' – give me SPSS any day!). In parallel, I believe I have developed a more balanced, critical view of quantitative methods and I hope that I am a more well-rounded researcher as a result.

If I had my time again…

My interest in exploring the relationship between allotment gardening and wellbeing came from my own suburban allotment gardening experiences. One of the aspects that I was particularly interested in (as expressed in my initial bracketing interview, see Appendix 20) was the cultural diversity at my allotment site, which includes allotment holders from Bangladesh, England, Guyana, India, Ireland, Jamaica and New Zealand. While I live in a culturally diverse area, people tend to socialise within their own ethnic and cultural groups. For me, the allotment environment is a positive exception, providing extremely rich multicultural interaction and I was interested to see whether this view was shared by others, including those from minority ethnic groups. I fleetingly considered doing some ethnographic research interviewing fellow allotment holders, but my misplaced positivist concerns kicked in (How will I stay objective? What about demand characteristics? What about boundaries?) and this seemed a step too far from the research-world I was familiar with. I therefore decided to conduct the research in a less immersed manner at two neighbouring allotment sites where I was not known. I had assumed that there would have been a similar degree of diversity, given the close proximity and that I would be able to recruit a diverse group of participants. However, my recruitment strategy of leaving recruitment packs in the trading huts resulted in an all-white British sample for this study. As it happens, a homogenous sample is preferable for IPA research, so in some ways this was an advantage. However, if I was repeating the research, I may be inclined to use a more purposive sampling strategy (for example, just approaching Caribbean men to find out more about their experience of allotment gardening) or indeed now to take an ethnographic approach.

If I was doing the project again, I would also think carefully about whether to do two interviews with each participant or just one. My initial rationale for conducting two interviews was partly based on my own experience of being a participant in a former student's single-interview IPA project in 2010. I remembered having felt somewhat frustrated after the interview, as I kept

thinking of things that I wished I had said. Reflecting on the interview, I was also concerned about whether what I had said might have been misinterpreted and would have welcomed an opportunity to clarify my thoughts with the researcher. By offering participants a second interview in this study I was hoping to give them this opportunity. However, while many participants said that the experience of taking part in the interview had made them think much more about their relationship with the allotment, very few additional themes came out of the second interviews. Moreover, only one participant showed any concern that what they said in the first interview might have been misinterpreted. I am not therefore sure whether the additional time in conducting, transcribing and analysing the second interviews was justified. It is possible, however, that simply knowing that there was going to be a second interview allowed participants to feel more contained. Furthermore, it allowed me to feed back the initial themes as a credibility check. An additional benefit was that it gave me the opportunity to pick up on things that I noticed when I was transcribing (e.g. I wished I'd asked more about that, I wonder whether I understood that correctly). The knowledge that I would have an opportunity to reflect on the interview while transcribing and then have a further opportunity to speak with participants took the pressure off me as an inexperienced qualitative research interviewer.

Implications for my clinical practice

Through conducting this project I have become aware of the potential value of therapeutic horticulture. This has important implications for my clinical practice. While it may not be appropriate or feasible to establish gardening-based interventions within all NHS mental health services (although in some settings, such as inpatient services, this may be a possibility), my research has made me aware of the vast number of existing charity- and community-based gardening groups across the country that clients may be able to access. These include both projects developed specifically for people experiencing mental health difficulties (e.g. interventions funded by EcoMinds) and those run as general inclusive community projects. It is my clinical responsibility to find out about these groups (and indeed other local resources) so that I can discuss them with clients interested in gardening as a possible adjunct to psychological therapy and/ or as part of a longer term recovery plan.

This project has also led me to explore the broader value of the natural environment as a therapeutic resource. I was struck by the words of George Burns, one of the few clinical psychologists who has published in this field:

> Colleagues, in informal discussions, related stories about what they did for their personal happiness and well-being or about what had helped them through periods of difficulty. For fun or relaxation, they usually hike, scuba dive, sail, travel, garden or participate in other nature-based activities. But, somehow, there is an incongruence between what they use effectively in their own lives and what they do with clients. Our training often teaches that, for our clients to reach similar goals, they must tread a different path from what we travel ourselves. (Burns, 1998, p. xiv)

In times of stress when conducting this research I have drawn on the theoretical models underlying nature-based therapy. For example, when struggling to concentrate after long periods of study, I have taken myself round to the allotment for a break in a ‘restorative environment’ (Kaplan, 1995). I feel that I have benefited from nature-based coping strategies

and am keen to think further about how this may be applied with clients. As this is an emerging field, I think that it will be important to join with other like-minded clinicians through organisations that I have become aware of through this research, such as Counselling and Psychotherapy Outdoors (CAPO) (www.outdoortherapy.org.uk) and Ecotherapy UK (http://www.ecopsychology.org.uk), in order to develop clinical practice and the theory/ evidence-base.

One very simple nature-based technique recommended by George Burns (1998), which could be easily incorporated within clinical practice, is the use of a sensual awareness inventory – a form where people record their favourite sights, sounds, smells, tastes, physical sensations and activities. Burns (1998) reports that in practice people often record nature-based stimuli (e.g. the sound of the waves, the smell of strawberries) yet comment that they have not experienced these things recently. Through becoming aware of this list of positive experiences, people are able to make a plan to actively seek them. This process appears similar to activity scheduling that is used within a CBT framework, only with the emphasis on activities that involve contact with the natural environment. Further research, however, is needed to empirically test such methods (see below).

Ideas regarding further research

Through conducting this project I have developed a number of ideas about future research and audit opportunities. The review in Section A made me aware of the number of horticultural projects in the UK that are currently running with no formal means of evaluation. People from a wide variety of backgrounds set up therapeutic horticultural projects, often with no research training, limiting the potential for effective evaluation. I think it is imperative that such interventions are properly evaluated, as without evidence it is unlikely that the current level of investment in such initiatives will be maintained. Clinical psychologists are well-placed to perform such evaluative research. Indeed, I am working on a clinical placement at an Ecominds-funded horticulture-based mental health project and am currently involved in selecting and implementing a wide range of outcome measures to evaluate the effectiveness of the intervention over time.

Section A also revealed that there have been no randomised controlled trials of gardening-based interventions and minimal follow-up of brief gardening-based interventions, highlighting obvious areas for further research. It would also be interesting to conduct a randomised controlled trial to explore the value of specific nature-based therapeutic techniques. For example, one idea would be to compare the effectiveness of nature-based activity scheduling with non nature-based activity scheduling in reducing depression symptoms.

The research conducted in Section B found that the allotment gardeners interviewed felt that they experienced a wide range of benefits of allotment gardening. It was acknowledged, however, that the group interviewed may not be representative of the wider population of allotment gardeners (e.g. these were people who were 'succeeding' at allotment gardening, having kept their plots for over a year, and who were motivated to volunteer for a project that would involve discussing their allotment for several hours). It would be interesting to conduct some larger-scale quantitative research to get a more representative understanding of people's experiences of allotment gardening. This would enable us to make comparisons

between different groups of gardeners (e.g. are there age, gender, ethnicity difference in the way people perceive allotment gardening?). It could also have implications for the development of supported community gardening projects through identifying potential barriers to allotment gardening.

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Section D

Appendices

Section A: Literature review

Appendix 1: Instructions for authors – Mental Health Review Journal

Manuscript requirements

Please prepare your manuscript before submission, using the following guidelines:

Format	All files should be submitted as a Word document
Article Length	Articles should be between 3000 and 5000 words in length.
Article Title	A title of not more than eight words should be provided.
Article Title Page	An **Article Title Page** should be submitted alongside each individual article using the template provided. This should include: • Article Title • Author Details (see below) • Acknowledgements • Author Biographies • Structured Abstract (see below) • Keywords (see below) • Article Classification (see below)
Author Details	Details should be supplied on the **Article Title Page** including: • Full name of each author • Affiliation of each author, at time research was completed • Where more than one author has contributed to the article, details of who should be contacted for correspondence • E-mail address of the corresponding author • Brief professional biography of each author.
Structured Abstract	Authors must supply a structured abstract on the **Article Title Page**, set out under 4-7 sub-headings (see our "How to... write an abstract" guide for practical help and guidance): • Purpose (mandatory) • Design/methodology/approach (mandatory) • Findings (mandatory) • Research limitations/implications (if applicable) • Practical implications (if applicable) • Social implications (if applicable) • Originality/value (mandatory)

	Maximum is 250 words in total (including keywords and article classification, see below).
Keywords	Please provide up to 10 keywords on the **Article Title Page**, which encapsulate the principal topics of the paper. Whilst we will endeavour to use submitted keywords in the published version, all keywords are subject to approval by Emerald's in house editorial team and may be replaced by a matching term to ensure consistency.
Article Classification	Categorize your paper on the **Article Title Page**, under one of these classifications: • Research paper • Viewpoint • Technical paper • Conceptual paper • Case study • Literature review • General review.
Headings	Headings must be concise, with a clear indication of the distinction between the hierarchy of headings. The preferred format is for first level headings to be presented in bold format and subsequent sub-headings to be presented in medium italics.
Notes/Endnotes	Notes or Endnotes should be used only if absolutely necessary and must be identified in the text by consecutive numbers, enclosed in square brackets and listed at the end of the article.
Figures	All Figures (charts, diagrams, line drawings, web pages/screenshots, and photographic images) should be submitted in electronic form. All Figures should be of high quality, legible and numbered consecutively with arabic numerals. Graphics may be supplied in colour to facilitate their appearance on the online database. • Figures created in MS Word, MS PowerPoint, MS Excel, Illustrator should be supplied in their native formats. Electronic figures created in other applications should be copied from the origination software and pasted into a blank MS Word document or saved and imported into an MS Word document or alternatively create a .pdf file from the origination software. • Figures which cannot be supplied in as the above are acceptable in the standard image formats which are: .pdf, .ai, and .eps. If you are unable to supply graphics in these formats then please ensure they are .tif, .jpeg, or .bmp at a resolution of at least 300dpi and at least 10cm wide. • To prepare web pages/screenshots simultaneously press the "Alt" and "Print screen" keys on the keyboard, open a blank Microsoft Word document and simultaneously press "Ctrl" and "V" to paste the image. (Capture all the contents/windows on the computer screen to paste into MS Word, by simultaneously pressing "Ctrl" and "Print screen".)

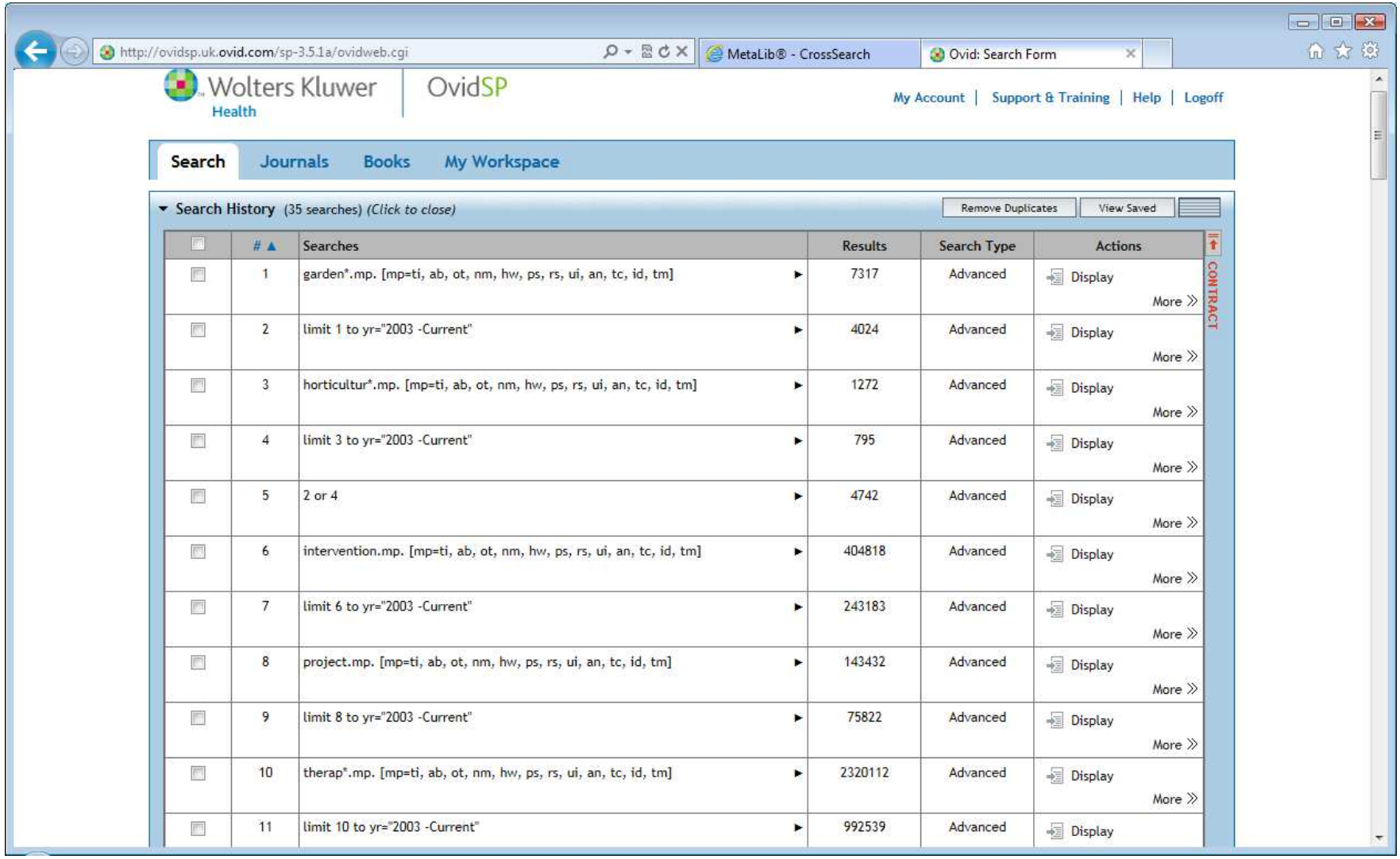
	• Photographic images should be submitted electronically and of high quality. They should be saved as .tif or .jpeg files at a resolution of at least 300dpi and at least 10cm wide. Digital camera settings should be set at the highest resolution/quality possible.
Tables	Tables should be typed and included in a separate file to the main body of the article. The position of each table should be clearly labelled in the body text of article with corresponding labels being clearly shown in the separate file. Ensure that any superscripts or asterisks are shown next to the relevant items and have corresponding explanations displayed as footnotes to the table, figure or plate.
References	References to other publications must be in **Harvard** style and carefully checked for completeness, accuracy and consistency. This is very important in an electronic environment because it enables your readers to exploit the Reference Linking facility on the database and link back to the works you have cited through CrossRef. You should cite publications in the text: (Adams, 2006) using the first named author's name or (Adams and Brown, 2006) citing both names of two, or (Adams ***et al.***, 2006), when there are three or more authors. At the end of the paper a reference list in alphabetical order should be supplied:
For books	Surname, Initials (year), ***Title of Book***, Publisher, Place of publication. e.g. Harrow, R. (2005), ***No Place to Hide***, Simon & Schuster, New York, NY.
For book chapters	Surname, Initials (year), "Chapter title", Editor's Surname, Initials, ***Title of Book***, Publisher, Place of publication, pages. e.g. Calabrese, F.A. (2005), "The early pathways: theory to practice – a continuum", in Stankosky, M. (Ed.), ***Creating the Discipline of Knowledge Management***, Elsevier, New York, NY, pp. 15-20.
For journals	Surname, Initials (year), "Title of article", ***Journal Name***, volume, number, pages. e.g. Capizzi, M.T. and Ferguson, R. (2005), "Loyalty trends for the twenty-first century", ***Journal of Consumer Marketing***, Vol. 22 No. 2, pp. 72-80.

Appendix 2: Data extraction form

Authors:	Year:
Title:	
Journal:	
Author perspective:	
Country:	Setting:
Theoretical basis for study:	
Design:	Control group (if applic.):
Sample:	
Recruitment method:	
Inclusion criteria:	
Exclusion criteria:	
Intervention content/ no.sessions:	

Who delivers intervention?
Outcomes and measures:
Timing of outcome measurement:
Analysis approach:
Key results:
Conclusions supported by results?
Study Strengths:
Study Weaknesses:
References to follow up:

Appendix 3: OVID search results



# ▲	Searches	Results	Search Type	Actions
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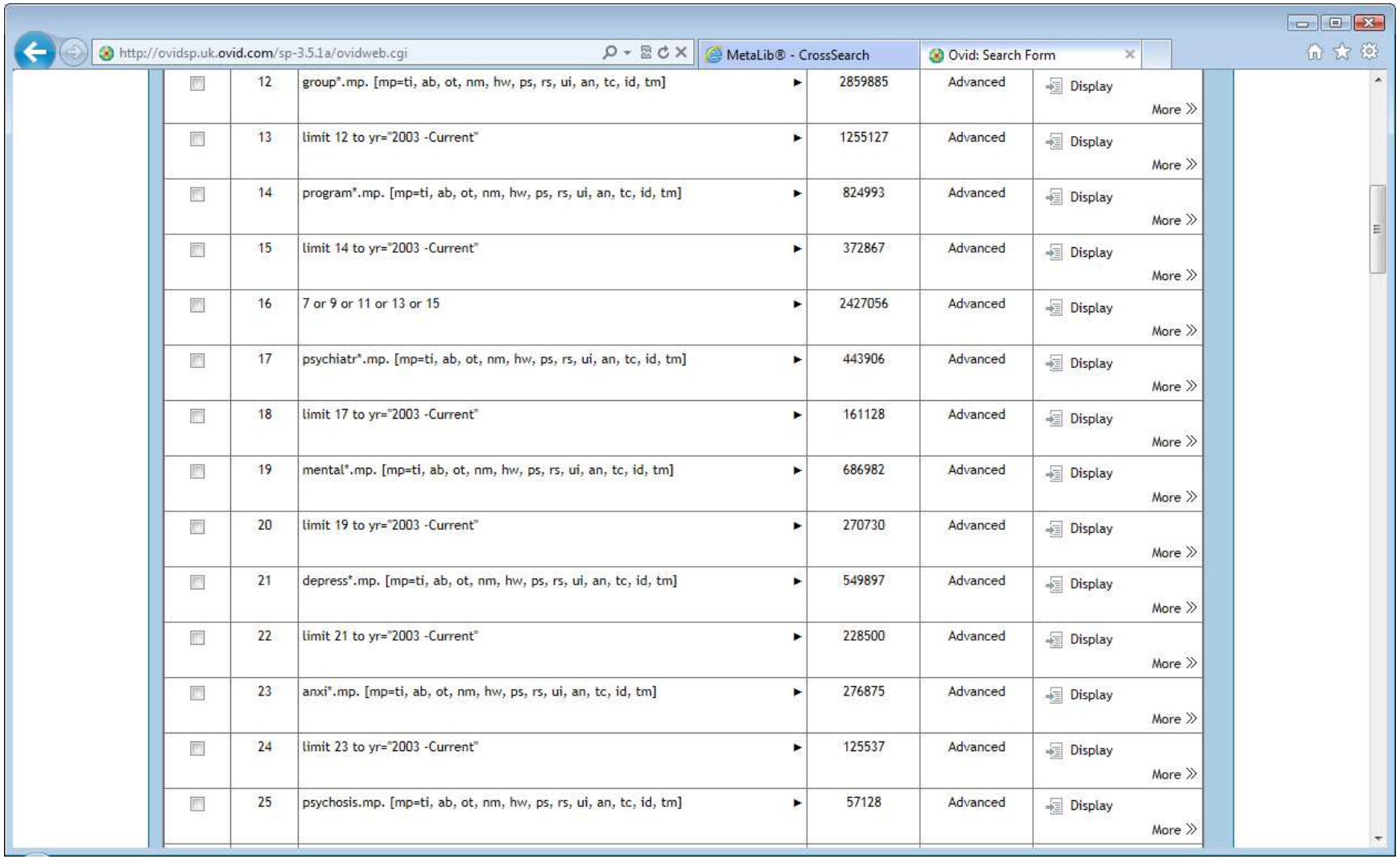
2	limit 1 to yr="2003 -Current"	4024	Advanced	Display More »
3	horticultur*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	1272	Advanced	Display More »
4	limit 3 to yr="2003 -Current"	795	Advanced	Display More »
5	2 or 4	4742	Advanced	Display More »
6	intervention.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	404818	Advanced	Display More »
7	limit 6 to yr="2003 -Current"	243183	Advanced	Display More »
8	project.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	143432	Advanced	Display More »
9	limit 8 to yr="2003 -Current"	75822	Advanced	Display More »
10	therap*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	2320112	Advanced	Display More »
11	limit 10 to yr="2003 -Current"	992539	Advanced	Display



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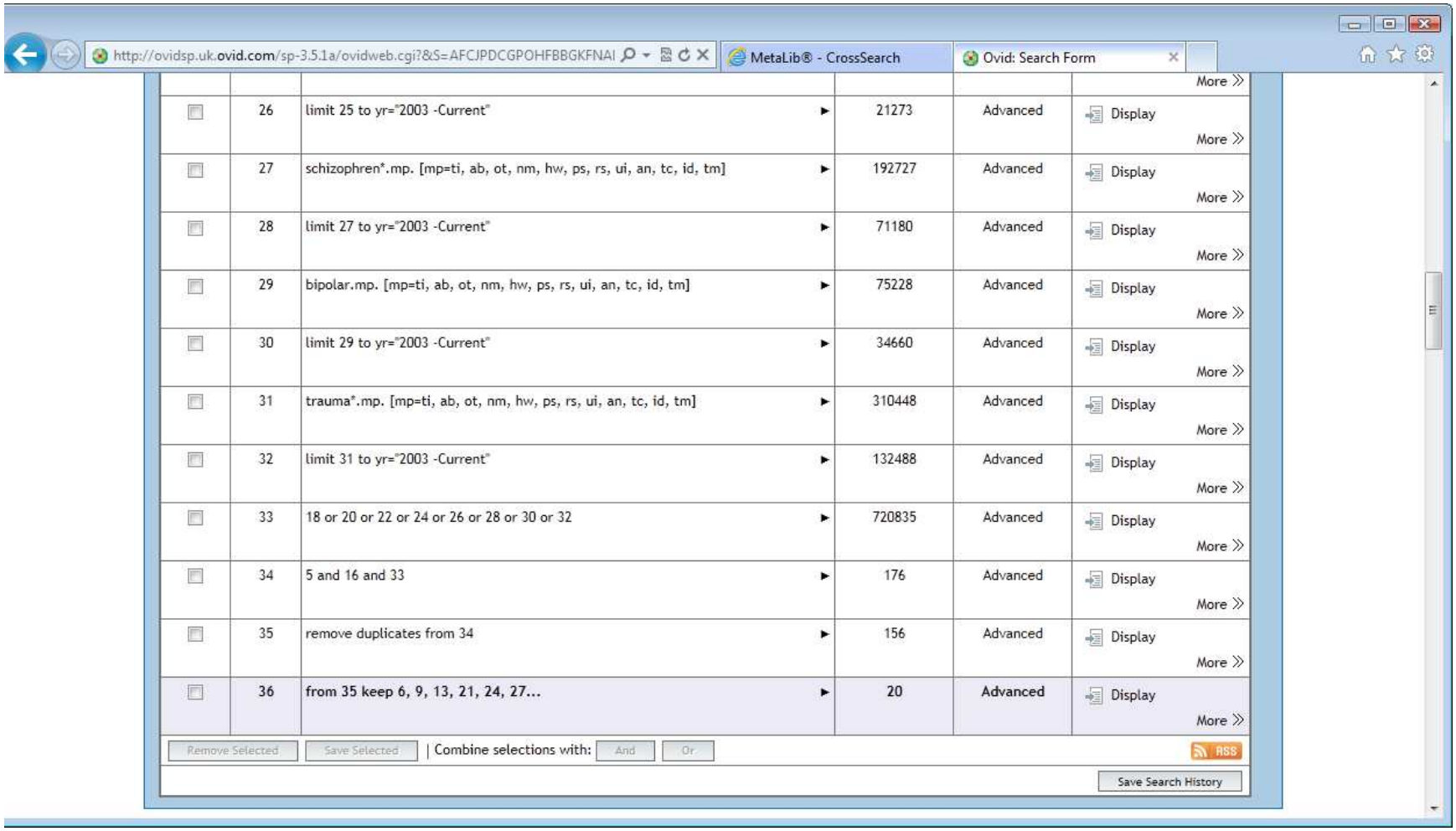
13	limit 12 to yr="2003 -Current"	1255127	Advanced	Display	More »
14	program*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	824993	Advanced	Display	More »
15	limit 14 to yr="2003 -Current"	372867	Advanced	Display	More »
16	7 or 9 or 11 or 13 or 15	2427056	Advanced	Display	More »
17	psychiatr*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	443906	Advanced	Display	More »
18	limit 17 to yr="2003 -Current"	161128	Advanced	Display	More »
19	mental*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	686982	Advanced	Display	More »
20	limit 19 to yr="2003 -Current"	270730	Advanced	Display	More »
21	depress*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	549897	Advanced	Display	More »
22	limit 21 to yr="2003 -Current"	228500	Advanced	Display	More »
23	anxi*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	276875	Advanced	Display	More »
24	limit 23 to yr="2003 -Current"	125537	Advanced	Display	More »
25	psychosis.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm]	57128	Advanced	Display	More »


http://ovidsp.uk.ovid.com/sp-3.5.1a/ovidweb.cgi?&S=AFCJPDCGPOHFBBGKFNAI
MetaLib® - CrossSearch
Ovid: Search Form
More
26 limit 25 to yr="2003 -Current" 21273 Advanced Display More
27 schizophren*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm] 192727 Advanced Display More
28 limit 27 to yr="2003 -Current" 71180 Advanced Display More
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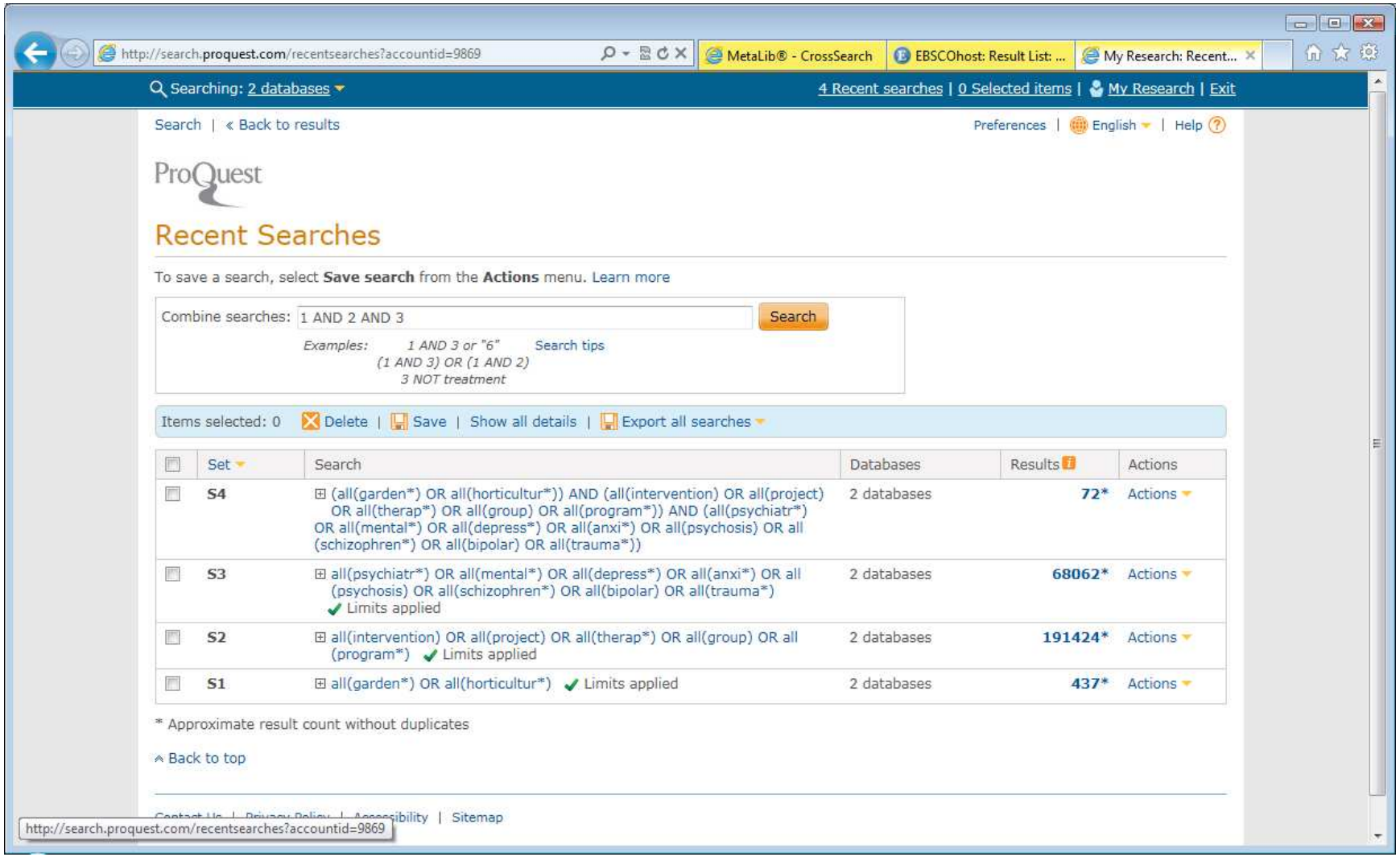
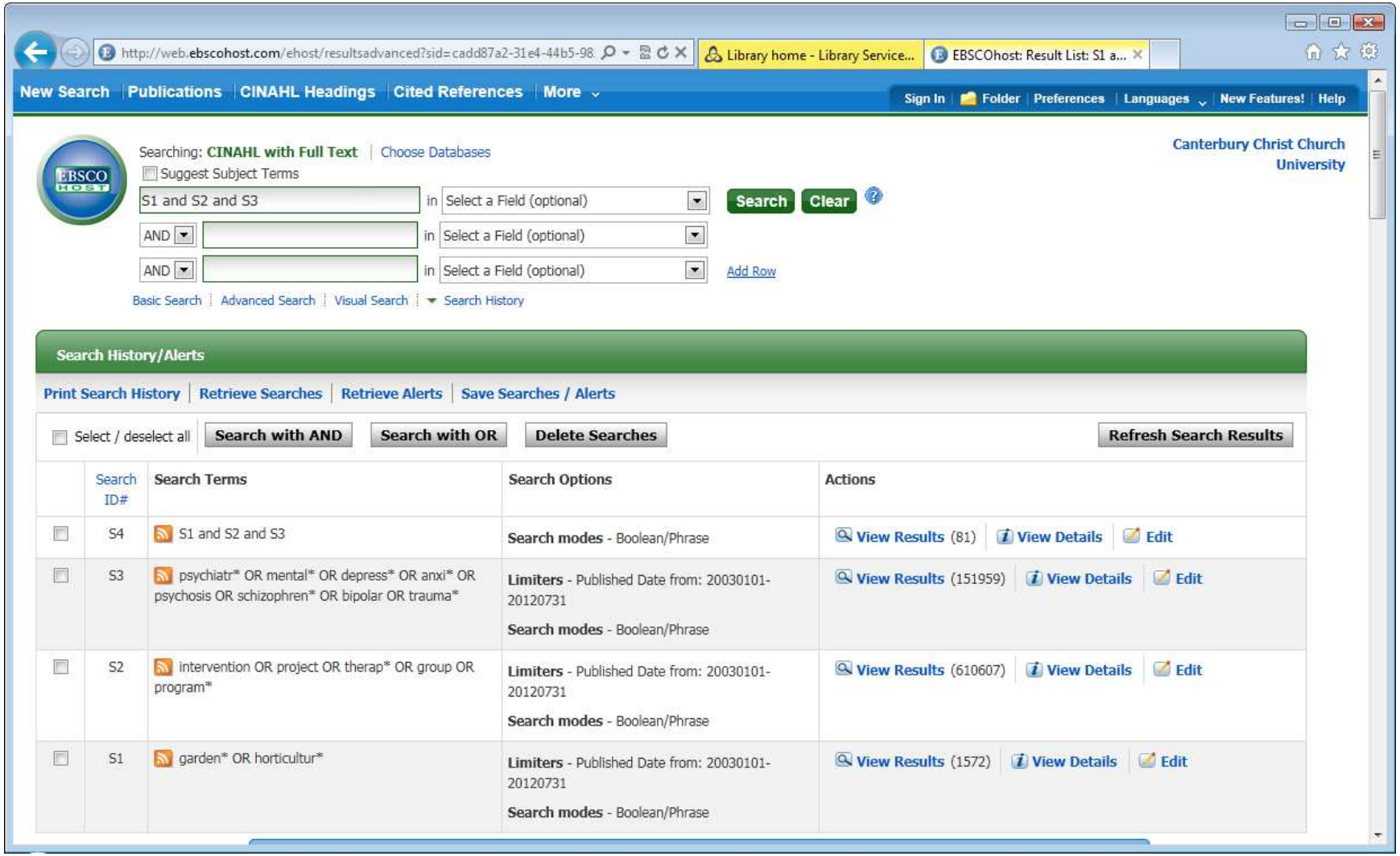
30 limit 29 to yr="2003 -Current" 34660 Advanced Display More
31 trauma*.mp. [mp=ti, ab, ot, nm, hw, ps, rs, ui, an, tc, id, tm] 310448 Advanced Display More
32 limit 31 to yr="2003 -Current" 132488 Advanced Display More
33 18 or 20 or 22 or 24 or 26 or 28 or 30 or 32 720835 Advanced Display More
34 5 and 16 and 33 176 Advanced Display More
35 remove duplicates from 34 156 Advanced Display More
36 from 35 keep 6, 9, 13, 21, 24, 27... 20 Advanced Display More
Remove Selected
Save Selected
Combine selections with:
And
Or
RSS
Save Search History

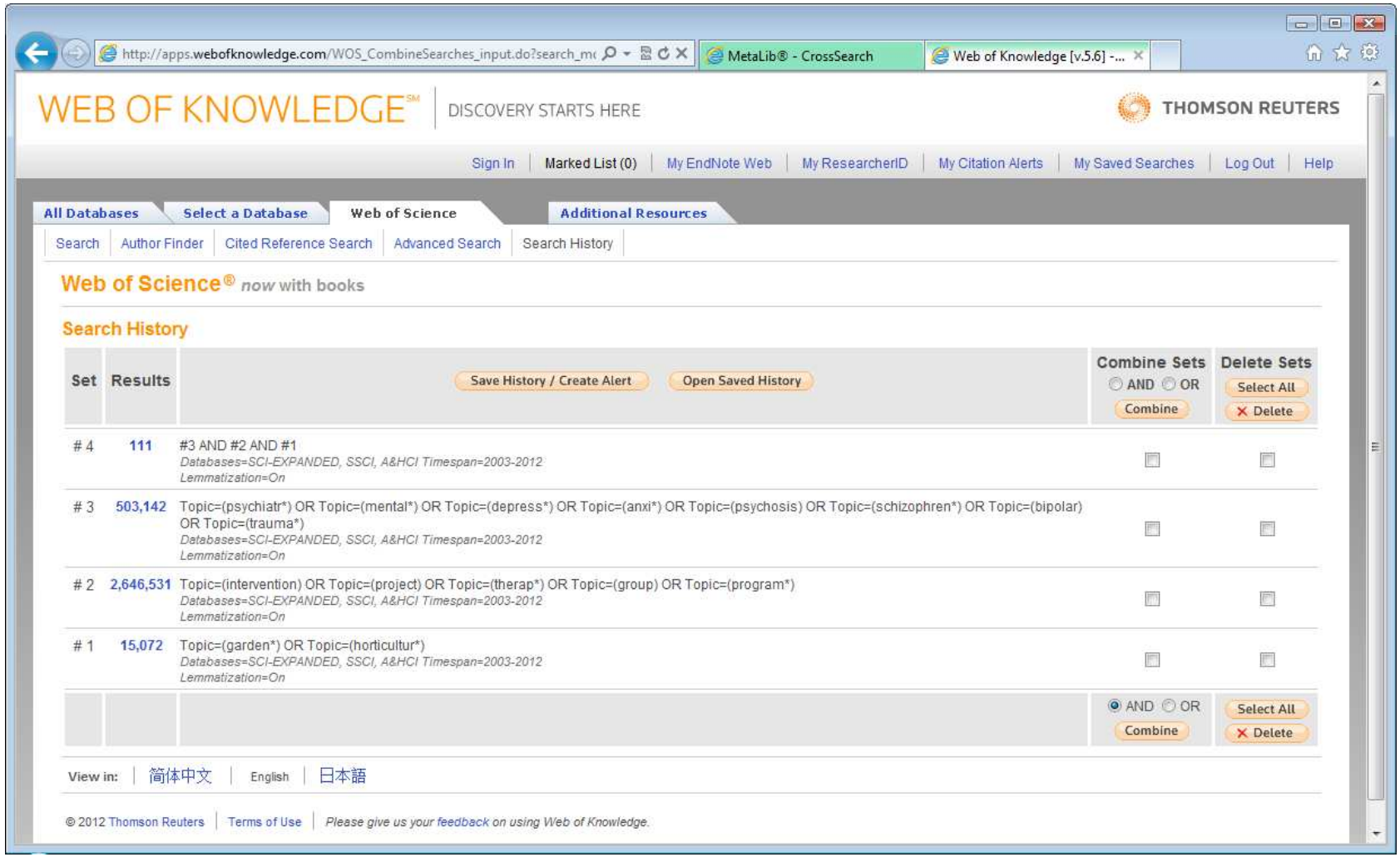
Appendix 4: ProQuest search results



Appendix 5: EBSCO Host CINAHL search results



Appendix 6: Web of Science search results



Appendix 7: Review of potential papers against study inclusion criteria

Reference	English	Empirical research	Active gardening intervention	Adults experiencing non-organic mental health difficulties	Other
Aitken (2007)	✓	X			
Aldridge & Sempik (2004)	✓	X			
Allen (2008)	✓	X			
Arnold, Bevan, & Bishop, 2008)	✓	✓	X		
Davis (2009)	✓	X		X	
Donnelly (2006)	✓	X			
Duffin (2008)	✓	X			
Fieldhouse (2003)	✓	✓	✓	✓	Already reviewed by Sempik et al. (2003) X

Reference	English	Empirical research	Active gardening intervention	Adults experiencing non-organic mental health difficulties	Other
Gonzalez et al. (2009)	✓	✓	✓	✓	
Gonzalez et al. (2010)	✓	✓	✓	✓	
Gonzalez et al. (2011a)	✓	✓	✓	✓	
Gonzalez et al. (2011b)	✓	✓	✓	✓	
Hickey (2008)	✓	X			
Hine et al. (2008)	✓	✓	X		
Hwang, Lee, Song, & Son (2007)	X				
Isaacs (2009)	✓	✓	✓	✓	Not peer reviewed X
Jackson (2007)	✓	X			
Kam & Siu (2010)	✓	✓	✓	✓	

Reference	English	Empirical research	Active gardening intervention	Adults experiencing non-organic mental health difficulties	Other
McCaffrey (2007)	✓	✓	X		
McCaffrey, Hanson, & McCaffrey (2010)	✓	✓	X		
McCaffrey, Liehr, Gregersen, & Nishioka (2011)	✓	✓	X		
McCann (2009)	✓	X			
O'Brien, Burls, Townsend, & Ebden (2011)	✓	✓	X		
Pachana, McWha, & Arathoon (2003)	✓	✓	X		
Page (2008)	✓	X			
Parker (2004)	✓	X			
Parkinson et al. (2011)	✓	✓	✓	✓	

Reference	English	Empirical research	Active gardening intervention	Adults experiencing non-organic mental health difficulties	Other
Parr (2005)	✓	✓ .	✓	✓	Fuller description of the same work in Parr (2007) below
Parr (2007)	✓	✓	✓	✓	
Pearce (2004)	✓	X			
Pointon (2005)	✓	X			
Rappe et al. (2008)	✓	✓	✓	✓	
Smilski (2008)	✓	X	X		
Soderback, Soderstrom, & Schalander (2004)	✓	X		X	
Son et al. (2004)	✓	✓	✓	✓	
Song, Kim, Sim, & Kim (2010)	X				

Reference	English	Empirical research	Active gardening intervention	Adults experiencing non-organic mental health difficulties	Other
Stepney & Davis (2004).	✓	✓	✓	✓	
Wakefield, Yeudall, Taron, Reynolds, & Skinner (2007)	✓	✓	✓	X	
Whitham & Hunt (2010)	✓	X			
Wild (2007)	✓	X			

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Appendix 8: Content and delivery of study interventions

Study	Type of gardening intervention	Group size	Delivered By	Attendance
Gonzalez et al. (2011a)/ Gonzalez et al. (2011b)	12 week farm-based horticultural intervention (2 x 3hr sessions per week) Details provided of both active and passive gardening activities (e.g. sowing, planting, observing the landscape)	3-7 people per group (with optional time spent alone)	Farmer – given instructions and support by researcher	Mean attendance 18.4/ 24 sessions
Parkinson et al. (2011)	Participants recruited from six projects – community allotment, conservation project and four psychiatric hospital gardens. Minimal information provided.	Not stated	Not clear for all sites. Occupational Therapists facilitated the hospital garden interventions.	Not stated
Gonzalez et al. (2010)	See Gonzales et al. 2011a/2011b above	4-7 people per group (with optional time spent alone)	Farmer	Mean attendance 18.7/24 sessions
Kam & Siu (2010)	10 session Horticulture Activity Program (1x 1hr session per work day for 2 weeks) Details of each session's programme are provided in the paper – includes active horticultural activities and psycho-education on stress and coping.	Not stated	Occupational Therapist	Two participants dropped out.
Gonzalez et al. (2009)	See Gonzales et al. 2011a/2011b above	3-5 people per group (with optional time spent alone)	Farmer	Not stated
Rappe et al. (2008)	Allotment based intervention Assessed over 17 sessions but ongoing for participants Weekly group sessions but also free to attend at other times	Varied across sessions. 1-10 in total per week (0-4 patients, 0-4 support workers and 1-3 researchers)	Not facilitated – support workers encouraged patients to make decisions about what to do	Average time spent on plot was 1hr 20mins per week.
Parr (2007)	Two gardening projects: One allotment-based project in Nottingham with flexible opportunities for group and individual work. One market-garden based intervention in Nottingham – more structured, participants paid.	Varied – some individual work, some group work	Not stated	Not stated
Stepney & Davis (2004)	Minimal information provided Intervention based at a 'horticultural site' and lasted 12 months	Not explicated stated. Assumed that all 10 participants attended at the same time each week.	Not stated	Attendance data only provided for 4 participants (73 – 88% attendance)
Son et al. (2004)	37 session horticultural intervention (1hr twice a week for 5 months) Content not clear but involved growing plants	Not clear. Assumed all 25 participants in the experimental condition did the group together.	Horticultural therapist	Not stated

Appendix 9: Selection of study participants

Study	How identified	Inclusion Criteria	Exclusion Criteria	Other treatment received
Gonzalez et al. (2011a, 2011b 2010, 2009)	Newspaper advertisements	DSM IV major depression/ depressive phase of bipolar disorder BDI≥15	Borderline personality disorder, eating disorders, PTSD, schizophrenia, addiction problems in past 6 months Psychiatric hospitalisation Already gardening	Participants continued treatment – majority receiving medication and/or therapy
Parkinson et al. (2011)	Posters at recruitment sites (six therapeutic horticulture interventions)	18-65 yrs Attended at least 3 horticulture sessions Can concentrate for at least 1hr	None described	Not stated
Kam & Siu (2010)	Through sheltered workshop/ vocational rehabilitation services – convenience sample	Diagnosis of schizophrenia spectrum disorder, bipolar disorder or major depression	Had attended previous horticultural programme Had major physical/ medical problems that would interfere with gardening	All took part in their regular work related skills training programme
Rappe et al. (2008)	Convenience sample – already engaged in allotment project	None described	None described	Not stated
Parr (2007)	Not stated	None described	None described	Not stated
Stepney & Davis (2004)	Volunteers	Active clients of the mental health social work team	None described	Not stated
Son et al. (2004)	Not stated	People with chronic schizophrenia living in a social welfare centre	None described	Not stated

Appendix 10: Outcome assessment and timing

Study	Outcome measures	Timing of assessment
Gonzalez et al. (2011a)	Beck Depression Inventory (Beck, 1967) Life Regard Index Revised (Debats, 1990) (Study 1) Sense of Coherence Scale (Antonovsky, 1987) (Study 2) Developed scale/ open ended questions re experience	Screening (baseline 1) Pre-intervention (baseline 2) 12 weeks (end of intervention) 3 month follow-up
Gonzalez et al. (2011b)	Beck Depression Inventory (Beck, 1967) State-Trait Anxiety Inventory (Spielberger et al., 1983) Positive and Negative Affect Scale (Watson et al., 1988) Perceived Stress Scale (Cohen et al.,1983) Therapeutic Factors Inventory Cohesiveness Scale (Lese & MacNair-Semands, 2000) Authors developed items on social aspects/ experience	Screening (baseline 1) Pre-intervention (baseline 2) Four weeks (mid intervention) 12 weeks (end of intervention) 3 month follow-up
Parkinson et al. (2011)	Work Environment Impact Scale (Moore-Corner et al., 1998) Volitional Questionnaire (de las Heras et al., 2007)	Cross-sectional
Gonzalez et al. (2010)	Beck Depression Inventory (Beck 1967) Attentional Function Index (Cimprich, 1993) Brooding Scale (Treynor et al., 2003) Perceived Restorativeness Scale (Hartig et al., 1991)	Recruitment (baseline 1) Screening (baseline 2) Pre-intervention (baseline 3) Four weeks (mid intervention) 12 weeks (end of intervention) 3 month follow-up
Kam & Siu (2010)	Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) Work Behavioural Assessment (New Life Psychiatric Rehabilitation Association, 2005) Personal Well-being Index (Smyth et al., 2009) Semi-structured interviews	Pre-intervention Post-intervention
Gonzalez et al. (2009)	Beck Depression Inventory (Beck 1967) Attentional Function Index (Cimprich 1993) Perceived Restorativeness Scale (Hartig et al. 1991)	Recruitment (baseline 1) Pre-intervention (baseline 2) Four weeks (mid intervention) 12 weeks (end of intervention) 3 month follow-up
Rappe et al. (2008)	Authors developed a 59-item questionnaire assessing motivation, skills and importance of gardening	Not specified
Parr (2007)	Semi-structured interview Ethnographic observations	Not specified
Stepney & Davis (2004)	Hospital Anxiety & Depression Scale (Zigmond & Snaith, 1983) Social Fear Questionnaire – author unknown	Pre-intervention Post-intervention
Son et al. (2004)	Relationship Change Scale (Chun, 1995) Self-esteem scale (Rosenberg, 1965) Social Behaviour Scale (Trower, Bryant, & Argyle, 1978) Symptom Checklist 90 Revision (Kim, Kim, & Won, 1984) Evaluation of Horticultural Activity (Oseas, 1961)	Pre-intervention Mid-way through intervention Post-intervention

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Section B: Empirical Research

Appendix 11: Instructions for authors - Applied Psychology: Health and Wellbeing

Applied Psychology: Health and Well-Being is one of the two official journals of the International Association of Applied Psychology (IAAP), the oldest worldwide association of scholars and practitioners of the discipline of psychology (founded in 1920).

Applied Psychology: Health and Well-Being is a peer-reviewed outlet for the scholarly dissemination of scientific findings and practical applications in the domains of health and well-being. Articles are encouraged from all areas of applied psychology including clinical, health, counseling educational, sport, cross-cultural and environmental psychology. The mission of the journal is to provide readers with outstanding articles that present the latest data and best practices in the application of psychology to the promotion of well-being and optimal functioning.

Applied Psychology: Health and Well-Being publishes empirical work, theoretical papers, model intervention programs, case studies, debates, and reviews. Of particular interest are intervention studies (e.g., randomized controlled trials) and meta-analytic reviews.

Special Sections are occasionally published. These are composed by guest editors who invite contributions with a particular thematic or regional focus for the section.

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• Administration centralised and reduced
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Manuscripts should not ordinarily exceed 30 double-spaced pages. Manuscripts should be prepared in accordance with the format prescribed by the American Psychological Association. For details see the Publication Manual of the APA.

The journal to which you are submitting your manuscript employs a plagiarism detection system. By submitting your manuscript to this journal you accept that your manuscript may be screened for plagiarism against previously published works.

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Authors' professional and ethical responsibilities

Submission of a paper to APHW will be held to imply that it represents an original contribution not previously published (except in the form of an abstract or preliminary report); that it is not being considered for publication elsewhere; and that, if accepted by the Journal, it will not be published elsewhere in the same form, in any language, without the consent of the Editors.

Ethics Authors are reminded that the Journal adheres to the ethics of scientific publication as detailed in the *Ethical principles of psychologists and code of conduct* (American Psychological Association, 2002, http://www.apa.org/ethics?). These principles also imply that the piecemeal, or fragmented publication of small amounts of data from the same study is not acceptable.

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Informed consent Authors must ensure that all research meets the ethical guidelines, including adherence to the legal requirements of the study country. Within the Methods section, authors should indicate that 'informed consent' has been appropriately obtained. When submitting a manuscript, the manuscript page number where the statement appears should be given.

Conflict of interest All submissions to APHW require a declaration of interest. This should list fees and grants from, employment by, consultancy for, shared ownership in, or any close relationship with, an organisation whose interests, financial or otherwise, may be affected by the publication of the paper. This pertains to all authors, and all conflict of interest should be noted on page 1 of the submitted manuscript. Where there is no conflict of interest, this should also be stated.**Title:** The title should be concise and should be supplied on a separate sheet together with the author's name(s), title, current address, telephone and fax numbers and email address. A short title of no more than 40 characters (including spaces) should also be supplied.

Abstract: The title must be included again, on the same page and immediately before the abstract. An abstract of 150-200 words in English should precede the article. The abstract should be structured in the following way with bold marked heading: Background; Methods; Results; Conclusions; Keywords; Abbreviations (for example, for test).

If appropriate, you may also include a further 3 bullet points, in addition to the abstract, with the heading 'practitioner points'. These should very briefly outline the relevance of your research to professional practice.

Headings: There should be no more than three (clearly marked) levels of subheadings used in the text of the article.

Acknowledgements: These should be supplied, as briefly as possible, on a separate page.

Statistics: Results of statistical tests should be given in the following form: F(1,9) = 23.35, p

Keywords: All articles should contain keywords. No more than 6 keywords should be submitted.

References: The APA style of referencing is used (author's name and date of publication parenthesised in the text) and all works cited should be listed alphabetically by author after the main body of the text, to the journal style as follows:

Authored Book:Bandura, A. J. (1977). Social learning theory. Englewood Cliffs, NF: Prentice Hall.

Chapter in edited book:Baker, F. M., & Lightfoot, O. B. (1993). Psychiatric care of ethnic elders. In A. C. Gaw (Ed.), Culture ethnicity, and mental illness (pp. 517-552). Washington, DC: American Psychiatric Press.

Journal article: Klimoski, R., & Palmer, S. (1993). The ADA and the hiring process in organizations. Consulting Psychology Journal: Practice and Research, 45(2), 10-36.

References in Articles
We recommend the use of a tool such as EndNote or Reference Manager for reference management and formatting. EndNote reference styles can be searched for here: http://www.endnote.com/support/enstyles.asp

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Appendix 12: Semi-structured interview schedules

The interviews were semi-structured. The researcher was led by the responses given by each participant therefore the list of questions below was not exhaustive, nor were the questions asked in a set order. The schedules presented are to give an indication of the topics that were covered and the types of questions and prompts that were used.

Interview 1

- How did you come to be an allotment gardener?
    - What were your expectations/ motivations?

- What does your allotment mean to you?
    - In what way is it important?
    - What would life be like without it?

- How do you think your allotment gardening affects you?
    - What do you get out of coming here?
    - What is it about allotment gardening that you enjoy?
    - How does coming here impact on you physically?
    - How does coming here affect the way you feel?
    - How does coming here affect the way you think?
    - How does coming here affect your relationships with others?
    - How does having the allotment affect the way you view yourself as a person?
    - What do other people think of your allotment gardening?
    - Are there any negative effects of allotment gardening?
    - How do you balance these negative effects against the positive?

- Do you notice any changes in yourself after spending time on your allotment?
    - What do you put that down to?/ How do you make sense of that?

- Have you noticed any changes in yourself since getting your allotment?
    - What do you put that down to?/ How do you make sense of that?

- General prompts
    - You mentioned x - can you tell me a bit more about that?
    - Would it be possible to give an example of that?
    - How does that make you feel?
    - What is it about x do you think that makes y happen? (e.g. what is it about weeding do you think that helps you clear your mind?)
    - What do you mean by x?

Interview 2

The purpose of the second interview was to see whether participants had any new insights since the first interview, to share the themes identified in the initial coding and get feedback, to ask participants to expand on issues that may not have been fully explored in the first interview and to see whether participating in the interview had changed their perception/ experience of allotment gardening. Questions included:

- Last time we met, we talked about how allotment gardening affects you. Is there anything else that has come to mind on this topic since we last met?

- I've been through the first interview and pulled out some key themes that were discussed – would it be okay if I went through those themes with you to see whether I've understood what you were saying correctly?
    - Do you think these themes capture your experience of allotment gardening?
    - Do you think there's anything we talked about that I've missed out?
    - Is there anything else that comes to mind that hasn't been captured in those themes?

- I was particularly interested last time when you talked about x – would you mind saying a bit more about that?

- Have you noticed any changes in the way you view your allotment gardening since we last met?

- What has it been like taking part in this study?

Appendix 13: Study poster

Allotment Research Project – Volunteers Wanted!

XXXXX [location removed] allotment holders are invited to participate in a research project exploring experiences of allotment gardening.

Taking part in the study would involve participating in two interviews with the researcher, held on your allotment plot or, if you prefer, at your home. You would be asked about the effect allotment gardening has on you.

Questions Include:

How do you think your allotment gardening affects you?

What does your allotment mean to you?

Do you notice any changes in yourself after spending time on your allotment?

For further information on the research and how to volunteer, please take an information pack or contact Jane Clatworthy on XXXXXXXX / XXXXXXXX/ jec41@canterbury.ac.uk .

Appendix 14: Participant information sheet

Exploring the Experience of Allotment Gardening: An interview study

Information Sheet

You are being invited to take part in a study exploring experiences of allotment gardening. Before you decide whether or not to take part please read the following information. If there is anything that is not clear or if you would like more information, please contact Jane Clatworthy, Trainee Clinical Psychologist, at jec41@canterbury.ac.uk or XXXXXXXXX / XXXXXXXX (phone numbers).

What is the purpose of the study?

There are many different ways in which gardening can affect the way people feel, physically and mentally. The research team is interested in finding out how allotment holders think gardening affects them.

What will happen if I agree to take part?

If you agree to take part in this research, a researcher (Jane Clatworthy) will contact you to arrange to interview you at your allotment or, if you prefer, at your home at a time convenient to you (this could be a weekday, an evening or at the weekend). The interview will last approximately one hour and will explore your views about allotment gardening. The interview will be electronically recorded so that the researcher can later write out what was said and think about it. It is likely that you will continue to think about your experiences of allotment gardening following the interview. The researcher would like to arrange a second interview with you, approximately four weeks after the first, to hear about any further thoughts you have had on the topic. This interview would also take place at your allotment or at your home at a time convenient to you and is likely to last approximately one hour.

Will my taking part in this study be kept confidential?

If you choose to be interviewed at your allotment site, it will be important for you and the researcher to find an interview spot where you are not likely to be disturbed or overheard by others, so that what you say can be kept confidential on the allotment site. All information collected as part of this research will be anonymised (your real name will not be linked with the information you have provided). The information you provide may be viewed by members of the research team. Information would only be shared with others (e.g. health professionals) if you said something that suggested that there was a risk of harm to yourself or another person. In these unlikely circumstances, the researcher would try to discuss the way forward with you first. Information will be kept securely in a locked filing cabinet and on a password protected computer for ten years before being destroyed.

What are the possible benefits of taking part?

Taking part in this study will help us to understand people's experiences of allotment gardening, which may help us to develop gardening programmes to benefit others. The interviews may also help you to clarify your own thinking about your allotment gardening experiences, which may in turn impact on the way you view your allotment gardening.

What are the possible disadvantages of taking part?

No particular disadvantages of taking part are anticipated. It is possible, however, that talking about your experiences of allotment gardening could bring up difficult or upsetting thoughts or feelings. If you became upset during the interview, the researcher would check whether you wished to continue. You would be free to have a break from the interview or withdraw from the study. If appropriate, the researcher would also offer information on relevant sources of support.

What will happen to the results of the research study?

Once the researcher has analysed the information gathered in her visits, she will write up a report to be submitted as part of her training. If you would like a copy of this report, please tell the researcher and she will provide you with a copy. She also hopes to publish the study findings in an academic journal and present the findings at an academic conference. Your name would not be mentioned in any report, publication or presentation. Please indicate on the consent form whether you would be happy for anonymous extracts of what you had said to be used in written reports and the conference presentation.

Who is organising and funding this study?

This study is being organised and funded by Canterbury Christ Church University. The project is being conducted as part of the researcher's clinical psychology doctoral qualification.

Who has reviewed the study?

Canterbury Christ Church University, Salomon's campus Ethics Committee has reviewed and approved the study (reference number: MMC/V75)

What should I do now?

If you would like to participate in this study, please complete the attached consent form and participant details form. Please post the participant details form and one copy of the consent form to Jane Clatworthy using the freepost envelope provided. The other copy of the consent form is for you to keep with this information sheet.

Contact information: Jane Clatworthy, jec41@canterbury.ac.uk, XXXXXXXX (phone numbers)

Researcher	Lead Supervisor	Second Supervisor
Jane Clatworthy	Dr Joe Hinds	Professor Paul Camic
Trainee Clinical Psychologist	Lecturer	Research Director
Canterbury Christ Church University	Sheffield Hallam University	Canterbury Christ Church University

Many thanks for taking the time to read about this study

Appendix 15: Consent form

Exploring the Experience of Allotment Gardening: An interview study

Consent Form

Contact Researcher: Jane Clatworthy

Please tick all boxes that apply

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to contact Jane Clatworthy to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time. ☐
3. I understand that the interviews will be audio-recorded. ☐
4. I agree for anonymous written extracts from my interviews to be included in study reports/ publications. ☐
5. I agree for anonymous audio extracts from my interviews to be included in a conference presentation. ☐
6. I agree to take part in the above study. ☐

_____	_____	_____	_____
Name	Date	Signature	Contact phone number

Please post one copy of this form with the attached participant information form to Jane Clatworthy using the envelope provided. She will call you to arrange the first interview. The other copy of this form is for you to keep with the information sheet.

Appendix 16: Demographic information form

We would be grateful if you would complete the following information sheet. This will help us to select a range of participants for this study. Please post this form with one copy of the consent form to Jane Clatworthy using the envelope provided.

Allotment site:	
Gender (please circle):	Male Female
Age:	
Ethnicity: (Please write the ethnic group you identify with e.g. Black Caribbean, Asian British, White British)	
Occupation:	
Approximate number of years of allotment gardening:	

Appendix 17: Sample coded interview transcript

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Appendix 18: Summaries of participants' individual allotment experiences

These have been removed from the electronic copy to protect participant anonymity.

Appendix 19: Table of themes

THEME 1: FUNDAMENTAL IMPORTANCE OF FOOD

Description	Location in transcripts (participant /transcript /page)	Example quotes
Acknowledging the fundamental importance of food – a basic survival need. There was recognition that producing food may not be as important now as it was in the past, due to lower cost and increased availability (e.g. from those who remembered post-war times of shortage - P1, P2 and P3). Only one participant expressed a financial motivation to produce her own food when she had been made redundant (P5). Several participants reported that the allotment had given them a different relationship with food (e.g. they valued food more).	1a4, 1a5, 1b3, 1b6 2a24, 2b7 3a5, 3a6, 3a10, 3b5/6 4a6 5a8 6a5	"You're going back to basics aren't you with gardening - food growing is the first in the chain isn't it – if you've not got food, then nothing else happens does it". (3a10) "I am what I eat" (2a24)

THEME 2: PROTECTION AND SAFETY

Sub-theme	Description	Location	Example quotes
Protecting the mind	The allotment as a means of protecting people from stress and mental distress – two key mechanisms reported - mindfulness / meditative quality (all participants) and physical exercise as a means of releasing stress (P2, P6)	1a6, 1a15, 1a10/11, 1b7, 1b9, 1a7, 1a8 2a2, 2a5, 2a6, 2b2 3a1, 3a2, 3a3, 3a9, 3a10, 3b5/6 4a2, 4a13, 4a7 5a7, 5a8, 5b5 6a2, 6a6, 6a5, 6a13, 6a11	P1 talks about the pressure of work, using terms like "critical", "tremendous deadlines", "tremendous pressure "and then says about the allotment "so you had this relaxation that allowed you to unwind that was a bit of a safety valve" (1a6) "You're just concentrating on one simple task, which is pulling out a weed, out of the ground. You're watching what you're doing obviously cos otherwise you could pull up your plants as well as your weeds and the total concentration is on that so your mind is clear – you're not thinking "oh I must do this, I must do that", you're just doing that" (3a1) "I seriously believe that physical exercise is good for relieving stress and depression and anything else" (2a6)
Protecting the body	Keeps you fit in a 'gentle' way. Can pace yourself. Cheaper/ more appealing than gym membership. Two women had bad backs but felt that allotment could help strengthen them/ not damage them (P4, P5). In terms of other health benefits, one person mentioned vitamin D production in the sun and the development of the immune system through exposure to dirt (P5)	1a8 2a4 3a3 4a3 5a6, 5a10, 5b3, 5b5 6a1, 6a4, 6b1	"I was never a very keen gym member – a sense of "I should do this, it's good for me" – I do find I'm probably more physically active because of having the allotment – gets your heart pumping more, if you're having a dig at the allotment" (6a4)

Sanctuary	Viewing the allotment as a physically safe place/ a retreat to escape to. There had, however, been some minor vandalism on Site 1.	1a9 3a7 5a1, 5a5, 5a12, 5a14	"Nothing bad happens there, so you sort of feel quite safe" (5a14) "It's a place of escape ...a bit of a sanctuary I suppose" (5a5)

THEME 3: FEELING CONNECTED

Sub-theme	Elements	Description	Location	Example Quotes
Connected to others	Development of relationships/ social networks	Gentle nature of interaction – gradually build on common interest to connect on other levels. Many social opportunities at Site 2. Also includes greater connection with family members involved in gardening. Often contrasted with the isolating experience of living in suburbia.	1a4 2a3, 2a5, 2a7, 2a12, 2b4 3a2 4a2, 4a5, 4a10, 4a11, 4b1 5a1, 5a3, 5a4, 5a10, 5a11 6a4, 6a7	"Friendships develop and, you know, you have a bit of a laugh- we do the bonfire night and we have trips out, we have the bbq at Christmas, we have the quiz night" (2a12) "There's quite a social side to it as well, in a gentle way….you've always got a topic to talk about, you've always got the allotment – what's going on, what you're doing and so on and then it spreads to other topics as well" (1a4)
	Valuing diversity	Brings together people you wouldn't normally come into contact with – interesting, increases learning. Allotment provides common ground. Recognition from P2 that there	1a4, 1a5, 1b10/11 2b5, 2a3, 2a4 3a2 4a6, 4b4,	"What is so strange is that there is this interconnection erm and yet erm, there's a tremendous difference between people...." (1b10)

		may be some prejudice on the plot, but this did not come across in interviewing these participants.	5a15, 5b6, 5b7 6a7	"You meet people you wouldn't necessarily meet in normal life – it sort of broadens your experience of who you talk to...everyone has their own outlook and it's just interesting to hear what other people think". (6a7)
	Positive (but not idealised) perception of the allotment community	e.g. generally helpful, friendly, nonjudgemental , show consideration for neighbours. Some petty arguments.	1a5, 1a10, 1b6 2a4 3b4 4a1, 4a9, 4b8 5a14, 5a15, 5b8 6a7, 6a3	"the atmosphere is cooperative, it's helpful" (2a4) "I've never heard anyone shout at anybody over there. Nobody has arguments or, you know, there's no rivalry – there's friendly rivalry, especially when it's show time and stuff - but everyone's so good hearted and good natured" (5a14)
Connected to the earth		A sense of belonging as part of the planet – part of the broader eco-system. Being dependent on other aspects of the ecosystem to help your things grow – e.g. bees for pollination	1a2, 1a13, 1a12, 1a14, 2a18, 2a20 5b4 6b2	"It's a place where you feel – it's hard to say – attached to the earth" (1a2) "you see where you fit in as a human being into the whole picture – you know, if kids don't know the seasons then they probably exist in a vacuum. How do they know their worth if they don't see where their place is in the big scheme of things?" (2a18)
Connected to past		All participants had a family history of growing and memories of others growing/ sensory memories (esp. P5). There seemed to be an element of reminiscing and being	1a1, 1a17 2a1, 2b2 3a1, 3a2 4a1, 4b1	"How did I become to be an allotment gardener? Well, my father had one, my grandfather had one, everybody had one –I can't think of anybody that I know who didn't have an allotment"

	connected to previous ancestors and also a sense of it being only natural to continue the family tradition.	5a2, 5a3, 5a7, 5a9, 5a11, 5a13 6a1	(3a1) I was a bit a little bit disappointed with the cucumbers cos they are my absolute favourite and I've always loved them and that stems from my granddad – he always used to grow them for me when I was little… He grew them for me! So that's why I have to grow them, for him as well as me. Even though he's been gone 10, 12 years. I still have to... I still grow them… we were very close (5a13)

THEME 4: ESTEEM

Sub-theme	Description	Locations	Example quotes
Pride in membership of an elite group	Such hard work – proud of yourself if you can cut it – elite group. Often comments that other people (such as those who value instant gratification) would not be able to cut it. Slight sense of being unusual/ outsiders. Being a marker of a 'better type of person'. Other people fail because it's such hard work.	1a3, 1a15, 1b2, 1a15 2a3, 2a6, 2a13, 2a16, 2a17, 2b3, 3a5, 3a6, 3a9, 3b1 4a1, 4a5, 4a6, 4b5, 4a9, 4b3 5a6, 5a9, 510, 6a1, 6a2, 6a11, 6a6	"I think they're quite impressed that I actually do it, that I manage to do it" (4a6) "I'm not being big headed but I think quite a lot are jealous really because they haven't got the stamina to be able to do it themselves, and they would like to" (3a5)
Pride in the produce	Pleased with what you've grown – being able to give to others. Not needing to buy from shops. Being able to have special veg	1a2,1a9, 1b2 2a2, 2a5, 2a23, 2a6	"It's nice to grow things that you can't get in the shops. My husband loves beetroot

	– not available elsewhere, better quality.	3a5, 3a2, 3a4, 3a6, 3a9 4a2, 4a5, 4a11, 4a3 5a8, 5b8, 5a1, 5a7, 5b2, 5a3 6a12,6b2, 6a2, 6a10, 6a3	when they're really small and not pickled, so growing those – just bring home a few and boil them when they're really small – delicious" (6a12) "my mum will tell you that about a year ago, it was the first time I'd ever grown potatoes, so we dug up our first potatoes – or I dug up my first potatoes ever and I was just like a child – I was jumping around going "I've grown potatoes" so it's just nice" (4a3)
Agency/ autonomy	Being your own boss/ in charge. Free to do with the land what you wish. Give it back if no longer feasible/ enjoyable – nothing to lose. Control over what goes on your food (e.g. pesticides). Control over how much social contact you want to have.	1b9 2a26, 2a27 3a5 4a4, 4a8, 4a13, 4b6 5a1, 5a4, 5a7, 5b7 6a3, 6a13, 6a6, 6b1, 6b3	"It's your own little piece of land, even though it belongs to the council, it's your own little piece of land that you can do what you like with and grow what you like – there's no restrictions or anything – you're just free to do what you want to do" (5a1) "You can be with people if you want to, depending on the time of day that you go, or if you just want a bit of peace and quiet, go over there in the evening and you can just be lost over there" (5a1)

Role replacement/ transferable skills	All participants talked about the allotment as a means replacing roles that would otherwise have contributed to esteem – following retirement, redundancy, the leaving of children, bereavement (observed in others). Nurturing was perceived to be important – could replace nurturing children with nurturing plants to some extent. Can provide status after work – eg P2 who used to be senior teacher and now runs allotment society. Broad range of skills can be transferred – e.g. teaching, mechanical (lawn mowers), specific expertise (man who used to work at garden centre on Site 2), natural organisers.	1a16, 1b5 2a2, 2a13, 2b8, 2b11, 2a12, 2a14, 2a15, 2a21, 2b3, 2b4 4a4, 4b1, 4a13, 5a2, 5a3, 5a11, 5a12, 5b1, 5b6, 5b5, 6a1, 6a9	"When you retire you've lost a big chunk that compulsorily took up your life and it would be dreadful if you just sort of sat around looking at the television and not doing anything" (1a16) "You need something to almost replace the children" (5a12)

THEME 5: GROWTH

Sub-theme	Description	Examples	Quotes
Problem solving/ continued learning	Battle with nature – problems solving situations that arise. Also time management to stay on top of things – particularly in the context of working. Often closely linked with acceptance – e.g. you can problem solve to a point, but sometimes you have to accept that it's not going to work – see quote.	1a1, 1a3, 1a6, 1a12, 1b3 2a2, 2a5, 2a6, 2a15, 2a22, 2a8, 2b11 3b1 4a2, 4b3/4, 4a6, 4a12 5a3, 5a10, 5a13 6a3, 6a10, 6a11, 6a12, 6b1	"You just have to go 'okay, did I do something wrong – did I not prune properly, did I water at the wrong time?' – you know – and there are some things that are beyond your control and you just have to accept that – like white fly" (4b4)

Acceptance	Philosophical attitude – if you can't problem solve, accept. Acknowledgement that it's easier to accept when there isn't the financial pressure/ need to have food that there may have been in the past. The new grower (p6) had an accepting attitude linked to being new (i.e. will get better in the future) – imagine this will change over time to a more general acceptance that some things are out of her control.	1a3, 1a8/9, 1a10, 1a13, 1b3/4 2a20 3a11 4b4, 4a4 5b3, 5a10 6a6, 6a12, 62b	"You think "oh those cabbage plants are growing very nicely" and suddenly the pigeons go on them and within 24hrs they're gone! There's just bare stalks standing up in there. You've got to be prepared to accept that – "oh blow". (1a3) "You can't change the weather. You can't change the activity of the bees. Those are just things that you have to go with" (2a20)

THEME 6: PLEASURE OF BEING IN NATURE

Description	Examples	Quotes
All participants expressed pleasure at being outdoors in nature/ exposed to the elements. Fresh air and tranquillity valued. For some, nature/ ecology was a longstanding interest (P1, P2, P5, P6). For some, there was a spiritual quality (e.g. the wonder of all the produce coming from seeds – e.g. P3, P6, P4). Three people felt very strongly that they were outside people and were meant to be outside (P1, P2, P5) – often contrasting this to the work environment. Hard for people to put into words what was is good/ important about being in nature – "just is". Accessibility of this resource was key. Escape from suburbia. Pleasure of watching nature at work. Two participants described being addicted to the allotment – (P3, P5). Will link this theme to the literature/ theories on the benefits of green spaces.	1a7, 1a13, 1a16, 1a2, 1b1, 1b10, 1a11, 1a14 2a1, 2a2, 2a5, 2a6, 2a7, 2b1 3a3, 3a4, 3b1, 3b4 4a4, 4a9, 4a12 5a5/6, 5a2, 5b2, 5b4, 5b8, 5a11 6a4, 6a13, 6a2, 6a15	"Being out in the fresh air, listening to the birds, having the sun – it doesn't matter what the weather is – it's just a very, sort of, you know, just a 'let go' type of a place. Just to get on and sort of be at one with nature really – it sounds a bit clichéd (laughs). But it does. I mean I like the outdoors anyway so it's just an extension of all that. It's fresh air, and I find it's more and more important to me as I get older – I just feel that I want to be outside more and more and that is a fantastic place just to get outside." (5a5)

THEME 7: VALUES

Sub-theme	Description	Locations	Examples
Alternative to current society – helping others	The majority of participants raised concerns about current society – individualism, materialism, capitalism. (It is important to put this in context and acknowledge that the interviews took place just after riots/ looting in the UK, a topic raised spontaneously by five participants). The allotment – in particular the sense of community and the battle with nature putting people in their place – was seen to provide an opportunity to promote an alternative set of values.	1a17, 1a18, 1a11 2a18, 2a19, 2a20, 2a22, 2a3, 2a4, 2a9, 2a10, 2a11, 2a13, 2a21, 2a24/25, 2a27, 2b4, 2b5 3a9, 3a6, 3b6, 3b5, 3a7, 3a8 4a10, 4b5, 4b6 5b5	"People need more than individualism – they need to feel they belong somewhere I think" (1a11) "You are fighting against nature out there because it's you against mother nature and unless you learn about mother nature and start working with her, you're not really going to win. And the people who walk off the plot with a trug that's got rhubarb in it, and beetroot, and potatoes, they've worked bloody hard and they've got in step with mother nature – if you're going to negate that and just think that you can be a person in your own right and get on with it and do what you want to do, you're not going to be successful" (2a19)
Helping the environment - Eco-values	Many of the participants expressed 'green' values - "make do and mend", recycling, reducing waste, reducing food miles, organic produce.	2a17, 2a18, 2b10 3a5 4a8 5b4, 5a8 6a10, 6a14	"I've always been quite aware of green issues and I do think (allotments) are very green – cos you know we use everything – plastic bottles that we have here I take them down there to cover seedlings and all that sort of thing – my husband built me two big compost bins just out of pallets that people were chucking. So it's a very recycling friendly environment as well" (6a14)

Appendix 20: Thoughts from the bracketing interview and their development

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Appendix 21: Ethics application

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Appendix 22: Ethics approval

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Appendix 23: Summary report for ethics panel/ participants

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