M.Sc. in Research

Blossoming on the bog - The role of bogs in the maintenance and improvement of mental health for a group of people attending the mental health services in Counties Louth and Meath in Ireland.

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Declaration Form

We, the undersigned declare that this thesis entitled Blossoming on the Bog - The role of bogs in the maintenance and improvement of mental health for a group of people attending the mental health services in Counties Louth and Meath in Ireland,

is entirely the author's own work and has not been taken from the work of others, except as cited and acknowledged within the text.

The thesis has been prepared according to the regulations of Dundalk Institute of Technology and has not been submitted in whole or in part for an award in this or any other institution.

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Glossary of Terms

Definitions for common terms that are discussed in this thesis are presented below to provide understanding and clarity to the reader.

Bog	Also known as a ‘wetland’, a habitat covered in plants, moss and water pools. Characterised by their peat soils, which formed over thousands of years from decaying vegetation.
Co-Production	The creation of an equal and collaborative mental health service by merging the knowledge of both mental health professionals and service users to reach therapeutic goals.
Hierarchal	A belief system in which the mental health professional was presumed to know best, and have control over the treatments received by the service user.
Nature-Based Therapy	A therapeutic intervention that uses the natural world and contact with outdoor environments as a facilitator for mental well-being, growth and recovery.
Recovery	Encompasses one’s ability to live a fulfilling and meaningful life while living with and managing their mental health difficulties or illness.
Social Prescribing	Interventions which foster community connection and support mental, social and physical well-being in a non-clinical environment, often facilitated in local community settings and by voluntary groups.

Abbreviations

ART	Attention Restoration Theory
BDI	Becks Depression Inventory
CP	Co-Production
DKIT	Dundalk Institute of Technology
HAM-A	Hamilton Anxiety Rating Scale
HSE	Health Service Executive
MMR	Mixed Methods Research
NBT	Nature-Based Therapy
NR-6	Nature Relatedness Scale
SPSS	Statistical Package for the Social Sciences
SRT	Stress Reduction Theory
WHO-5	World Health Organisation – Five Wellbeing Index

Abstract

Blossoming on the bog - The role of bogs in the maintenance and improvement of mental health for a group of people attending the mental health services in Counties Louth and Meath in Ireland.

Clare Carvill

This research study aimed to explore the role of nature-based therapeutic interventions (specifically in bog environments) on the maintenance and improvement of mental health in a group of people attending the mental health services for support in the North East of Ireland in Counties Louth and Meath. There is evidence both in Ireland and internationally, of the benefits that spending time in natural environments has on mental health and overall wellbeing. Many research studies have shown the positive impact of nature-based interventions on psychological, physical and social well-being with findings indicating reductions in stress, anxiety, low mood and blood pressure, activation of the parasympathetic nervous system and the promotion of social, self and nature connectedness, reducing feelings of loneliness. This study was comprised of an 8-week programme, in which individuals attended the bog for 2 hours every week to participate in activities. These activities included walking, bird watching, learning about the flora and fauna, photography, artwork, poetry and engaging in mindfulness and meditation activities within the bog. Co-production was a key element in this study. Co-production is a collaborative approach which involves shared decision-making, team work and equality. The study promoted a recovery-orientated approach to mental health care, building on individual strengths and goals. This research study had a mixed methods design, using both quantitative and qualitative data collection methods. The quantitative approach consisted of four validated questionnaires, which participants completed on the first and final weeks of the programme. In order to collect qualitative data, participants took part in focus groups following the programmes completion. The findings of the research have been profound, with reductions in anxiety and depression symptoms for participants, enhanced wellbeing, social and nature connection, empowerment and a sense of belonging. The study highlights the role of bogs as community spaces where people can go to connect with themselves, each other and their cultural heritage.

Chapter 1: Introduction

1.1 Introduction

This research study explored the role of nature, specifically of bog habitats, in the maintenance, and improvement of mental health in a cohort of people attending the mental health services in the Irish regional areas of County Louth and County Meath (two regions in the North-East of Ireland). Participants attended the bog programme once a week for 8 weeks, with participants completing the research questionnaires on the first and final weeks, and spending the 6 weeks in-between at the bog and engaging in a range of activities. These therapeutic activities were chosen by the groups collaboratively using co-production, and included walking, meditation, mindfulness, learning about the flora and fauna, birdwatching, foraging, artwork such as painting, drawing and pottery, bird box making, sharing poetry and music, alpaca walks and barbecues.

1.2 Background

Bogs are large bodies of water containing peat soil, formed over long periods of time as plant matter decayed. A distinctive environment is created in bogs due to the combination of moist and cold conditions with an acidic pH level, forming a unique and thriving ecosystem (Aporri et al, 2022). The bog is a characteristic feature of the Irish landscape, covering 21% of the countries land (Habib and Connolly, 2023). Bogs have been at the centre of social and cultural heritage in Ireland for centuries, acting as meeting points for communities who spent a lot of their time on the bog, farming and cutting turf as their primary source of fuel (O'Connor and Gearey, 2020). In recent years, bogs in Ireland have undergone a radical paradigm shift as instead of being viewed as a physical resource they are being acknowledged for their social, cultural and environmental importance (Irish Wildlife Trust, 2021). Bogs are home to a diverse range of flora and fauna species, absorb water to prevent flooding, and store carbon from the air to protect the environment (National Parks and Wildlife Service, 2023). The Irish Peatland Conservation Council was established in 1982 to conserve and restore Irish bogs for future generations (Irish Peatland Conservation Council, 2023). Bórd na Móna, who once supplied Irish people with turf from the bogs to fuel their homes, now work to protect these precious ecosystems with their Bog Rehabilitation

Programme (Bórd na Móna, 2021). In November 2020, the Irish government granted Bórd na Móna 108 million euros in funding to rehabilitate and restore the 80,000 hectares of bog owned by the company throughout Ireland (Government of Ireland, 2020). There is now an opportunity for governmental and community organisations to develop initiatives on Irish bogs to ensure the ongoing fostering of community engagement and connection to these unique habitats. One solution to this may be to develop wellbeing initiatives in local communities in Ireland to support mental health and wellbeing.

Worldwide, mental illness is the leading cause of disability and approximately one billion people live with a mental health disorder, this accounts for 15-20% of the world's population (World Health Organisation, 2020). These figures emphasize the current global mental health crisis. Throughout Irish society today, there is a mental health epidemic, with 2 in 5 people living with a mental health disorder, 1 in 10 people having attempted suicide in the past and many more in mental health distress (Maynooth University, 2022). In 2006, the Vision for Change mental health care policy document was published in Ireland, this set forth a treatment plan based on a person-centred, and community based approach to care. It also highlighted areas of improvement and goals for the future (Department of Health, 2006). This was updated by Sharing the Vision, published in 2020. This policy document examines the delivery of the services cited in the Vision for Change (Government of Ireland, 2006). It provides recommendations for the enhancement of mental health treatments and a recovery orientated service (Government of Ireland, 2020). Today, mental health care in Ireland is spread over a number of treatment modalities including acute inpatient care, residential support services and community based interventions such as day hospitals, home visits and outpatient clinics (Health Service Executive, 2022).

Pharmacological interventions are the primary treatment of mental health disorders in Ireland, and while these can be beneficial to the individual in symptom management, they often cause unwanted side effects and do not address the social or lifestyle factors that may contribute to poor mental wellbeing (Paul and Potter, 2024). Other treatments that may be provided include talk therapies and group activities in healthcare and community settings (Mental Health Ireland, 2024). Current waiting list figures for adult mental health services in Ireland are not available online. A report from the Mental Health Commission in July 2023, stated that there were 4,450 children

and adolescents on waiting lists for support from the mental health services in Ireland, emphasizing serious concerns for the health and welfare of young people (Mental Health Commission, 2023). In February 2024, 21,132 people in Ireland were on waiting lists for primary care psychology services, a 102% increase from 10,466 people in 2020 (Ward, 2024). These services would ensure early intervention support, preventing further mental health deterioration and the need to attend the mental health services. In 2022, €5.5 million euros in funding was invested in primary care psychology services and mental health to support the 'Waiting List Action Plan', which aimed to 'significantly reduce' psychology service waiting list numbers (Department of Health, 2022). It is clear that government investment is not sufficient and new, innovative treatments are needed to support those in mental health distress, ensure early intervention, and address the inadequate mental health services at present. Nature Based Therapy (NBT) may be the answer to these shortcomings, as the literature highlighting its benefits continues to grow in recent times.

Over the past century, more than half of the world's population has relocated to urban areas and it is estimated that 68% of people will live in cities by the year 2050 (Ritchie and Roser, 2018). Modern lifestyles and the rapid development of technology has resulted in a significant decrease in the amount of time that most people spend in natural environments (Colding et al, 2020). Human disconnection with nature has been attributed to many cultural, political, economic, behavioural, and scientific factors (Parenti and Moore, 2016). Studies have shown that living in urban environments has a negative effect on the amygdala area of the brain, and stress receptors (Ledorbogen, 2011) and thus increases the risk of developing mental health disorders such as anxiety and depression (Peen et al, 2010). Similarly, traffic pollution has been correlated with increased rates of depression (Pelgrims et al, 2021). There is statistical evidence that suggests the risk of developing schizophrenia is 2.37 times higher in urban areas compared to rural areas (Vassos et al, 2012). Evidence supports the possibility that trends of increased urbanisation and surging mental health disorders correlates with decreased exposure to nature, causing disconnectedness and changes in psychological functioning (Richter et al, 2021). Throughout the world, many countries are facing epidemics of mental health disorders, and physical health diseases, such as cardiac and respiratory diseases, and diabetes (Katzmarzyk et al, 2022).

The exploration of the role of nature in supporting the prevention and management of these illnesses is essential, as nature provides an accessible, holistic pathway to healing whilst alleviating demands on health and social care services (Lovell and Depledge, 2018). NBT provides cost-effective, accessible and flexible opportunities for those seeking support, in adjunct with pharmacological and other interventions. Historically, mental health institutions in Ireland had farms and gardens on site, which encouraged residents to spend time outdoors (Walsh and Daly, 2004). However, in recent years, it seems that the therapeutic potentials of nature and spending time outdoors have been forgotten and replaced by modern, scientific interventions. Throughout Irish history, the bogs have been important meeting places for those in the community, once viewed as a fuel source, attitudes are now changing as these habitats are appreciated for their beauty, and their abundance of rich biodiverse species. In recent times, social prescribing services are slowly being expanded throughout Ireland (Mental Health Reform, 2023). Therapeutic bog interventions may act as a beneficial social prescribing support in communities around Ireland, especially for those experiencing pre-clinical symptoms of a mental health disorder, chronic health issues, or those experiencing loneliness and seeking deeper connection in their lives Around Ireland, there are now thousands of acres of bogs being restored and protected. This highlights an opportunity to develop these bog locations as local amenities for people in communities to come and maintain their mental and physical wellbeing. This may also foster a sense of guardianship and care, as communities have the opportunity to support the protection and conservation of the bogs.

1.3 Research Question

What is the role of a therapeutic intervention in a bog habitat on the maintenance and improvement of mental health for a group of people attending the mental health services in Counties Louth and Meath in Ireland?

1.4 Research Aim and objectives

The main aim of this research study was to explore the impact of a nature-based therapeutic bog intervention on the improvement and maintenance of mental health

for a group of individuals attending the mental health services in Counties Louth and Meath in Eastern Ireland.

The objectives of the study were:

1. To co-produce a structured programme with service users recruited from local mental health services in the Louth and Meath areas.

2. To foster shared decision-making, empowerment and autonomy using co-production and a recovery focused approach.

3. To engage participants in enjoyable activities during the wetland programme.

4. To evaluate the impact the programme may have on social isolation and loneliness through social connection, nature connection and community involvement.

5. To evaluate any changes that may occur in mental wellbeing for participants following the intervention using both qualitative and quantitative measurements.

6. To explore whether there is a correlation between mental wellbeing and nature connection.

7. To highlight Irish bogs as valuable environments of historical and cultural significance. Advocating for the development of community health initiatives on bogs to support the wellbeing of the population.

8. To reduce the carbon footprint of the local mental health services by providing a programme within the locality of the participants, promoting environmentally sustainable interventions.

1.5 Chapter 1

Chapter one is the introductory chapter. It contains the abbreviations, glossary of terms, the introduction to the research concepts and area of study, and details the research aims, objectives and background. It also contains this description of the contents of each chapter of the thesis.

1.6 Chapter 2

Chapter two contains the literature review for this research study. The literature review outlines all the previous research on the topic, contextualising the research topic and providing the reader with an understanding of the research subject, focusing on areas such as; the human-nature connection, nature based therapies in Ireland and around the world, co-production, social prescribing and recovery. The literature review demonstrates a knowledge gap in the current literature, thus justifying the need for the research study in question.

1.6 Chapter 3

Chapter three outlines the methodological approaches utilised in this research study. This provides the reader with an understanding of the philosophical beliefs that guided the researcher in their study design. The methodology chapter describes the mixed methods approach chosen by the researcher, and justifies the use of both qualitative and quantitative research methods to carry out the research study.

1.7 Chapter 4

Chapter 4 describes the methods undertaken by the researcher in order to plan, implement and evaluate the research study successfully. The methods chapter outlines concepts including; the research design, research method, sampling methods, inclusion and exclusion criteria, data collection processes, data analysis procedures, ethical considerations and ensuring validity, reliability and rigour. Each of these concepts and the methods used is explained to ensure the appropriate utilisation of the research study.

1.8 Chapter 5

Chapter five displays the quantitative and qualitative research findings following their analysis by the researcher. The quantitative findings from the completion of questionnaires and their analysis using SPSS are described along with graphs

presenting numerical data and statistical figures. The qualitative findings from the analysis of focus groups with participants, using thematic analysis are displayed in themes and sub-themes. These are accompanied by direct quotes from the research participants.

1.9 Chapter 6

Chapter six is known as the discussion chapter. Here, the researcher compares the study's findings with the current literature on the research topic. From this comparison, the researcher has drawn conclusions from their research findings. This chapter contextualises the research findings and provides a deeper understanding to the reader in relation to the broader meanings of the findings and how they relate to current research in this area.

1.10 Chapter 7

Chapter seven is known as the concluding chapter. This chapter contains implications, limitations and recommendations drawn from the study and its findings. The implications describe the conclusions drawn from the findings by the researcher, and their wider impact in the field of mental health care. The limitations describe any shortcoming or barriers encountered by the researcher during the study. The recommendations suggest actions that may be taken in mental health care practice, policy and education, to promote and implement the concepts identified in the research findings.

1.11 Conclusion

The conclusion chapter summarises the main points of the research study and thesis. This provides the reader with a synthesis of the research topic and highlights the important findings of the study.

Chapter Two: Literature Review

2.1 Introduction

This chapter, known as a literature review, explores and discusses the current literature and research available that relates to the research topic in question, the facilitation of a therapeutic bog intervention and its possible impact on the maintenance and improvement of mental health for a group of people attending the mental health services in Counties Louth and Meath. A literature review was chosen for this thesis rather than a systematic review. While a systematic review would have supported structure and rigour, the use of a literature review provides flexibility and allows the researcher to present a diverse range of topics, themes and perspectives related to the research question.

Nature-based therapy is an emerging and contemporary research area. The explorative nature of a literature review was appropriate, so not to be confined or constrained to one specific subject area. The literature discussed in this chapter includes published research articles, books, webpages, and health service and government documents. The topics explored include the human connection with the natural world, urban living, nature-based therapy and its corresponding theories, physical health and nature, the medical model in healthcare, recovery, co-production, peer support and social prescribing. The interrogation of current research identifies a gap in the literature and current knowledge, thus supporting the researcher in justifying the implementation of their study.

2.2 Search strategy

Key words: Nature-based therapy, Eco-therapy, Bogs in Ireland, Wetlands in Ireland, Bog therapy/Wetland therapy, Co-production, Social prescribing, Recovery, Mental health care in Ireland, Nature connectedness, Nature relatedness, Mental health, Physical health.

Search engines: Dundalk Institute of Technology Ebsco library database, PubMed, Science Direct, Google Scholar, Google, Health Service Executive Website.

Literature review inclusion criteria:

- Quantitative studies;
- Qualitative studies;
- Studies published within the last 20 years;
- Historical data to provide context and understanding;
- Literature that is related to the research topic;
- The inclusion of peer reviewed and high quality research studies.

Literature review exclusion criteria:

- Literature is not relevant to the research topic;
- Poor quality research with methodological flaws;
- Studies that have not been peer reviewed;
- Research from unreliable sources;
- Studies that contain missing data.

2.3 Nature and Humans

Nature provides us with the air we breathe, the food we eat and the water we drink, all fundamental to our survival (Brauman et al, 2020). Humans had a harmonious and symbiotic relationship with the natural world for thousands of years, in which nature's elements were viewed as sacred and all living things were equal (Yakar, 2018). Historically, humans lived in small rural communities close to nature and while cities have existed for thousands of years, urban living has accelerated dramatically in the past century (Cox et al, 2018). As humans move away from nature, this ruptures their

relationship to the natural world as they perceive nature as a separate entity, and natural resource exploitation is permitted with little consideration for the repercussions to humans, other animals and the environment (McGeeney, 2016).

In Ireland, the importance of human connection to nature and the land can be traced back for thousands of years (Morton, 2022). Neolithic monuments in Ireland signify the ancient and sacred connection that Irish ancestors had with nature, and the important role that it played in their lives (Blake and Reilly, 2013). Bogs have important archaeological and cultural significance, as the absence of oxygen in peat preserves ancient landscapes, artefacts and even bog bodies, giving a glimpse into ancient Ireland and its ancestral heritage (Chapman et al, 2018).

2.4 Nature Connectedness

The concept of having a relationship with nature is known as 'nature connectedness', which is defined as "the extent to which an individual includes nature within his/her cognitive representation of self" (Schultz, 2002). Nature connectedness is determined by the amount of direct contact and exposure one has with nature during their lifetime, their knowledge and belief systems, emotional responses and available resources (Collado et al, 2015, Ives et al, 2018). Bashan et al (2021) found that nature connectedness is higher for those living in rural areas compared to those living in urban areas. In recent years, connectedness with nature has decreased, as digital and technological advancements have increased, as evidence suggests we now spend only 10% of our time outdoors (Frumkin et al, 2017). These lifestyle factors have created a barrier in the relationship to natural environments (Ives et al, 2018). This disconnection from the natural world is thought to be one of the major contributors to the world's climate crisis, as reduced opportunities to interact with the natural environments, loss of emotional affiliations with nature and societal attitudes that do not place value on connections to nature, have resulted in the commoditisation of the natural world (Soga and Gaston, 2016). Nature connectedness may predict more environmentally favourable behaviours than environmental knowledge and education (Otto and Pensini, 2017). Similarly, nature connectedness is linked to increased sustainable and ecologically beneficial behaviours (Rosa and Collado, 2019). The

term ‘nature deficit disorder’ was devised by Richard Louv, who attributed the manifestation of physical and mental illnesses in children with behavioural, attention and sensory deficits as a result of spending limited time in nature (Louv, 2005).

Urban areas with sounds created by humans may act as chronic stressors to the brain, having negative consequences on mental health and cognition, as the constant stimuli result in a psychological state of constant alertness (Stobbe, 2022). Subconsciously, the human brain may perceive these stimulating noises as signals of danger, even while sleeping (Suter, 1991). This idea was supported by an Irish study which found that traffic noise in residential areas was associated with a poorer quality of life for older adults (Mac Domhnaill et al, 2022). Urban noises may also increase an individual’s risk of developing dementia in later life (Meng et al, 2022).

In contrast to this, sounds from natural outdoor habitats, including water, wind and birdsong may reduce stress and restore attention. This is because humans instinctively associate these sounds with a soothing and safe environment (Ratcliffe, 2021). This is supported by a study in the UK, which aimed to explore the impact of birdsong on mental health. Participants (n=1292) recorded their interactions with birds, and the effects this had on their mood. The results showed long lasting improvements in mood and well-being for those with and without a diagnosis of a mental health disorder (Hammoud, 2022). A similar study in Germany, found that exposure to birdsong reduced feelings of depression, anxiety and paranoia for the participants (Stobbe et al, 2022).

Fisher et al (2019) explored the impact of green and blue outdoor spaces in urban areas on well-being. Participants (n=512) reported increased feelings of happiness, satisfaction, well-being and nature connectedness following visits to green and blue spaces. This is reiterated by Nath et al (2018), who found increased well-being, mindfulness and stress reduction for participants (n=310) who spent time in green spaces while living in urban areas. Green spaces have been shown to increase social cohesion and encourage social connections and health promoting behaviours in urban areas, reducing feelings of loneliness and benefiting overall quality of life (Jennings and Bamkole, 2019). These findings highlight the importance of accessible nature spaces in urban areas.

Connection to the natural world can act as a protective factor during times of adversity and isolation, as was demonstrated in March 2020, when restrictive measures and lockdowns in Ireland and around the world prevented people from leaving their homes for non-essential reasons, in an attempt to prevent the spread of the novel coronavirus (Kennelly et al, 2020). The COVID-19 crisis has resulted in poorer mental health outcomes for many people in Ireland due to social distancing rules, care changes, reduced access to care, long waiting lists, persistent media reports and higher mortality rates due to the virus (O'Connor et al, 2020). A Healthy Ireland survey found that 81% of respondents (n=7500) felt socially disconnected as a result of the COVID-19 pandemic and 30% reported a worsening in their mental well-being (Healthy Ireland, 2021). Selvaraj (2022) found that those with higher nature relatedness experienced increased perceptions of well-being during the lockdown. While the lockdown measures had negative consequences on many aspects of life, for some, the reduced pace of busy lifestyles and more time spent at home allowed for the development of a stronger connection to nature as Vimal (2022) discovered a positive correlation between the lockdown and increased nature connection. Over 65% of participants (n=1292) had increased interactions with animals and plants, and 30% - 40% felt that these interactions reduced feelings of loneliness. These findings are also reflected by Muro (2023), who explored the benefits of forest bathing and hiking for participants during the COVID 19 pandemic. The results showed increased positivity and mindfulness, and decreased feelings of anxiety and low mood following the interventions. These studies signify the role of the natural world as a mental health support and comfort during the COVID 19 lockdowns, demonstrating nature's ability to provide comfort and connection during times of disease and uncertainty (Muro et al, 2023; Selvaraj et al, 2022; Vimal, 2022).

2.5 Theories Underpinning Nature-Based Therapy

There are two prevailing theories that help us to understand the therapeutic effects that occur due to nature exposure, these are known as the Stress Reduction Theory (SRT) (Ulrich, 1981) and the Attention Restoration Theory (ART) (Kaplan and Kaplan, 1989). The SRT was devised by Roger Ulrich in 1981. This theory suggests that exposure to natural environments and looking at elements of nature, like plants and rivers reduces stress experienced by the individual, as blood pressure and pulse rate

reduce. Emotional restoration and a reduction of negative thoughts also occurs due to the focus of attention on the natural surroundings (Ulrich, 1981). Ulrich believes these natural responses developed as human evolution occurred in these environments, causing humans to have a natural affiliation with them for their survival (Ulrich, 2023). A study that supports this theory conducted by Hunter et al (2019) aimed to explore the stress experienced by participants before and after spending time in nature. Stress levels in the participants (n=36) were measured using salivary amylase and salivary cortisol. The results showed a significant reduction in the salivary stress markers, an average of 21% in cortisol and 28% in amylase (Hunter et al, 2019). Similarly, a study in Japan saw a marked reduction in salivary cortisol levels and pulse rate, and an increase in feelings of relaxation for its participants (n=17) following a forest therapy intervention (Ochiai et al, 2015).

The second prevailing theory ART was developed by Stephen and Rachel Kaplan in 1989 and suggests that time spent in nature can improve concentration and reduce brain fatigue. This occurs as time spent in natural settings promotes more ‘effortless’ brain activity, which enables the brain to regain and restore its ability for directed attention (Kaplan and Kaplan, 1989). ART has four key elements which are; the extent in which one feels connected to nature, being away from the stressors of life, soft fascination which allows for effortless attention, and compatibility ensuring the individual is enjoying the experience (Moreno et al, 2018). A study by Moran (2019) explored ART while working with individuals in prison by having them spend time in green spaces and look at pictures of natural settings. The results showed that the nature interventions brought feelings of peace to 71% of participants, a sense of calmness to 78%, improved focus for 39% and two thirds of those surveyed experiencing reduced mental fatigue (Moran, 2019).

The Biophilia hypothesis was proposed by Stephen Kellert and Edward Wilson in 1993. It suggests that humans have a natural inclination to respond positively to natural surroundings since nature is the habitat in which they evolved (Kellert and Wilson, 1993). This hypothesis served as the foundation for the SRT and the ART’s shared evolutionary perspective (Scopelliti et al, 2019). The extent in which a person feels connected to nature and perceives nature as part of their identity is known as nature relatedness (Nisbet and Zelenski, 2013). Nature relatedness has been theorised to foster 'ecological identity', in which one's sense of self is extended to

embrace not only other people but also living creatures and the habitats surrounding them (Dean et al, 2018).

It is evident that those who spend more time in nature and who receive education emphasizing the importance of nature connection have higher levels of nature relatedness (Otto and Pensini, 2017). Higher levels of nature relatedness correlate with improved physical and mental health, higher perceptions of meaning in life, increased environmental awareness and sustainable behaviours (Dean et al, 2018). Interaction with nature can trigger emotional healing by enabling one to process their feelings and thoughts as they interact with nature using their senses (Adevi et al, 2018). Considering the plethora of evidence that demonstrates the positive effects nature exposure and connection can have on mental well-being, nature-based therapeutic interventions may be a suitable treatment approach for those living with mental health distress or who have received a mental health diagnosis.

2.6 Nature-Based Therapy

Nature-based therapy (NBT) can be described as a therapeutic intervention that uses the natural world and outside space as a facilitator for mental well-being, growth and recovery (Corazon et al, 2010, Naor and Mayseless, 2021). NBT is also known as nature therapy, eco-therapy, nature assisted therapy and green care (Bonham-Corcoran and Armstrong, 2022). NBT can be conducted in a number of ways including farming, horticulture, wilderness therapy, meditation, mindfulness, environmental conservation, exercise in outdoor spaces, nature-based arts and crafts and animal assisted therapies (Chaudhury and Banerjee, 2020). Numerous nature-based treatment modalities have been developed in response to the evidence of the positive impact nature- based interventions (NBT) can have on individual's physical, psychological and emotional well-being (Naor, 2017).

The use of NBT to improve mental well-being can be traced back for centuries in the Western world. There is evidence that during the Hippocratic era of 440–360 B.C.E. doctors recommended time in natural spaces to improve health (Robinson et al, 2020). In Greek and Roman times, outdoor thermal spas and baths were enacted for well-being (Gianfaldoni et al, 2017). The therapeutic approach taken by NBT is known as

'eco-psychology' which focuses on the amalgamation of ecology and psychology to foster healing and strengthen relationships between humans and the natural world (Fisher, 2013). The emergence of eco-psychology can be traced back to transpersonal psychologist Robert Greenway who devised the term 'psycho-ecology' in 1968 (Schroll, 2007). Theodore Roszak is also known for his role in the development of eco-psychology. He wrote multiple books on eco-psychology and its practices and his seminal text 'The Voice of the Earth, an Exploration of Eco-psychology' provides guidance to mental health professionals in relation to NBT (Chaudhury and Banerjee, 2020; Roszak, 1999).

2.7 Nature-Based Therapy in Ireland

There is little evidence of NBT being used as a mental health intervention resource in Ireland prior to the 21st century. Walsh and Daly (2004) mention the use of horticulture and farming as employment for residents in institutional care in their exploration of the history of Irish mental health care, but no reference is made to the therapeutic outcomes of this. There is limited guidance regarding NBT available for mental health professionals in Ireland. There is no reference to the use of NBT in a Vision for Change document (Government of Ireland 2006) or in the Sharing the Vision document (Department of Health, 2020). Despite this, in recent years NBT have become more widespread in Ireland. In 2016, St Patrick's hospital in Dublin developed a community garden where service users participate in gardening groups to support their recovery (St Patricks Mental Health Service, 2016). Solas is an outdoor walking group based in Donegal funded by the health service and provides regular support to those experiencing mental health distress. With a focus on 'Walking, Talking and Listening', co-production and peer support are key approaches used in this service. Feedback from participants highlight the value of the non-judgmental, non-clinical and collaborative approach used. Participants report benefits to their mental health in areas of social connections, confidence, autonomy, and feeling understood and respected (Solas Donegal, 2022). The Comeragh Wilderness Camp in County Waterford provides wilderness and bush craft camps to young people who are experiencing mental health difficulties and behavioral challenges. These events allow young people to connect with nature and others, develop outdoor skills and provide a safe environment for emotional expression (Comeragh Wilderness Camp, 2024). The

Woodlands for Health Initiative was a 12-week programme in Ireland that consisted of exercise in forest settings. The individuals who took part (n=150) were living with mental health distress. Surveys completed by participants showed promising results with a 10.8% rise in nature relatedness, and 31% improvement in well-being. 95% of participants believed that NBT would be useful strategies in aiding recovery (Woodlands for Health, 2020). Nature Therapy Ireland is an Irish organisation who offer NBT interventions in group setting to all members of the public. Their goal is to aid individuals in connecting with nature to support their well-being and health (Nature Therapy Ireland, 2022). This highlights the initiatives available in Ireland in recent years to provide NBT and aid nature connection to support those experiencing mental health distress (Comeragh Wilderness Camp, 2022; Nature Therapy Ireland, 2022 Solas Donegal, 2022; Woodlands for health, 2020; St Patricks Mental Health Service, 2016).

2.8 Nature-Based Therapy – an International Exploration

In the United Kingdom (UK), NBT has become more widespread in recent years, as interest in the therapeutic potentials of nature have increased (Bragg and Leck, 2017). The Blue Prescribing project is a bog therapy programme run by the Wildfowl and Wetlands trust. Their aim is to conserve the UK's bogs, and to foster nature connection and mental well-being (Wildfowl and Wetlands Trust, 2021). Participants, who had been diagnosed with depression or anxiety, took part in a 6-week course in which they spent two hours each week engaging in activities such as birdwatching and walking. Questionnaires and focus groups showed the significant benefits for anxiety, emotional well-being, stress reduction, social inclusion and physical health (Maund et al, 2019). These findings are corroborated by the results of a similar study in which participants (n=36) reported improvements in their mood following bog exposure, particularly those with pre-existing emotional difficulties (Reeves et al, 2019). The UKs Ecominds initiative, which financed 130 nature therapy projects, showed that 70% of those who took part (n=12000) noticed marked improvements in their mental well-being, and self-esteem increased by 11% (Farmer, 2014). This is reflected in 'a dose of nature' initiative in which participants (n=48) experienced reductions in anxiety and depression, well-being increased on average by 69% with confidence and social skills improved (Bloomfield, 2017).

The use of NBT is also growing worldwide. NBT has been found to support those living with psychotic and affective disorders with significant improvements for participants (n=50) noted in areas of depression, confusion, anxiety and dejection (Bi,elinis et al, 2019). This is mirrored by Heard et al (2022) who reported feelings of peace, connection to nature and others, mental restoration and resilience for participants who were living in a forensic mental health unit following a nature group intervention. In Japan the concept of 'shinrin yoku' or forest bathing involves the mindful focus of attention on one's senses while in a nature setting, and has been used since the 1980s to support mental and physical well-being (Plevin, 2018). Shinrin yoku has been commended for its restorative effects and has been shown to improve mood, especially among those living with a clinical diagnosis of depression (Furuyashiki, 2019). These findings are mirrored in another study in China, which found that a forest bathing intervention reduced activity of the sympathetic nervous system, and activated the parasympathetic nervous system for participants, supporting nervous system and emotional regulation (Wen et al, 2023). It is evident from the current research that NBT to support mental health and wellbeing have many therapeutic and beneficial effects in Ireland, in the United Kingdom and around the world.

2.9 The Benefits of Biodiversity

Bogs in Ireland are known for the biodiversity, with a large range of plants and animals living and breeding on them, comprising 40% of all species in Ireland (Irish Wetlands Committee, 2018). In Australia, research investigated the impact of biodiversity on well-being, finding that participants (n=4912) reported higher levels of well-being in areas with higher biodiversity of plants and animals (Mavoa et al, 2019). A similar study in Germany found a positive correlation between increased richness of bird and plant species and improved mental health (Methorst et al, 2021). Correspondingly, Cox et al (2017) in the UK found that participants (n=263) reported higher levels of mental well-being in areas with diverse species of birds and vegetation. These studies emphasize the therapeutic implications of biodiverse environments and highlight bogs as a favourable location for NBT (Methorst et al, 2021; Mavoa et al, 2019; Cox et al, 2017).

2.10 Nature's Role in Supporting the Microbiome

Exposure to natural environments can support the development of a healthy microbiome. Microbiome refers to micro-organisms in the body which effect mental wellbeing, immunity, nutrition and metabolism (Ghosh, 2022). The microbiome of the gut is thought to play an important role in mental health development as hormones and neurotransmitters which develop in the gut send messages to the brain (Clapp et al, 2017). The gut microbiome of individuals living with mental health disorders have shown to function differently to those without, as transportation of neurotransmitters from the gut to the brain is impaired (Butler et al, 2019). Yuan et al (2019) found that inflammation in the gut acted as a biomarker for mental ill-health and chronic inflammation increased the risk of developing a mental health disorder. Nature exposure may have a beneficial effect on mental well-being not only through its psychological benefits but also due to physiological changes in the gut microbiome (Wong and Osbourne, 2022). This is demonstrated in a study which found an increase of serotonin and healthy gut bacteria for play-school children (n=54) who participated in an outdoor play group for 10 weeks (Sobko et al, 2020). These studies solidify the importance of spending time in natural environments to support mental health and reduce the risk of developing diseases by supporting the bodies' microbiome (Wong and Osbourne, 2022; Sobko et al, 2020).

2.11 Mental Health Symptoms

Sleeping difficulties are often experienced by those living with a mental illness. Insomnia, hypersomnia, interrupted sleep and poor quality of sleep are common sleeping difficulties, and these can have further repercussions on mental well-being (Wainberg et al, 2021). Gladwell (2016) discovered that vagal activity and restorative sleep was greater following a nature walk in comparison to walking in an urban area. Johnson et al (2018) supported these results in their findings which found that spending time in nature improved sleep duration. These findings support the use of NBT for those living with a mental illness in order to support their quality of sleep, thus benefiting their overall well-being (Wainberg et al, 2021; Gladwell, 2016).

Van der Berg and Beute (2021) noted a significant therapeutic effect for those (n=40) experiencing burnout and high levels of stress following a ‘walk and talk’ group aiming to support their mental health. Furthermore, Bratman (2015) and Bratman (2021) determined that neural activity in the prefrontal cortex area and rumination levels decrease following a walk in nature. These studies highlight nature’s role as a protective and preventative factor for those living with chronic stressors and adverse experiences who may be at risk of developing a mental illness (Bratman, 2021; Van der Berg and Beute, 2021; Bratman, 2015).

Those living with a diagnosis of a mental illness, are more likely to experience co-morbid physical health problems (Momen et al, 2020). Factors contributing to this risk include poor dietary intake, reduced physical activity, smoking and unwanted complications associated with psychotropic medications (Ee et al, 2020). This leaves those living with mental illness more at risk of developing respiratory and cardiovascular diseases, metabolic syndrome and diabetes. In Ireland, the mortality rate of those living with severe and enduring mental health difficulties is two to three times that of others in their communities (Collins et al, 2019). A recent study in Denmark found that individuals living with a mental health disorder have a life expectancy that is 7–10 times shorter than those in the general population (Plana-Ripoll et al, 2019). Early detection and interventions for mental illness and co-morbid conditions, along with psychoeducation regarding health and self-management may help in reducing physical health problems and premature mortality for these individuals (Momen et al, 2022). In Japan, a forest therapy programme proved to significantly lower blood pressure and pulse rate for participants (n=128) following the intervention (Yu, 2017). Reiterating this, NBT in a forest setting has also shown to benefit cardiovascular and metabolic systems for participants (n=19), with reduced blood pressure, pulse rate and adrenaline (Li, 2016). NBTs promote physical activity in a meaningful and engaging way, which supports health and well-being (Maier and Jette, 2016). These studies emphasize NBT as beneficial in supporting the cardiac and physical health of those living with, or who are at risk of developing co-morbid physical health conditions (Yu, 2017; Li, 2016; Maier and Jette, 2016).

2.12 The Medical Model

The clinical approach to mental health care is known as the biomedical model, which views mental ill health as a disease resulting from chemical imbalances and genetic disturbances in the brain (Handerer et al, 2021). In traditional psychiatry practices, a hierarchal model was enacted in which the mental health professional was presumed to know the best interventions and have control over the treatments received by the service user (Le Boutillier, 2015). These practices often failed to consider the wishes and values of those receiving treatment, leaving them feeling disempowered and undermined, highlighting the importance of a collaborative approach (Pledger, 2018). While the biomedical model is still evident in areas of the Irish mental healthcare system, questions regarding its efficiency and functionality have arisen in recent years. The Mental Health Commission in Ireland have advocated for the continued reform of the Irish mental health services to ensure high quality, person-centred and community based care (Mental Health Commission, 2018). This has influenced the implementation of a recovery orientated service as the dominant approach to care (Norton, 2021).

2.13 Traditional Psychotherapeutic Interventions

Pharmaceutical interventions are often the initial treatment used to support an individual in the management of their mental health disorder (Begum et al, 2020). Psychiatric medications are grouped into four categories known as anti-depressants, anti-psychotics, anxiolytics and mood stabilisers. These medications alter chemicals in the brain to relieve symptoms (Ivanov and Schwartz, 2021). Although psychotropic medications can assist in symptom reduction and management, they often have unwanted and debilitating side effects including emotional numbness, weight gain, cardiovascular complications, parkinsonism, drooling, sweating and in severe cases neuroleptic malignant syndrome (Ejeta et al, 2021). To reduce the possibility of unwanted side effects, it is crucial for the prescribing psychiatrist to ensure an appropriate and individualised prescription for each individual, thus maintaining their dignity and quality of life (Cipriani et al, 2018). Recent evidence suggests that the effectiveness of pharmaceutical and treatment modalities may have been overstated as a result of a number of clinical research study flaws including; bias, the inclusion of poor comparative populations, and researcher loyalty (Leichsenring, 2022). This is

mirrored by Driessen et al (2015), who found that while antidepressant medications can be effective in the treatment of depression, research bias has resulted in the over inflation of these benefits. This highlights the need for further research into the true effectiveness of pharmaceutical interventions in the treatment of mental illness. Globally, the prescription of psychiatric medications is increasing by 4% every year, with the greatest increases observed in antidepressant medications (Brauer et al, 2021). In England, the consumption of antidepressant medications has almost doubled in the last ten years (Davies et al, 2023). In 2019, it was estimated that 500,000 people in Ireland were prescribed antidepressant medications (Lucey, 2019). Similar increases in prescription rates of other psychiatric medications such as antipsychotics and mood stabilisers have also been identified (Roberts et al, 2018). For individuals who desire cessation of psychiatric medications for many reasons including unwanted side effects, no notable benefits and a desire for autonomy, there is a lack of evidence based literature available in relation to the safe reduction and discontinuation of psychiatric medications. The withdrawal effects of psychotropic medications can be severe and long lasting, with more research needed on this subject (Bowers et al, 2021). In 2016, Ireland had the third highest rate of mental health disorders in Europe, with 18.5% of the population experiencing mental health conditions such as anxiety, depression and bipolar disorder (Mental Health Ireland, 2016). Research in 2022 estimated that 42% of adults in Ireland are living with a mental health condition (Hyland, 2022). It is clear that rates of mental illness in Ireland are increasing, this is correlated with increased prescription rates of psychiatric medications. However, it is evident that pharmaceutical interventions alone are not a long term solution.

The use of psychotherapeutic interventions known as ‘psychotherapy’ are also utilised to support those experiencing mental health distress, including trauma informed therapy, talk therapy, family based therapy, and cognitive behavioural therapy (Brenner and Howe-Martin, 2020). These therapies involve the individual talking with a trained professional in a group setting or one on one, to work through difficult emotions and experiences, while developing beneficial coping mechanisms (Government of Ireland, 2020). A meta-analysis by Cuijpers et al (2016) found that while cognitive behavioural therapy can be beneficial in the treatment of anxiety and depressive disorders but many studies in this area are affected by issues such as bias, poor methodological quality, and inadequate control groups. Today in Ireland, mental

health treatments offered by the Health Service Executive often combine the use of pharmacological and therapeutic interventions (O'Doherty et al, 2018). Social and community initiatives, along with peer support services are also provided to support service users in their mental health journey (Department of Health, 2020). Recovery from mental illness and mental health distress is influenced by a multitude of biological, psychological, emotional and social factors (Jaiswal et al, 2020). It is clear that additional and alternative supports are needed in Ireland to promote recovery and healing for those living with mental health distress. The development of mental health promotion initiatives in conjunction with traditional psychotherapeutic approaches may be a solution to address the rising mental health needs of the population.

2.14 Recovery

Anthony (1993, pp.21) defines recovery as a "process of changing one's attitudes, values, feelings, goals, and skills in order to live a satisfying life within the limitations caused by illness". Recovery encompasses one's ability to live a fulfilling and meaningful life while living with and managing their mental health difficulties or illness (Trenoweth, 2016). Individuals experiencing mental health issues are encouraged to engage in their own recovery processes using self-responsibility and autonomy. A contextualized and humanistic understanding of therapeutic intervention is used as an approach to mental health care in place of the biomedical model in the recovery-focused approach (Glover, 2012). Mary Leamy and Mike Slade developed the 'CHIME' recovery acronym in 2011. CHIME stands for Connectedness, Hope, Identity, Meaningful role and Empowerment and encompasses the processes that emerge during recovery (Leamy et al, 2011). Recovery is about identifying and supporting a person's strengths, interests, and goals rather than focusing on "getting rid" of their issues. It focuses on the individual, rather than a set of symptoms related to their mental health diagnosis (Jacob, 2015).

The concept of recovery first appeared in the 1980s in the U.S.A. following deinstitutionalisation and since then, it has grown globally as a primary approach to mental health care to replace the biomedical model (Davidson, 2016). Ireland's former mental health policy a Vision for Change (Government of Ireland, 2006) identified recovery as an approach to care but provided limited guidance on how it should be implemented in practice.

The HSE proposed a recovery framework in Ireland known as the 'National Framework for Recovery in Mental Health' (HSE, 2017). This framework proposes a mental health service aimed at delivering a recovery and individual focused approach to care. The framework identifies recovery principles, peer support workers and recovery colleges as key approaches to the development of a recovery orientated service (HSE, 2017). In recent years, the recovery model has become the dominant approach to mental health care in Ireland. This framework is supported by Ireland's current mental health policy 'Sharing the Vision, a mental health policy for everyone', which identifies the recovery approach as a central principle in mental health care (Department of Health, 2020).

The recovery ethos has influenced the reformation of mental health practices, policies and legislation around the world (Shera and Ramon, 2013). Recovery orientated services have become the dominant approach in mental health care in many countries including Australia, Canada, England, Germany, New Zealand, the United States, the Netherlands, and Norway (Pincus, 2016). Ireland's inspiration and guidance on the implementation of recovery came from international recovery policies in England, Canada, and Australia (Health Service Executive, 2017), notably the Sainsbury Centre Recovery strategy developed by the National Health Service in the UK (Shephard et al, 2009).

Advancing recovery in Ireland is a health service initiative that aims to promote recovery in Irish mental health services by merging the knowledge of service users, their families and health care professionals (HSE, 2024). Advancing recovery in Ireland aims to foster collaboration and communication among stakeholders, develop recovery education programmes, empower service users and implement best practice recovery guidelines (Collins et al, 2016). The National Framework for Recovery in Mental Health sets out four recovery principles that should be followed to adopt a recovery orientated mental health service; the importance of the individuals lived experience of mental health, the use of co-production and a collaborative approach, an organisational commitment from services to a recovery approach, and the use of recovery based learning and practices (HSE,2017). A lack of consistency in transferring recovery policies into practice has been identified as a barrier to the implementation of recovery orientated mental health services in Ireland (Schwartz et al, 2013). O'Keefe et al (2018) explored the perceptions of service users (n=20) in

Ireland regarding the application of recovery polices in the mental health services over time. While some participants felt that a recovery ethos had been integrated into their care providing empowerment and equality, others reported a lack of guidance or education regarding recovery.

Recovery based interventions support individual's in their recovery goals due to the collaborative approach, skill enhancement and the promotion of social connection, as demonstrated by Sinnott and Rowlis (2021) who supported service users (n=7) by participation in a gardening and woodwork group in Wexford. This was reflected in the Refocus recovery group, as participants (n=37) enjoyed the collaborative approach with staff and the focus on goals, strengths and empowerment (Wallace et al, 2016). The aforementioned literature shows the therapeutic value of a recovery approach but highlights the need for guidance and support, suggesting that more up to date research is needed to determine the implementation of recovery orientated practices throughout Ireland (Sinnot and Rowlis, 2021; O'Keefe, 2018; Wallace et al, 2016; Schwartz et al, 2013).

Swords and Houston (2020) aimed to explore perspectives of recovery in Ireland from multi-disciplinary team members. Findings indicated a positive view of recovery from mental health care professionals, who viewed it as a beneficial and effective therapeutic approach. Recovery approaches are also perceived to be helpful in promoting strengths and autonomy for clients, and assisted in the development of therapeutic relationships (Chang et al, 2021). The integration of recovery principles by mental health professionals in the care they provide has shown to enhance health outcomes and provide a positive experience for those receiving support (Sánchez-Guarnido et al, 2024). It is argued that a biomedical model is still dominant in the Irish health services today and that a recovery approach can be difficult to implement due to imbedded hierarchal beliefs, identifying areas of improvement (Swords and Houston, 2020). Barriers to the implementation of a recovery model include a lack of organisational guidance and systematic barriers, traditional mental health models, strict risk assessment procedures and stigma (Ørjasæter and Almvik, 2022; Chang et al, 2021). Co-operation and commitment from all stakeholders is necessary to ensure the successful implementation of a recovery focused mental health service (Holwerda et al, 2016). These studies highlight professional's positive attitude towards recovery and the benefits of the implementation of recovery principles in mental health care, but

also the need for organisational shifts to ensure the true expression and promotion of a recovery orientated approach (Ørjasæter and Almvik, 2022; Chang et al, 2021; Swords and Houston, 2020; Holwerda et al, 2016).

The healing potentials of nature can support individuals in their mental health recovery and provides a contemporary, holistic and progressive approach (Adams and Morgan, 2018). Receiving mental health care in a natural setting engages service users with therapeutic interventions in a non-clinical environment, unlike many traditional approaches, thus promoting recovery, hope, empowerment and connection (Tambyah, 2022). This highlights the role of NBT in the promotion of a recovery ethos in mental health care.

2.15 Co-Production

Co-Production (CP) is a key aspect of the recovery process. CP involves the creation of an equal and collaborative mental health service by merging the knowledge of both mental health professionals and service users to reach therapeutic goals (Redman, 2021). Co-productive practices include participants in the planning, organization and evaluation of interventions and as active members of the multi-disciplinary team, promoting empowerment and self-autonomy (HSE, 2018). CP is a system that realizes the importance of service user's lived experience. Lived experience refers to the expertise and knowledge gained by an individual while living with a mental illness (Kohrt et al, 2021). This influences positive changes in mental health care services and enhances pre-existing skills (HSE, 2018). The practice of CP allows the person to reconstruct their identity, beyond the labels of mental illness and support them in playing an active social role in their community (Rose and Beresford, 2018). There are many definitions of CP available, this may be due to the different approaches, visions and purposes of CP (Filipe et al, 2017).

Elinor Armstrong originally coined the term 'CP' during her work as a scholar in the 1970s (Norton, 2021). A set model of CP has not been developed. While this can be challenging, it allows for flexibility, creativity and the use of initiative when participating in CP (Norton, 2019). CP has been criticized due to this lack of direction and limited guidance, but findings have indicated that it is structural and organisational shortfalls

which hinder the use of CP in practice (Williams et al, 2016). Gheduzzi et al (2021) identified poor engagement and a lack of trust as possible hindering factors to CP but stresses the importance of assessment and effective communication throughout the CP process to rectify any difficulties that may arise.

The HSE published a guidance document known as the 'CP in Practice Guidance Document' in 2018 to support the implementation of a recovery focused mental health service in Ireland. This document sets out the core elements of CP which are co-designing, co-implementation and co-evaluation (HSE, 2018). In CP the mental health professional and individual work together to reach a shared decision. The facilitator's role includes discussing the options that are available, considering any risks and benefits, answering questions, the clarification of the individuals' preferences and abilities, ensuring the person's understanding, and collaborating to make a decision (Slade, 2017). The challenging of traditional power dynamics often present in psychiatry is a key concept of CP (Sommer et al, 2018). An ethos of non-judgment, self-awareness and curiosity must be adopted by the mental health professional to honour and integrate the knowledge, and wishes of the individual gained through their lived experience (Soule, 2022). Service users and mental health professionals can create new knowledge about treatment and recovery from mental health disorders by exchanging information and working as part of a team. This may assist in the evolution of person-centred mental health care, reduce care costs both to the individual and mental health services, and promote better health outcomes (Brand and Timmons, 2021). CP has many benefits, on both individual and organisational levels. Those who participate feel empowered as self-awareness and understanding is nurtured, while mental health services promote an ethos of participation, recovery, empowerment and safety (Guarino et al, 2024).

Throughout Ireland, recovery colleges have been established to support those experiencing mental health distress. Recovery colleges provide a range of courses and educational training focused on recovery and empowerment. CP is the core ethos of recovery colleges, as training is facilitated by mental health professionals, those with lived experience and their family members (Recovery College, 2022). Evaluations of recovery colleges have shown positive results, as focus groups with participants (n=16) highlight positive identity, empowerment, hope, belonging and community as benefits. Recovery colleges focus on education rather than 'treatment' which creates

a safe and welcoming environment (Jay et al, 2017). Recovery colleges also motivate mental health professionals to reflect on personal practices and attitudes, while promoting organisational change steered towards recovery and CP (Zabel et al, 2016). Peer support, CP and a safe environment are key elements identified to support service users in recovery college settings (Kenny et al, 2020).

Co-produced recovery college courses increase community integration due to social inclusion and connections and reductions of negative stereotypes and attitudes towards those experiencing mental health difficulties (Crowther et al, 2019). CP in recovery college promote equal creation aspects, and attendees (n=25) voice their appreciation for having their experiences and expertise acknowledged (Ali et al, 2022). This is reflected in an Irish study which explored the use of CP between staff and service users (n=7) to produce visual art pieces, identifying CP as a beneficial approach to supporting the recovery process by fostering collaboration, liberation, self-revelation and creativity (McCaffrey et al, 2021). In a similar study, Hubbard et al (2020) co-produced a nature walk intervention with input from a service user and members of the multi-disciplinary team. The co-productive aspect of this project was considered useful as the knowledge and lived experience held by the service user ensured a realistic and practical approach. In another study, those participating in co-produced mental health services (n=37) had a 63.2% reduction in acute hospitalization in comparison to those who attended the traditional service (n=40). Those in the CP group were more likely to attend their service, and 39% had reductions in medications, in contrast to a rate of 22% in the control group. In the UK, CP programmes support young people attending mental health charities, with positive influences on self-worth, self-esteem and self-efficacy, empowerment and equality supporting the development of identity (Mayer and McKenzie, 2017). Cultural attitudes from staff have been identified as hindering factors of the co-productive process, stressing the importance of self-awareness and accountability (Ali et al, 2022).

CP is a key approach in fostering a recovery orientated mental health service that values and incorporates the experience and voices of those accessing support (HSE, 2018). CP clearly promotes empowerment, equality, teamwork and self-efficacy and ensures a dignified and person-centred ethos in mental health care. CP acknowledges the lived experiences of each individual and provides an opportunity to express their opinions, wishes and ideas in a safe and collaborative environment (Ali et al, 2022;

McCaffrey et al, 2021; Hubbard et al, 2020; Kenny et al 2020; Crowther et al; 2019; Mayer and McKenzie, 2017; Zabel, 2016).

2.16 Peer Support Workers

Peer support workers are individuals who have personal lived experience of mental health distress and recovery, and use this knowledge and understanding to support others in their recovery journey (HSE, 2024). In Ireland, peer support workers empower others with the expertise gained by their lived experience, fostering a recovery ethos. Their role includes the promotion of a recovery approach, rights advocation, facilitation of mental illness management, providing hope, promoting stigma reduction and enhancing communication between services and service users (Guarino et al, 2024; Naughton et al, 2015). A study by Hunt and Burn (2019) was conducted to explore the impact of peer support workers working in the mental health services in Ireland. Those who attend the mental health services in Ireland perceive peer support workers as beneficial in areas of recovery, support, hope, community involvement and empowerment. In the UK, a peer support group known as Peertalk, has been successful in providing an accessible service, that enhances social connections, CP, relatedness with others and therapeutic support for those who attend (Beard et al, 2024). Mirroring this, peer support has been identified as a pivotal factor in the recovery process as peer support workers symbolize hope and act as advocates for service user's (Poremski, 2022). Peer support workers have faced challenges in their in-service enhancement and development including imbedded cultural practices which result in stigma and discrimination, negative stereotypes regarding mental health and socioeconomic factors that hinder leadership opportunities (Sunkel and Sartor, 2022).

Peer support within mental health care systems clearly promotes co-production, autonomy, advocacy, empowerment, and a strong recovery-oriented ethos. However, institutional barriers must be acknowledged to ensure the success and expansion of peer support, ensuring a recovery focused and co-productive ethos in the mental health services (Beard et al 2024; Guarino et al, 2024; Poremski, 2022; Sunkel and Sartor, 2022; Hunt and Byrne, 2019; Naughton et al, 2015).

2.17 Social Prescribing

Social prescribing (SP) can be defined as an intervention which fosters community connections and supports mental, social and physical well-being in a non-clinical environment (National Academy for SP,2020). These interventions are usually facilitated in local community settings and by voluntary groups. SP supports recovery by enabling individuals to forge social connections with others, participate in meaningful activities and develop new skills (Mahut and Fortune, 2021). SP builds on existing strengths held by the individual rather than focusing on their mental health diagnosis, promoting recovery and supporting the development of resilience for individuals and their wider communities (Henry and Howarth, 2018). A person may be signposted to an SP group by a community healthcare professional or choose to engage through self-referral. In other circumstances, an SP link worker may meet with the individual to discuss their desires and values and build rapport, developing an intervention that is appropriate to their individual needs (HSE, 2019). A study in Ireland found that receiving support from a SP link worker was reported to be beneficial by 70% of participants (n=12), all of whom were experiencing co-morbid mental health distress (Kiely, 2021). SP can act as a first line of treatment for those presenting to general practitioners and primary care services with mental health difficulties, enabling the provision of therapeutic and social interventions without the need for specialised mental health treatments (Aughterson et al, 2020). SP can act as an alternative to pharmacological interventions, or in adjunct with medications, thus providing a multifaceted approach to the biological, psychological and social aspects of mental wellbeing (O'Shea et al, 2017). SP offers a solution to organisational barriers that hinder access to mental health care such as long waiting lists and lack of appropriate services (Morris et al, 2022). SP may be particularly beneficial to vulnerable populations who are less likely to receive appropriate care such as those from ethnic minority groups due to cultural and language barriers (Husk et al, 2019) and those from socially disadvantaged backgrounds due to insufficient resources and care pathway barriers (Gupta, 2021).

Men's Shed is a community-based social prescribing programme in Ireland, comprising over 450 sheds nationwide and engaging approximately 10,000 men each week." Men's shed aims to promote social connections and community involvement

for men by taking part in activities such as gardening, metalwork, woodwork and community initiatives (Mens Sheds, 2019). To McGrath et al (2022) explored the effectiveness of Men's Shed, men who attended (n=461) completed a questionnaire about their experiences when commencing the programme and at 3, 6 and 12 month intervals following commencement. Results showed that over time, well-being, life satisfaction, trust and physical activity levels significantly improved, while feelings of loneliness decreased. The 'Get Well Connected' programme was a SP initiative that took place from 2018-2020 in Dublin. Participants (n=21) were referred to a range of SP groups which included walking, gardening and projects in their local communities. Well-being improved on average by 39% and participants reported an increased sense of community and belonging (Gage et al, 2020).

SP may offer a solution to the loneliness often experienced by those experiencing mental health distress (Reinhardt, 2021). Growing research has linked loneliness to a number of harmful psychological and physical effects, making it a major public health issue around the world (Cacioppo & Cacioppo, 2018). Loneliness has been shown to increase the risk of developing mental health disorders such as anxiety and depression (Steen et al, 2022). Loneliness also increases the risks of premature death, the development of cardiovascular disease and dementia (Donavan and Blazer, 2020). Humans are naturally social beings who need social connections and community to thrive (Peterson et al, 2019). Worryingly, loneliness and social isolation increases the risk of premature death. In an Irish survey, Ward et al (2019) found that loneliness is higher in older populations, with one third of adults over 50 experiencing loneliness sometimes and 7% of these feeling lonely often. Loneliness was also associated a reduced quality of life, poorer physical health and a higher risk of depression. Loneliness has been identified as a predictor of poorer recovery outcomes for those experiencing mental health distress (Wang et al, 2020). A UK study involving 60 participants aimed to reduce loneliness through a 12-week SP programme. Following the intervention, 72.6% of participants reported a reduction in feelings of loneliness (Foster et al, 2020). A similar mixed methods study in the UK, supported individuals experiencing loneliness with an SP intervention. Participants (n=19) reported increased social support and relationships which helped to combat their loneliness (Kellezi et al, 2019).

In Ireland, SP services are available from the Health Service Executive and voluntary organisations in 30 locations nationally. Horticulture groups, art and drama, exercise, men's shed, literary groups, self-help programmes and music groups are some examples (Health Service Executive, 2021). The HSE SP Framework (2021) outlines key elements and was developed to guide mental health practitioners and services in delivering SP using a common approach. This framework highlights that governance from healthcare organisations, sufficient government and community funding and suitable implementation strategies are vital to ensure the development of successful SP interventions in Ireland. The Sharing the Vision mental health policy identifies SP as a major approach to support community integration and connection for those experiencing mental health difficulties and social inequalities (Department of Health, 2020).

Aughterson et al (2020) explored the attitudes of general practitioners towards SP in the UK. While participants (n=17) valued SP and emphasized the importance of non-medical interventions, they identified a lack of training regarding referral processes and limited knowledge of the resources available as barriers to effective SP. SP link workers also identified inadequate training to support complex needs, poor communication between community and health providers, and long re-referral waiting lists as hindering factors to effective SP (Wildman et al, 2019). Frostick and Fellow (2019) identified key social and health principles for successful social prescribing in the community. These included clear referral pathways and collaboration between all stakeholders that must be adopted to ensure successful SP in primary care services. A recent Irish study found that evaluations to explore the impact of SP interventions are inconsistent and vary among organisations, highlighting the need for standardised evaluation strategies following SP to identify specific therapeutic outcomes (Connolly et al, 2024).

2.18 Green Social Prescribing

The use of NBT in SP, also known as 'green prescribing' has become increasingly popular in recent times (Howarth and Lister, 2019). Green social prescriptions combine three elements; natural settings, social connection and enjoyable activities to support the individual, acting as an alternative to traditional treatment approaches (Bragg et al, 2017). Nature-based SP programmes are flexible and can be integrated into many cultural and social environments. In the UK, SP has become increasingly

available from the National Health Service, with campaigns which aim to make it more widespread and accessible (National Health Service, 2019). In 2020, the English government invested £5.77 million in 'green' SP aiming to promote well-being, provide early interventions and forge connections to nature for people and communities (National Health Service, 2020). The outcomes of this project were very successful, and 8,339 people living with mental health difficulties engaged in nature-based social prescription activities. Findings indicate significant improvements in wellbeing, reductions in anxiety and depression symptoms, and enhanced physical wellbeing (Haywood et al, 2024).

The Bridgewater Therapeutic Garden is a nature-based SP initiative in the UK. Gardening is used to promote mental and physical health. Findings indicate increased feelings of well-being, confidence, and social connectedness. Focus groups with participants highlighted the therapeutic and positive effects of the group on their daily lives (Howarth et al, 2020). An almost identical UK study found that a social prescription gardening group provided hope, meaningful social relationships and nature connection for participants (n=20). Health inequalities such as poor mobility and transportation barriers may hinder the suitability of nature-based SP interventions (Fixsen and Barrett, 2022). This is mirrored by Wood et al (2022), stressing the importance of maintaining flexibility and adapting the interventions to suit individual needs and capabilities. A flexible approach supports referral processes, but long waiting lists are identified as a barrier to SP participation. Assessing the effectiveness of SP interventions can be difficult due to the broad and complex challenges they aim to address, as well as the variety of SP models and frameworks available (Drinkwater et al, 2019). While many studies reveal the therapeutic benefits of SP, some reviews suggest that there is limited rigorous evidence to support SP and its effectiveness in improving mental and physical health due to quality and reliability shortfalls, thus identifying a need for further research on the topic (Kiely et al, 2022; Napierala et al, 2022). There is limited evidence of nature-based social prescription programmes in Ireland, however in 2013 a green SP intervention was established in Donegal. The programme consisted of community walks in natural surroundings. Participants (n=194) well-being significantly improved, as well as physical activity levels and blood pressure (Stirrat et al, 2013).

It is clear that SP programmes are a useful strategy in providing localised and community-based initiatives to support mental wellbeing, social inclusion and to reduce feelings of loneliness (Haywood et al, 2024; McGrath et al, 2022; Foster et al, 2020; Gage et al, 2020; Kellezi et al, 2019). Nature based 'green prescribing' interventions also aid social cohesion and nature connection (Wood et al, 2022; Howarth et al, 2020; Stirrat et al, 2013). It is important for facilitators to be aware of possible SP facilitation barriers, and to minimise these by adopting flexibility and continuously assessing the intervention (Fixsen and Barrett, 2022; Wood et al, 2022). It is clear from the literature that there is an opportunity to develop new nature-based SP programmes in Ireland to support health, wellbeing and connection among local communities.

2.19 The Facilitation of Nature-Based Therapy

For mental health professionals who are interested in learning about the facilitation of NBT in Ireland, Nadúr are an organisation who provide NBT training in forest and other natural habitats. Those who take part in the training receive an integrative forest therapy practitioner qualification (Nadur Forest Therapy, 2021). Psychoeducation is an important aspect to consider when delivering NBT, as presenting evidence and a rationale to the individual allows them to develop an understanding of the purposes and goals of the intervention (Duffy, 2022). The location of the natural setting and the activities undertaken during the therapy should be chosen in a collaborative manner, ensuring comfort and empowerment (Reese and Gosling, 2020). This partnership promotes autonomy and equality, challenging the hierarchal approach in traditional psychiatry. When selecting the approach to be used, personal factors such as lifestyle, experiences in nature, physical capabilities, cognitive abilities, preferences and timing must be considered (August and Gewirtz, 2019). The core elements to consider when delivering NBT include the partnership between the facilitator and nature, nature's role as a 'co-therapist', engagement of the body and mind, nature's role in in emotional restoration and regulation, and the promotion of belonging and bonding (Harper et al, 2019). The therapeutic process outlined by Harper (2019) is mirrored by McGeeney (2016) who outlines the pathway one should follow while facilitating NBT. The first phase is preparation, which entails organizing and preparing interventions. The next phase entails the promotion of mindfulness, teamwork, sensory engagement, awareness and breathing. Expression is encouraged using therapeutic conversation,

reflection, stretching, movement and creative arts. Reflection is the final step, in which the facilitator and individual evaluate the experience to determine its usefulness and set future therapeutic goals. This process of reflection is key to integrating the therapeutic benefits of NBT into everyday life (Duffy, 2019). The evaluation and reflection by the individual of their experiences, allows them to incorporate nature into their value system and recognize it as a therapeutic partner in the future (Guiffrida, 2015).

An Australian study explored mental health professional's perceptions of NBT. Findings suggest that practitioners support nature interventions and believed they are beneficial for the development of therapeutic relationships and to promote social connectedness, empowerment and confidence for service users, while also improving mental health symptoms and physical health (Tambyah, 2022). In Japan, forest therapy practitioners were interviewed to explore their views of NBT. The non-intimidating natural environment was thought to assist in the focus of attention and connection to nature, the self and others. Mental health benefits for clients such as relaxation, gratitude and emotional awareness were reported by practitioners (Clarke et al, 2021). These findings highlight the perceived benefits of NBT from the perspective of healthcare professionals with previous experience in this therapeutic modality (Tambyah, 2022; Clarke et al, 2021).

In Ireland's 2024 budget, €1.3 billion has been allocated by the government to the mental health services (Department of Health, 2024). Many individuals cannot access the mental health support they need due to long waiting lists, limited availability of appropriate services, a lack of specialised services and lack of investment (Mental Health Reform, 2018). These highlight the need for alternative, accessible and cost effective mental health treatment options. Annually, five people participating in the Ecominds programme was estimated to save the UK health service £35,413 while reduced demands on the mental health services (Vardakoulias, 2013). NBT can be cost effective due to the wide availability and accessibility of natural spaces while offering an alternative approach to mental health care which may reduce pressures on the healthcare systems, but more research is needed on this area (Hinde et al, 2021).

It is important to consider the barriers that may hinder the delivery of NBT in health care practices. Robinson et al (2020) explored the constraints hindering the effective

delivery of NBT in the UK, these included limited time and funding, reduced availability of services and green spaces, and a lack of understanding regarding NBT. These findings are reiterated by Tambyah et al (2022) as NBT facilitators identified individual barriers including transportation issues, physical health restrictions for service users, and lack of motivation resulting in limited participation, along with institutional barriers such as resistance to change, safety and risk assessing, and a lack of interest were common. Engagement barriers may also be present for potential participants such as reduced confidence or motivation to take part because of their mental health difficulties, and personal and work commitments (He et al, 2020).

These findings highlight the need for an awareness of the possible institutional and individual barriers that may arise during the planning and implementation of NBT, and emphasize the need for awareness, education, training and organisational changes to ensure the successful implementation of NBT in practice (Tambyah et al, 2022; Robinson et al, 2020).

2.20 Gap in the Literature

Although there is growing evidence supporting the therapeutic potentials of NBT and nature connection on mental health and wellbeing, few studies have been conducted within the Irish context. Specifically, bog environments have been utilised in the United Kingdom to facilitate this therapeutic approach (Maund et al, 2019; Reeves et al, 2019). While studies have been conducted in forest habitats in Ireland to explore the link between wellbeing and nature (Woodlands for health, 2020), no studies have been previously undertaken exploring the role of Irish bog habitats and their potential to support healing and mental health enhancement. This gap in current literature and research provides an opportunity to develop a holistic and progressive alternative to conventional mental health interventions in a natural setting. It is evident that a co-produced and recovery focused mental health programme in Irish bogs may provide emotional, psychological, physical and social therapeutic benefits for those attending the mental health services in the Louth, Meath, Cavan and Monaghan areas of North East Ireland. Bogs have been the focal point of heritage and social connection in Ireland for generations. A cultural shift in how Irish society perceives bogs is arising,

from an expendable resource to an invaluable asset for wellbeing and healing. With a correlational rise in mental illness and threats to the environment in recent years, it is an important moment to utilise this resource in a way which is positive for Irish communities and society as a whole. While the benefits of nature immersion may be experienced in a range of natural habitats, the bog habitat is the specific focus of this research due to the biodiverse, cultural and ecological significance of bogs in Ireland.

2.21 Conclusion

This chapter covered the previous research and literature on the topic, contextualising the research topic and thus providing the reader with an understanding of the research subject and justifying the need for the research study in question. The next chapter will outline the methodological approaches utilised in this research study.

Chapter 3: Methodology

3.1 Introduction

Research methodology refers to the theories and philosophical underpinnings, also known as paradigms that guide a researcher and assist them in answering their research question (Swarooprani, 2022). There are multiple factors that may influence a researcher's chosen methodological approach including; the belief systems one holds regarding the nature of reality and knowledge, individual ethical values, the specific research area of study and its supporting literature (Loan Nguyen, 2019).The aim of this research study was to explore the role of bogs in the maintenance and improvement of mental health in a cohort of service users attending the mental health services in the Louth and Meath areas. In order to answer this research question, a mixed methods methodological approach was chosen. In this chapter, both quantitative and qualitative research methods will be explored to provide context and understanding to the reader. Following this, the mixed method strategy will be discussed and its use in this study justified.

3.2 Paradigms

Research is defined by Leedy and Ormrod (2005) as a process in which academics study and comprehend a phenomenon, with an expectation to disseminate and share what they learn with the wider scientific community in their field. A research paradigm can be defined as a worldview that encapsulate the values, attitudes, and beliefs held by a researcher, guiding their perception of the phenomenon in question and the selection of a suitable methodology (Kumar, 2019). In simpler terms, a paradigm is the way in which the researcher perceives the reality of the world around them and the ways to gain knowledge about it (Rehman and Alharthi, 2016). It is imperative that the researcher clarifies and details their chosen paradigm, as this provides ground rules that guide the application of theories, impacts the research methods utilised and influences how the research results are interpreted (Brown and Dueñas, 2020). Research paradigms have different philosophical assumptions which are divided into four components known as ontology, epistemology, methodology and method (Lincoln and Guba, 1985).

Ontology refers to the assumptions and beliefs one holds regarding the nature of reality and what is known about the social world (Al-Saadi, 2014). Reality describes the social environment wherein the research is being conducted. Reflection of ontological values allow the researcher to understand their philosophical beliefs thus choosing an appropriate paradigm that aligns with their perceptions of reality (Buniss and Kelly, 2010). This supports the researcher in focusing their perception of the research topic, its importance, and different approaches that can be utilised to respond to the research question and comprehend the topic being studied, contributing to research science and possible solutions (Kivunja and Kuyini, 2017).

Epistemology refers to how the nature of knowledge is conceived, what constitutes as knowledge and how this can be obtained and communicated to the world (Dew and Foreman, 2020). The nature of the epistemological speculations we have regarding knowledge have a significant impact on how we approach learning about human experiences and behaviour (Patton, 2002). Epistemology in health research fields guide researchers, nurses and other healthcare professionals to construct phenomena to recognize and articulate the links between wellbeing, health and illness, their processes and behaviours that influence them (Sol and Heng, 2022). Barbara Carper (1978) devised four patterns of knowledge in nursing practice; empirics, aesthetics, personal and ethical knowing. Empirics consider the scientific, theoretical and factual elements of nursing practice, aesthetics describe the individualised, empathetic and compassionate ethos that guide nursing practice, while personal knowing refers to accountability and awareness, and lastly, ethical knowing relies on ethical standards and responsibilities to inform nursing care. These patterns of knowing influence nursing researchers to gain a deeper understanding of nursing practices and their effectiveness in healthcare organisations (Holtslander, 2008).

Ontological stances influence epistemological approaches, which have a major impact on the methodology and research method utilised to gather information and answer a research question (Brown and Dueñas, 2020). Research methodology as described by Crotty (1998) is the “strategy, plan of action, process or design” that dictates the research methods used by the researcher. Research methods describe the data collection and analysis procedures adopted to generate and acquire knowledge, and these are influenced by the chosen research methodology and philosophical beliefs

(Kumar, 2019). There are two primary paradigms in research, and these are known as positivism and interpretivism (Polit and Beck, 2020).

3.3 Positivism

Positivism is the methodological stance often associated with quantitative research (Polgar and Thomas, 2020). Quantitative research focuses on gathering and evaluating numerical data which is often generated into statistics to create precise and trustworthy research findings (Polit and Beck, 2020). Positivism adopts a formal and systematic attitude in which reality is viewed as a fixed entity that can be explained using observations and scientific rationale (Cohen et al, 2018). Realism is the term used to describe the ontological attitude adopted by positivists in which the phenomena being studied have a cause-and-effect relationship, and if this connection has been determined, future events can be anticipated with certainty (Rehman and Alharthi, 2016). Positivists believe that the individual is shaped by societal norms which influence their actions and behaviours (Kumar, 2019). Objectivism describes the epistemological approach of positivists in which knowledge is gathered objectively, without influence from the researcher, to discover patterns and universal laws which dictate and predict behaviours (Al-Saadi, 2014). It is imperative that the researcher detaches themselves from influencing the research findings to prevent bias (Park et al, 2020). Experiments, surveys and questionnaires are often used as data collection instruments and once the numerical data is collected, it is disseminated using statistical analysis (Kumar, 2019). Experimental, quasi-experimental, survey, comparative and correlational designs are used while carrying out positivist studies (Polit and Beck, 2020). Findings from positivist research are viewed as truth and support the refinement and strengthening of scientific theories by confirming hypothesis (Park et al, 2020). Positivist approaches are cost and resource efficient as the statistical and evidence based data generated are easily replicable to other study groups and predictions about phenomenon (Johnson and Onwuegbuzie, 2004). The objective methods used also ensure reliability and validity in research findings which can support policy and clinical skill enhancement (Pham, 2018). However, there has been growing criticism in nursing and healthcare literature regarding the suitability of positivist methodologies for investigating the human health and the social world as the

subjective experiences and opinions of those participating in healthcare research has been acknowledged as a priority to develop understanding and promote a humanistic philosophy (Corry et al, 2019).

3.4 Interpretivism

Interpretivism is the methodological stance often associated with qualitative research (Polgar and Thomas, 2020). In qualitative research, non-numerical data is gathered using communication and is disseminated in order to comprehend ideas and experiences (Polit and Beck, 2020). The ontological position of interpretivism is known as relativism which embraces a humanistic, subjective and flexible approach in which reality is viewed as a multifaceted entity influenced by a person's perceptions and experiences often influenced by social and cultural factors (Bhangu et al, 2023; Ritchie and Lewis, 2003). The epistemological approach to interpretivism is subjective, as knowledge is derived from understanding and reflection of experiences to discover meaning (Ryan, 2018). The researcher is directly involved as they construct subjective interpretations from the research findings, influenced by their personal values and perceptions (Alharahsheh and Pius, 2020). Differing from the positivist paradigm, findings from interpretivist research have many interpretations that cannot be objectively measured, thus the goal is to gain a greater understanding rather than aiming to generalize the findings to the entire population (Pham, 2018). Qualitative research methods originated in the psychological and social sciences, as quantitative methods were deemed inadequate in exploring the 'how's' and 'whys' of human behaviour (Pulla and Carter, 2018). Focus groups, field observations and structured or semi-structured interviews are the data collection methods utilised in order to develop a deep understanding of the phenomenon being studied (Queirós et al, 2017). Bryman (2016) describes the four concepts which are often merged in interpretivist research known as; hermeneutics (Heidegger 1962) which discover the deeper meaning of phenomenon, verstehen (Weber, 1947) which gains understanding from the studied participants point of view), symbolic interactionism (Mead, 1962) which explores behaviours, the meaning behind them and adaptation of these meanings over time, and phenomenology (Schutz 1962) which aims to evaluate and comprehend people's personal experiences. One advantage of the interpretivist paradigm is that researchers can not solely narrate about people's experiences but also develop a

deep understanding of their social and cultural environments, and the influence these can have on their value systems (Pervin and Mokhtar, 2022). Furthermore, researchers have the opportunity to utilise in depth and engaging interviews to discover participant's emotions, thoughts, perspectives, insights and values, aspects that cannot be explored by observation alone (Wellington & Szczerbinski, 2007). It is important to acknowledge the possible disadvantages of the interpretivist paradigm. The subjective nature of interpretivism can result in bias, as the findings may be influenced by the researcher's personal perceptions, opinions and thought processes, making it somewhat challenging to validate and rely on research results (Pham, 2018; Nudzor, 2009).

Historically, positivism dominated healthcare research but post-positivist and interpretivist paradigms have become increasingly popular in recent times (Corry et al, 2019). The use of positivist and interpretivist approaches in research has been continuously debated by those in the scientific community for many years (Almeida, 2018). Instead of using numerical data, qualitative research focuses on converting data from observations, interviews, and audio recordings into written words, and because of this, quantitative scientists have misinterpreted the approach, considering it to be nothing more than anecdotal evidence, hypothesis, and the researcher's subjective opinions (Everest, 2014; Broom, 2005). However, mental health care has undergone a paradigm shift in recent years, moving away from a deficit-focused medical model, towards a person-centred and recovery focused approach to care (Stein et al, 2022). This highlights the importance of integrating interpretivist principles to ensure that the personal and unique experience of each individual is considered. The debate between quantitative and qualitative research methods has not resulted in the identification of one optimum approach for carrying out healthcare research but the discussion has led to an evaluation of the advantages and disadvantages of each strategy (Everest, 2014). It is clear that each specific research paradigm has a beneficial role in contributing valuable information to nursing and healthcare research and practices. While some scholars debate positivist and interpretivist paradigms and regard them as opposing viewpoints, others think the distinction between the two is exaggerated and that an amalgamated and collaborative approach can be achieved (Nudzor, 2009). This joint approach is known as a 'mixed-methods' research approach (Creswell, 2009).

A positivist epistemology and a quantitative approach were considered for the purposes of this research. This approach would be beneficial in generating reliable and generalizable research findings by using questionnaires to gather changes in the mental wellbeing and nature connectedness of the participants following the intervention. In saying this, the use of questionnaires alone would not represent the personal experiences and opinions of the participants. Similarly, an interpretivist epistemology and a qualitative research approach was deliberated. This approach would allow participants to express their personal views and reflect on the individual impact of the bog programme intervention on their mental health and nature connectedness by participating in focus groups. However, the application of a solely qualitative approach would lack the reliability and validity required to produce data that can inform nursing and healthcare practices. Following deliberation of these two approaches, a mixed-method research (MMR) approach was chosen for the study, combining both positivist quantitative and interpretivist qualitative approaches in order to explore and answer the research question. The utilisation of both paradigms was chosen as they complement each other in achieving well-rounded and multi-dimensional research findings, while also increasing the validity, trustworthiness and richness of the study's findings.

3.5 Mixed Methods Research

Mixed methods research (MMR) has become increasingly popular as a methodological approach to health science research in recent years (Polgar and Thomas, 2020). MMR combines positivism and interpretivism, integrating qualitative and quantitative data to effectively comprehend intricate research topics (Fetters, 2016).

The use of MMR can be traced back as far as the 1800's, when both qualitative and quantitative methods were utilised in the explorations of Poverty in Europe (Hesse-Biber, 2010; Le Play, 1855). Despite this, it wasn't until the 1980s that MMR developed into a distinctive and valued branch of inquiry, and the use of MMR increased in many research fields including healthcare, psychology and social sciences. This sparked a 'paradigm debate' that questioned the suitability of amalgamating both qualitative and

quantitative paradigms that were perceived to represent opposing philosophical viewpoints (Denzin, 2010). It is argued that the aim of MMR is not to resolve the contrasting methodological perspectives of these paradigms, but to balance the limitations and bridge the gap between qualitative and quantitative research by combining both approaches. This is beneficial when one method alone is not adequate to explore the research subject, allowing researchers to effectively answer research questions and providing a clearer understanding (Mertens, 2017). Creswell and Plano Clarke (2011) identified the complex nature of research questions, the recognition of qualitative research as a credible methodological approach, and the growing desire of qualitative researchers to generalize their study outcomes as factors that influenced the development of MMR. Triangulation is used in MMR, meaning that data from multiple sources are brought together in order to solidify and justify research findings (Carter et al, 2014). Method triangulation will be used in this research, meaning that two data collection procedures will be used to gather information about the chosen phenomenon, namely questionnaires and focus groups (Heale and Forbes, 2013). In doing so, the potential constraints of each data collection method are overcome as the results derive from multiple perspectives, providing rigour and reliability (Noble and Heale, 2019). In MMR the researcher may adopt a concurrent design, in which both quantitative and qualitative data are gathered simultaneously or a sequential design in which quantitative and qualitative data are collected at separate intervals (Molina-Azorin, 2016). A sequential MMR design is most appropriate for this research study, as quantitative questionnaire data will be collected in the first and final weeks of the 8 week programme, while focus groups will be conducted following the completion of the programme, allowing participants to reflect on their experiences. Another key design aspect of MMR is integration, which describes the amalgamation of the qualitative and quantitative research findings referred to as the “point of interface” (Guest, 2013). Deciding where and how the separate results will be integrated is a crucial step in MMR, most often occurring in the results section (Schoonenboom and Johnson, 2017). The qualitative and quantitative data in the findings and discussion chapters of this thesis have been integrated. The statistical results of the four questionnaires are presented alongside the descriptive analysis, highlighting how these findings correlate with the personal experiences and opinions shared by the participants during the focus groups. To ensure success and high standards of quality when carrying out MMR, it is imperative that the researcher details the theoretical and

methodological approaches utilised, is transparent when displaying research findings and clearly describe the integration of the mixed method approach into the research design (Irvine et al, 2020). The use of MMR is advantageous as the quantitative aspects of MMR allow for the development of statistical and reliable data, while the qualitative methods provide a deep understanding of the phenomenon (Timans et al, 2019). MMR allows the researcher to develop depth and breadth in their research findings, especially when studying phenomenon that are multidimensional and complex in nature, such as in this study which explores the impact of a nature-based bog intervention on the maintenance and improvement of mental health (Creswell, 2009). Combining two approaches results in a more comprehensive picture of the research findings, offering a wider variety of viewpoints which deepens one's comprehension of the phenomenon while also presenting new research ideas for the future (Dawadi et al, 2021). Finally, MMR allows for the reconciliation of differing epistemological viewpoints between quantitative and qualitative research, providing a pathway to "true knowledge" (Bergman, 2008).

While it is evident that there are many benefits to MMR, it is important to acknowledge its challenges. There is a need for more training and direction in MMR for doctors, nurses and other healthcare professionals interested in research, as literature highlights the inconsistencies and lack of guidance in MMR that hinder healthcare research and reduce the validity of such findings (Wasti et al, 2022; Bressan et al, 2017). MMR is often more time consuming than other methodological approaches due to separate data collection and analysis methods, thus increasing costs and the use of resources (Creswell, 2017). MMR papers often require substantially more words than quantitative or qualitative research papers alone, due to the reporting and dissemination of the research processes and findings, further adding to the time consuming nature of MMR (Flemming, 2007). These limitations can be minimised by the adoption of a flexible approach by the researcher, and the development of precise time management and planning skills (Creswell, 2009).

3.6 Conclusion

This chapter has reached its aim to provide the reader with a clear understanding of the ontological and epistemological stances of the researcher. Following deliberation of the different paradigms, a mixed methods strategy was chosen. This incorporates a positivist and interpretivist methodology that supports the exploration of the

therapeutic bog intervention programme on the maintenance and improvement of mental health.

Chapter 4: Methods

4.1 Introduction

This chapter outlines the research methods that were used by the researcher to carry out this research study. Research methods are a structured plan and procedures that the researcher will use to conduct their research study and answer their research question (Devlin, 2021). This methods chapter describes the research design, research method, sampling methods, inclusion and exclusion criteria, data collection methods, data analysis methods, ethical considerations, validity and reliability specific to this research study. The development of a clear research plan is crucial to determine the focus, goals and procedures of the research, and to ensure the research will be a valuable resource in informing and enhancing mental health care practice, policy and education (Kumar, 2019).

4.2 Research Design

Research design refers to the analytical approach chosen by the researcher to guide their study and answer their research question (Murphy et al, 2018). There are many factors that influence the design chosen for a study such as the intervention that will be used, if comparison will be present, the goal of the research, sampling methods, the timeframe for data collection and the research setting (Wright et al, 2016). Qualitative research has six key designs known as phenomenology, ethnography, grounded theory, case studies, historical research and action research (Wood and Haber, 2018). Quantitative research has four main design approaches known as experimental, quasi experimental, descriptive and correlational (Parahoo, 2014).

For the purposes of this research study, the researcher utilised a quasi-experimental design. Quasi-experimental research explores the impact of an intervention on a specific population who are not randomly selected, differing from purely experimental designs in which participants for the study are chosen at random (Bloomfield and Fisher, 2019). In this research study, a NBT approach in the form of a bog programme

was used and its impact explored on the maintenance and improvement of mental health from a cohort of people who attended the mental health services in the Counties of Louth and Meath in Ireland. Quasi -experimental study designs are valuable in research as they demonstrate “cause and effect” links among the variables used in a study, produce evidence regarding the impact of an intervention on participants and allow the researcher to have control over and guide the study (Novosel, 2022). Quasi-experimental designs are beneficial in healthcare research where it is difficult to conduct experimental research due to the specific characteristics needed in the target population (de Vocht et al, 2021).

4.3 Research Method

Research method refers to the processes the researcher will use in order to carry out their research and collect the research data (Kumar, 2019). As previously discussed in the methodology chapter, this study used a mixed methods approach to data collection, gathering both quantitative and qualitative data to answer the research question. The mixed methods approach is beneficial as the results generated from the quantitative findings provide objective measurements of mental health indicators and accurately describe the impact of the intervention, while the qualitative findings allow for those taking part in the study to share their personal opinions and experiences (Wasti et al, 2022).

A questionnaire was used in order to collect the quantitative data required for this study. A questionnaire is comprised of questions and answers that one completes in order to share their experiences, opinions or feelings (Patil, 2020). Questionnaires are useful tools for gathering data because they support the gathering of sensitive information, are simple to distribute, are affordable and gather data in an effective and efficient manner (Patten, 2016). In this research study, the researcher aimed to evaluate the impact of the intervention on mental health (specifically depression and anxiety), overall wellbeing and nature connectedness. The questionnaires consisted of four components, known as the Beck Depression Inventory (BDI) (See appendix A), the Hamilton Anxiety Rating Scale (HAM-A) (See appendix B), the World Health Organisation- Five Well-Being Index (WHO-5) (See appendix C), and the Nature

Relatedness Scale (NR-6) (See appendix D) (Nisbet and Zelenski, 2013; World Health Organisation, 1998; Beck et al, 1961; Hamilton, 1959).

The BDI was developed by Aaron Beck in 1961, consisting of 21 questions that measure the attributes and symptoms of depression (Beck et al, 1961). The questions are multiple choice and a score between 0 and 3 is given to each answer, which are calculated following the completion of the questionnaire, providing an indicator to the level of depression the respondent is experiencing (Steer et al, 1986). The BDI has a total cumulative score ranging from 0-63. A higher cumulative score is indicative of greater depression severity (Beck, 1961). The desired direction of participant's scores in this study was for scores to decrease, signifying a reduction in depression symptoms for the participants. A revised version of the inventory, known as BDI-II was developed in 1996 to support the DSM diagnostic criteria for depression (Beck et al, 1996).

The HAM-A was devised by Max Hamilton in 1959 and contains 14 headings associated with specific symptoms that measure the severity of anxiety experienced by an individual, including both psychological and physiological anxiety effects (Hamilton, 1959). Each question is rated on a scale from 0-4 by the respondent, with total cumulative scores ranging from 0-56. The cumulative score indicates the anxiety symptom severity experienced by the respondent (Hamilton, 1959). The desired direction of participant's scores in this research was for scores to decrease, signifying a reduction in anxiety symptoms for the participants.

The WHO-5 was formulated in 1998 and consists of 5 questions relating to mental wellbeing such as mood, energy and enjoyment of everyday life (World Health Organisation, 1998). Respondents rate the questions on a scale from 0 to 5 and individual quality of life is determined by adding up the scores from each question upon completion of the questionnaire. The total cumulative scores range from 0-25, and this total sum is multiplied by 4 to acquire a percentage score. The desired direction of participant's scores in this research study was for scores to increase, signifying an enhancement of well-being for the participants.

Nisbet and Zilenski (2013) developed a comprehensive scale for assessing an individual's relationship with nature known as NR-6 which comprises of 6 questions which assess psychological, emotional and physical aspects of one's relationship to

nature. Each statement is rated on a scale from 1-5, with total cumulative scores ranging from 6-30. A higher cumulative score is correlated with a greater sense of connection with the natural world (Nisbet and Zelenski, 2013). The psychological component explores how one views their impact on nature, and nature's effects on them, while the emotional aspect measures the individual's empathy and feelings for nature and the need for physical proximity to nature is the subject of the physical aspect. Nisbet and Zelenski (2013) describe nature relatedness as a form of identity in which nature is included in ones sense of self. It also encompasses feelings and encounters with the natural world, and knowledge about the relationship between humans and all other living creatures. The desired direction of participants scores in this research study were for scores to increase, indicating the development of enhanced connection to, and relationship with nature.

The qualitative approach that was undertaken for the purposes of this research study were focus groups. Focus groups involve the gathering of information by the researcher, by guiding a conversation and asking participants questions about their experiences in a group setting (Polit and Beck, 2022). This allows the participants to share their opinions and perceived benefits or limitations of the intervention with each other and the researcher (Kumar, 2019). It is vital that the researcher is mindful of group dynamics during the facilitation of focus groups, ensuring that each individual has an equal opportunity to share their opinions and that the groups run smoothly and in a timely manner (Luke and Goodrich, 2019). Research has shown that three to six focus groups are needed to discern the information needed to answer a research question (Guest et al, 2016). It is important to have a structured discussion with broad opening questions, distinct key questions and closing questions, as this supports the flow of the discussion, allows for therapeutic rapport and maintains focus (Hennink et al, 2020). The questions used for the focus groups (see Appendix G) should be clear and short to allow for understanding, open ended to encourage dialogue and in a conversational style to put participants at ease and to prevent a formal environment (Hennink, 2014).

4.4 Sampling

In order to successfully answer the research question, the researcher must identify a suitable population. The population refers to a group of people who share common characteristics, targeted by the researcher to answer the research question (Casteel and Bridier, 2021). The specific population for this research study were those attending the mental health services for active treatment or living in supported residential mental health services in Counties Louth and Meath. This population was chosen as the research aimed to evaluate the chosen intervention specifically for those living with mental health difficulties, while the locations were accessible and convenient to the researcher's geographical area. Specifying the rationale of the selected population is important to provide context to the reader, validate the appropriateness of the population in the research and to guide the sampling approaches (Thacker, 2020).

Sampling is the process of choosing a subset of the population to act as a representative of the total population (Devlin, 2021). Sampling is beneficial in research as it allows for the generalizability of findings to the wider population and is more manageable and efficient than studying the whole population (Bhardwaj, 2019). The researcher may apply a probability or non-probability sampling method to identify their sample from the population. Probability sampling is a method of selecting samples at random from the population with all individuals having an equal opportunity to participate (Wiśniowski et al, 2020). In contrast, non-probability sampling is a method in which the selection of the sample is not random as the researcher identifies a particular group within the population needed to answer their research question (Kumar, 2019). A non-probability sampling method was used for the purposes of this research study. Non-probability sampling is a useful approach for the study as it is convenient, cost effective and quick in comparison to probability sampling (Thomas, 2022). Purposive sampling is the non-probability sampling method that was used for this study, meaning the researcher identified a specific population of people to participate in the study as these individuals possessed the characteristics needed to answer the research question (Wood and Haber, 2018). As the research aimed to explore the impact of a nature-based bog intervention on mental health, those attending the mental health services for support were the suitable candidates. Purposive sampling is advantageous as knowledgeable participants can share rich data with the researcher, there are many approaches to it allowing for flexibility and versatility and targeting a specific subset of the population saves time, money and

resources (Thomas, 2022). Sampling bias may occur during purposive sampling as certain members of the population are more likely to be chosen than others, which can result in unreliable results and a misrepresentation of the target population (Polit and Beck, 2022). The risk of bias can be prevented by clearly defining the chosen population, giving all members of this population subset an equal opportunity to participate and establishing clear inclusion and exclusion criteria (Kumar, 2019).

Convenience sampling is another non-probability sampling method that was used in this study, in which the researcher recruited participants within a specific geographical area. Convenience sampling is advantageous as it is accessible, simplistic and saves time (Stratton, 2021). For the purposes of this research, participation was available to those attending the mental health services in Counties Louth and Meath. These locations were chosen as they were familiar to the researcher and in close proximity to the educational institute in which the research was based. Motivation bias may occur as a result of convenience sampling, in which a person's interest in the study topic, their values and likes, and their social circumstances influence their decision to participate in the study (Gesiarz et al, 2019).

Sample sizes in non-probability sampling approaches tend to be smaller than those using a probability approach (Thomas, 2022). The researcher should carefully consider the study design, aims and objectives when determining the sample size to ensure success, as too small a sample size will not produce representative results, while too large of a sample size is inconvenient, unnecessary and a waste of resources (Andrade, 2020; Pye et al, 2016).

To recruit participants, information was distributed through the local mental health services and residential settings in the Louth and Meath areas. Nursing staff and directors of nursing were invited to act as gatekeepers during the recruitment of participants. Gatekeepers act as intermediaries between the researcher and the chosen population, assisting in identifying suitable participants for the study and grant access to them by the researcher (Singh and Wassenaar, 2016). Gatekeeping is a useful strategy to assist the researcher in contacting potential participants, to coordinate care and to safeguard those in the target population (Liang et al, 2019). Poor communication, power dynamics and negative attitudes have been identified as potential barriers while working with a gatekeeper, thus clear and open communication

and a collaborative approach is essential to ensure success (Spacey et al, 2021). In their role as gatekeepers, nursing staff identified those who were eligible to take part and promoted the bog research programme to them. There were also posters advertising the study circulated around the various mental health services. Participant information leaflets were provided to potential participants, which provided additional information regarding the study (see appendix E). Participants who were interested contacted the researcher about the study via email or phone, the details of which were provided on the poster, or alternatively, the nursing staff supplied potential participants with the contact details of the researcher. On occasion, the nursing staff contacted the researcher on behalf of potential participants.

The sample size proposed for this study was pragmatically rather than statistically determined. It was estimated that 6 separate 8 week programmes would be carried out at each bog location (12 programmes in total), with 8 to 10 participants attending each programme. This equalled a sample size of between 96 to 120 participants. Due to the outdoor environment of the study, the research facilitation was seasonal and weather dependant, to ensure the safety and comfort of the research participants.

In reality, the originally determined sample size was not reached. A total of 41 people were recruited to participate in the study, of whom 34 completed both the pre- and post-questionnaires, and 13 of whom took part in the focus groups. The researcher faced recruitment challenges which included obstacles in liaising with the mental health services and transportation difficulties. Research has shown that those living with a mental illness may face barriers in research participation, such as transportation issues, stigma and a distrust of research (Woodall et al, 2010). It is vital that these factors are considered and reflected on by the researcher, to develop actions to mediate these barriers, and thus ensure successful participant recruitment and retention.

4.5 Inclusion and Exclusion Criteria

The inclusion criteria specific to this research study were;

- anyone regularly attending the mental health services for active treatment or supported residential services in Counties Louth and Meath;
- those who were competent in the English language and;
- those who were physically mobile and able to walk on the bog and its surrounding environments.

The exclusion criteria specific to this research study were;

- those with severely limited mobility as the study required walking on the bog and its surrounding environments;
- those who were experiencing an acute mental health crisis as this may not have been a suitable intervention for a person in acute mental health distress;
- those who were under the age of 18;
- those living with a co-morbid diagnosis of mental illness and an intellectual disability.

4.6 Data Collection

Data collection is a systematic process used to gather the information needed to answer the research question and to evaluate the research outcomes (Wood and Haber, 2018).

In order to collect the quantitative data for this research study, the research participants initially completed the questionnaire on the first week of the 8 week programme. The data collection was completed in indoor community spaces, in close proximity to the bog. The researcher supported the participants in filling out the questionnaires and answered any questions or queries they had.

The researcher placed a number on each of the questionnaires, and the names which corresponded to these numbers were kept by the researcher in a password protected file on a password protected computer, This system allowed the researcher to accurately identify and match the pre and post-test questionnaires with the correct respondent.

4.6.1 The Bog Therapy Intervention

The research participants were separated into groups ranging from 3 to 8 people, based on their location and their availability to participate in the study. These pre-

determined groups of participants attended the bog together each week. A total of 7 programmes with a duration of 8 weeks each were conducted; 4 on the Girley bog in Meath, and 3 on the Ardee bog in Louth. During the first week of the programme, introductions were made to each other, and the researcher and participants engaged in the CP process, brainstorming together to decide on the programme activities. The participants were also given a journal designed by the researcher, which contained information about the bog, and in which they could record their experiences each week for their own personal reflections and memories.

During the 6 weeks on the bog, participants engaged in a wide range of activities. These activities were chosen by the participants on the first week of the programme, using CP, a collaborative process which ensured that everyone's wants and ideas were considered. The activities undertaken included walking, meditation, mindfulness, learning about the flora and fauna, birdwatching, foraging, artwork such as painting, drawing and pottery, bird box making, sharing poetry and music, alpaca walks and barbecues. A programme from one of the groups is provided in the appendices (see appendix F) to provide the reader with an example of the activities participants engaged in over the course of the research programme. Each individual group was unique due to the individual preferences and ideas that emerged in the CP process.

The participants repeated the questionnaire on the 8th week of the programme in the community space, supported by the researcher. The completion of the data collection instruments by the participants on the first and final week of the programme is known as a pre and post-test design, in which data collection tools are repeated to allow the researcher to assess the impact of the intervention and evaluate any changes that have occurred (Farmus et al, 2019).

Following completion of the bog intervention, the researcher conducted 4 focus groups with participant numbers raging from two to four people in each one. Participation in the focus groups was voluntary and participants from each group were invited to take part. Following the completion of two groups, the first focus group took place. The second focus group took place following the completion of the next 2 groups, and the final focus group took place following the completion of last 3 groups. Having participants from each group in the focus groups allowed for the exploration of the impact each different group had. During the focus groups, the researcher asked pre –

determined questions such as ‘What has it been like for you to take part in this bog nature programme?’ and ‘Going forward, how will you use nature to support you in your mental health journey and your recovery?’ (See appendix G). The focus groups were audio recorded by the researcher.

4.7 Data Analysis

Data analysis refers to the processing, reviewing and evaluation of the collected data in order to describe and interpret the research findings (Polit and Beck, 2022). The aims and objectives of the study, the type of data and the distribution of the data are factors that influence the methods used during data analysis (Mishra et al, 2019). As this research study had a mixed method approach, both quantitative and qualitative data analysis was conducted.

For the quantitative data, a statistical approach was used to analyse the results from the questionnaire which contained four components known as the BDI, HAM-A, WHO-5, and NR-6 (Nisbet and Zelenski, 2013; World Health Organisation, 1998; Beck et al, 1961; Hamilton, 1959). These were completed by participants on the first and final weeks of the programme. Statistical Package for the Social Sciences (SPSS) version 29 was used to calculate the statistical results. SPSS is a software that generates statistical data, and it works by comparing the differences in the pre-intervention baseline questionnaires and the post-intervention questionnaires (Rahman and Muktadir, 2021). SPSS is useful in research as it is designed to process large amounts of data, and it is simple to use and therefore requires no specific training or technical skills (Arkkelin, 2014).

A Paired Sample T-Test was used in SPSS to generate the quantitative data. A Paired Sample T-Test is used to compare means from two sets of related data, in this case the pre and post-test questionnaires completed by the participants (Ross, A. and Wilson, 2017). The mean is calculated by adding up the sum of values in question and dividing this sum by the sample size (n=34), to generate an average score (Hurley and Tenny, 2024). The paired t-test allows the researcher to explore the changes their intervention may have influenced over time, supporting the generation of hypotheses and dissemination of research findings (Hasija, 2023).

Standard deviation is used to measure the dispersion of data from the mean in question, representing the variance of values in a dataset (Omda and Sergent, 2023).

Point probability values (p) calculate the probability of intervention impacts occurring by chance rather than due to the effect of the intervention in question (Shreffler and Huecker, 2024). P values under 0.05 are known to imply that the research findings in question are statistically significant (Andrade, 2019).

Cohen's d (d) is the effect size often used in a Sample T-test. Effect size is used to quantify the relationship between the mean from two sets of data, with a larger effect size indicating a greater change as a result of the intervention in question (Moore, 2022). According to Cohen (1998) an effect size of 0.2 is considered small, an effect size of 0.5 is moderate, and an effect size of 0.8 is large. The reporting of the effect size allows the researcher to convey the practical significance and magnitude of their research findings (Lakens, 2013). Thompson (2007) cautions that these values are arbitrary and shouldn't be taken too literally, while Lakens (2013) proposes that findings be contextually considered, reminding us that even numerically small effect sizes can be contextually significant. Cohen's d effect sizes should therefore be considered both in the context of existing literature, and with explanation of the 'real-world' significance of the effect (Lakens, 2013).

The statistics generated measured the impact of the intervention in areas such as depression symptoms, anxiety symptoms, nature relatedness and wellbeing. The researcher studied and analysed these statistical results at a descriptive level, this is known as descriptive analysis (Devlin, 2021). Descriptive analysis is used by the researcher to summarize the statistical results from the study in an efficient and clear manner, providing context and understanding to the reader (Parahoo, 2014). A description of the four quantitative research components and the interpretation of their scores has been provided earlier in this chapter (section 4.3). In order to conduct the descriptive analysis the researcher firstly described the findings, providing an overview of the means, standard deviations and ultimately any changes that occurred over time from the pre-test and post-test research findings. Secondly, inferences were drawn from the statistical findings, and a commentary detailing the changes over time was provided to provide understanding of the significance and meaning of the quantitative findings**.** Descriptive analysis is advantageous in research as it provides neutral and objective summaries of the statistical data, it can be used to inform hypothesis to guide future research, provides a broad impression of the phenomenon and allows for critical evaluation (Kokol and Blazun Vosner, 2019).

In order to analyse the qualitative data, the researcher transcribed the recorded data from the focus groups on a computer. The researcher listened to the recordings again and compared these to their transcriptions to ensure they were correct. The transcriptions were checked by the researcher's academic supervisors to ensure their accuracy. The researcher invited the focus group participants to read and clarify the transcribed data to ensure its reliability, but none of the focus group participants chose to participate in this clarification process. Thematic analysis was used to analyse the data from the focus groups. Thematic analysis describes the method of discovering themes or trends in qualitative data (Maguire and Delahunt, 2017). The researcher identified codes which highlight important topics in the data, and from these codes' themes emerged, which are patterns that supported the researcher in answering their research question (Vaismoradi and Snelgrove, 2019). Braun and Clarke (2022) developed a six-step thematic analysis framework that involves familiarising oneself with the data, generating codes, searching for themes, reviewing the themes, defining the themes and finally writing up the results. Braun and Clarke's thematic analysis framework was used to conduct the qualitative data analysis for this research study. A software package was not used and the researcher manually completed the thematic analysis. The researcher reviewed the focus group transcriptions and then generated a codebook in order to analyse the focus group transcriptions (appendix J). In this codebook, the researcher inserted all quotes of relevance from the focus groups and colour coded them to identify the speakers. The quotes were then analysed, and codes were attached to them to categorize them. The researcher then reviewed the codes and searched for themes. These codes and themes were reviewed and compared to the codebook and focus group quotes to generate themes and subthemes. The researcher chose a selection of quotes from each theme, particularly focusing on quotes that were meaningful and clearly conveyed the quintessence of the theme in question. For example, many of the quotes from the focus groups related to feelings of wellbeing and the mental health benefits of participating in the research and spending time on the bog, thus this became a key theme 'blossoming on the bog'. The researcher noticed a pattern in which a number of quotes attributed this sense of mental wellbeing to the experience of a 'slower pace of life' while in the bog environment, thus creating this sub-theme within the aforementioned key theme.

There are many advantages associated with thematic analysis. Thematic analysis is highly flexible and can be adapted depending on the research question, its methods are easy to learn, it allows the researcher to summarize large amounts of data and it is useful in exploring the perspectives of participants and allows for the comparison of opinions and experiences (Burns and Grove, 2006) (Nowell et al, 2017). It is important that the researcher does not assume themes or make personal judgements about the data to prevent bias (Javadi and Zarea, 2016). Thematic analysis has been identified as a useful, versatile and powerful data analysis method in qualitative research (Kiger and Varpio, 2020). Using this approach allowed the researcher to identify themes relating to the participants experiences in taking part in the bog programme and the impact this had on their mental health, overall wellbeing and nature connectedness.

4.8 Ethics

Ethics refers to the moral standards that guide a researcher while conducting their research study to minimise harm and to maintain the privacy and human rights of the study participants (Koporc, 2019). The World Health Organisation has emphasized that upholding ethical principles is essential for safeguarding the welfare and dignity of those taking part in the study (WHO, 2019). It is important to maintain strict ethical standards in research, especially in MMR approaches as these are more complex than single method approaches, and therefore additional ethical consideration is required to maintain high standards of care and prevent organisational barriers (Stadnick et al, 2021).

Ethical approval for the research study was granted from the Dundalk Institute of Technology ethics committee (See appendix H) and the Health Service Executive ethics committee (reference number 23/015) (See appendix I). Applications for ethical approval contain important information such as the research aims and objectives, sampling procedures and protective measures for vulnerable participants, data collection and data analysis methods, potential risks and benefits, justification of the research, dissemination, confidentiality and data storage (Sivasubramaniam et al,

2021). The role of a research ethics committees is to monitor and uphold ethical principles in healthcare research in order to protect research participants, advise researchers on best practices and to ensure high quality research outcomes (Health Service Executive, 2023).

The Nursing and Midwifery Board of Ireland (NMBI) set out five fundamental ethical principles that must be followed at all times by nurses while providing care. These are to respect and preserve the dignity of individuals to whom you are providing care, to take responsibility and accountability for your professional practices, to provide a high quality standard of care, to maintain trust and confidentiality and to work as part of a team and in collaboration with participants, their families and fellow healthcare professionals (NMBI, 2021). In healthcare research it is crucial that only beneficial outcomes occur for participants, this is known as 'beneficence' and that no harm comes to any participants as a result of participating in the study, this is known as 'non-maleficence' (Varkey, 2021). Non-maleficence was obtained in this study as the aim of the research was to benefit the wellbeing of the participants. Risk assessments were conducted by the researcher, and all actions were taken to minimise potential risks, to prevent any harm to the participants. Respondent burden refers to the burden or psychological toll that may be placed on participants when participating in research and completing data collection processes (Yan et al, 2020). The researcher considered respondent burden for the participants while taking part in the research. In order to minimise respondent burden, the researcher utilised a number of strategies. All of the participants were provided with an information leaflet prior to the commencement of the research, which contained detailed information and explanations of the research processes. The participants were regularly reminded of the voluntary nature of the research and that they could withdraw consent to participate at any time. The completion of the data collection instruments and focus groups were facilitated in a safe and relaxed environment, with support and care from the researcher. The research supervisors and staff nurses from the mental health services were present during the data collection to support the participants and the primary researcher. The researcher was available to provide emotional support and reassurance to the participants should they become distressed while taking part in the research. All of the participants were linked with their local community mental health service should they need follow up care or support.

Ethical standards were maintained in this study by obtaining informed consent from the research participants. Informed consent refers to an informed decision made by the individual to participate in the research study with a clear understanding of the purposes of the research, the potential benefits and risks and how their personal information will be processed (Manti and Licari, 2018). The participant information leaflet (see Appendix E) detailing all of the information regarding the research study was provided to all potential participants. If they agreed to take part, an informed consent form was signed by the participant giving their permission to participate in the study and for the processing of their personal information. It is important that participant information leaflets and consent forms are accessible and use clear simple language to ensure understanding and informed decision making (Coleman et al, 2021). It must be communicated to the participants that their decision to take part is voluntary and that that they can choose to withdraw participation at any time without any effect on their mental health treatment (Manandhar and Joshi, 2020). The HSE 'National Policy for Consent in Health and Social Care Research' document outlines the guidelines and procedures the researcher should follow to ensure informed consent is maintained at all times during their study (HSE, 2023).

Confidentiality is a vital principle that must be followed to maintain the ethical standards of a research study. Any personal information pertaining to a research participant is considered to be 'confidential', and the researcher has an obligation to ensure that this information is protected and remains private at all times (Bos, 2020). The researcher maintained confidentiality by storing participant's personal information in password protected files on a password protected computer. Phone numbers of participants were kept on a password protected phone and deleted once the person ceased participation in the study. The informed consent form also reassured participants that any personal information would be securely stored, confidentiality maintained throughout the research process and published research findings would be anonymous (Barrow et al, 2022). The publication of anonymous research findings implies that no personal information that may identify any of the participants has been included in the reporting of the research, thus ensuring the upmost privacy and confidentiality (Kang and Hwang, 2023).

4.9 Validity, Reliability and Rigour

Validity, reliability and rigour are concepts considered when evaluating the psychometric properties of data collection tools, determining the quality and suitability of the use of these tools and their appropriate use in research (Ohiri et al, 2024).

In quantitative research, validity refers to the ability of a data collection instrument to measure the concept it purports to measure, in order to generate research findings that can accurately represent the wider population (Polit and Beck, 2022). Validity in research can be internal and external. Internal validity describes the accuracy in measuring the effects of the intervention on the participants being studied (Kumar, 2019). The researcher promoted internal validity by using careful planning and implementation techniques during participant recruitment and sampling processes, data collection and data analysis (Patino and Ferriera, 2018). Following the establishment of internal validity, the researcher can use their judgment to evaluate its external validity, determining whether or not the study's findings can be reproduced for other individuals and in other settings (Andrade, 2018).

There are four types of validity in quantitative research that the researcher must consider and maintain to ensure accurate and representative research findings, these are known as face validity, construct validity, content validity and criterion validity (Parahoo, 2014). Face validity refers to the suitability of the data collection instruments in collecting the data needed to answer the research question. The researcher established face validity by examining the four questionnaires to ensure that they were appropriate in gathering the information needed. Construct validity encompasses the ability of the collection tools to accurately measure the phenomenon in question (Singh, 2017). The researcher compared the questionnaires to similar documents of the same subject to evaluate their appropriateness. Content validity can be defined as the ability of the collection tool to assess the construct being measured. The researcher compared the questionnaires to the symptoms of depression and anxiety and the aspects of wellbeing and nature relatedness to maintain content validity. Criterion validity refers to the ability of data collection instrument to predict a specific outcome (Taherdoost, 2016). The researcher used only validated and clinically recognized questionnaires to achieve criterion validity.

Reliability in quantitative research is defined as the capability of the data collection instruments to accurately, consistently, and appropriately gather the data required for the research study (Devlin, 2021). To ensure reliability when collecting the data for the study, the researcher ensured validity and used widely recognized questionnaires used in many other research studies, while maintaining a comfortable and calm environment while the participants completed the questionnaires.

Worldwide, the BDI is the most prevalent depression assessment used by healthcare professionals and research has shown that the BDI has strong validity and reliability in the measurement of depression severity (Garcia Batista et al, 2018; Toledano and Contreras-Valdez, 2018). Research has shown that the HAM-A is a useful tool to assess anxiety symptoms and correlates with the DSM-5 diagnostic specifications for anxiety (Rodriguez Seijas et al, 2020). Studies have demonstrated the validity, reliability and internal consistency of the HAM-A scale for use in anxiety assessment (Hallit et al, 2020). The researcher chose to use the HAM-A rather than another anxiety measurement known as the Becks Anxiety Inventory (BAI) (Beck et al, 1988). The HAM-A contains a wider range and detailed account of anxiety symptoms when compared to the BAI thus providing a deeper insight into the anxiety symptoms experienced by the participants. The HAM-A is the most commonly used measure to assess anxiety in research that explores intervention outcomes, thus its use supports the reliability and consistency of the research findings (Baker et al, 2019).

Sischka et al (2020) found that the WHO five wellbeing index is a reliable tool to measure wellbeing in a study that evaluated its effectiveness in 35 countries. A similar cross-sectional study found that the WHO-5 has high cross-cultural validity and good clinometric sensitivity, making it a valuable tool for healthcare professionals around the world (Carrazzino et al, 2022). There has been some criticism regarding the reliability of the NR-6, therefore it should be used as part of a multi-dimensional approach to assessment by the researcher (Luong, 2022).

In contrast to quantitative research, the concept of achieving trustworthiness in qualitative research findings is called rigour and can be achieved using four indicators known as credibility, transferability, dependability and confirmability (Guba and Lincoln, 1985). Credibility refers to the appropriateness of the research findings in reflecting the feelings and experiences of the research participants. Credibility can be

achieved by asking the participants to confirm and approve the research findings (Stahl and King, 2020). Transferability describes the ability of your research methods to be repeated in other settings and can be promoted by providing clear methodological guidelines as a replication guide for others (Kumar, 2019). Dependability is similar to reliability, depicting the trustworthiness of the research findings and can be achieved by repeating the research to explore if the same results will be obtained (Forero et al, 2018). Confirmability also reflects reliability and refers to the extent in which the research findings can be independently verified by others (Wood and Haber, 2018).

4.10 Conclusion

This chapter described the methods undertaken by the researcher in order to plan, implement and evaluate the research study successfully, detailing concepts including; the research design, research method, sampling methods, inclusion and exclusion criteria, data collection processes, data analysis procedures, ethical considerations and ensuring validity, reliability and rigour. The next chapter will display the quantitative and qualitative research findings following their analysis by the researcher.

Chapter 5: Findings

5.1 Introduction

In this Chapter, the quantitative and qualitative findings of the research study are presented. As previously stated in the introduction, the aim of this research study was to explore the role of nature, specifically of bog habitats in the maintenance, and improvement of mental health in a cohort of people attending the mental health services in the Irish regional areas of County Louth and County Meath. Participants attended the bog once a week for 8 weeks, participating in a range of activities including walking, meditation, mindfulness, learning about the flora and fauna, foraging, artwork, sharing poetry and music, alpaca walks and barbecues.

5. 2 Demographic Information

The findings of the research are presented in this chapter. Table 1 below contains the demographic information of the research participants, clearly displaying the number of research participants (n), their gender and the bog location they attended.

Table 1

Demographic	(n)	(%)
Total number of participants	34	100 %
Male	15	44%
Female	19	56%
Girley bog	23	65%
Ardee bog	12	35%

It is important to highlight that while there were 34 participants (n) who completed the research study, there were a total of 41 research participants altogether. 7 of these participants either left the group before its completion or did not attend the final week to complete the quantitative data collection instruments. This ceasing in participation was attributed to several reasons, including poor motivation which often accompanies mental illness, physical health problems and changes in personal circumstances. It is also important to highlight that recruitment of participants was challenging at times and

the initial expected numbers of participants were not reached. This was not expressed by any participants during the data collection but is an important observation of the researcher and therefore vital to mention in the research findings.

5.3 Quantitative findings

The findings from each of the four quantitative research components are presented in this chapter. Two tables are provided for each component, providing a clear representation of the impact of the research intervention on the participant's symptoms of anxiety and depression, wellbeing and nature relatedness. The first tables provide the means ($\bar{x}$), standard deviations (Sd) and confidence intervals (CI) generated using the Paired Sample T-Test. The second tables progress the analysis of changes in the pre and post-test research components, and provide p values which indicate statistical significance and cohen (d) scores which represent the effect size of the variable in question, generated from the Paired Sample T-Test.

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5.4 Beck Depression Inventory (BDI)

Table 3 below displays the changes in the BDI over the course of the study and Table 4 presents an analysis of these changes.

Table 3

Beck Depression Inventory: Changes over course of study										
Variable	Pre Measures			Post Measures			Changes in paired means over Time			
	N=	Mean	Std. D.	N=	Mean	Std. D.	Mean	Std. D.	CI [95%]	
Sadness	34	**1.00**	.953	34	**.82**	.716	**.176**	.673	-.058	.411
The future	34	**1.09**	.900	34	**.62**	.739	**.471**	.706	.224	.717
Failure	34	**1.21**	.978	34	**1.47**	2.11	**-.265**	2.09	-.995	.466
Satisfaction	34	**1.00**	.853	34	**.79**	.808	**.206**	.538	.018	.394
Guilt	34	**.91**	.933	34	**.62**	.739	**.294**	.524	.111	.477
Punishment	34	**1.21**	1.82	34	**.53**	.748	**.676**	1.95	-.004	1.36
Disappointment	34	**.85**	.821	34	**.76**	.699	**.088**	.570	-.111	.287
Self-criticism	34	**.94**	.952	34	**1.12**	1.67	**-.176**	1.83	-.816	.463
Suicide	34	**.88**	1.64	34	**.62**	.652	**.265**	1.29	-.184	.714
Crying	34	**1.32**	1.29	34	**1.29**	1.24	**.029**	.969	-.309	.367
Irritation	34	**1.35**	1.01	34	**.88**	.769	**.471**	.788	.196	.745
Interest in people	34	**1.00**	1.07	34	**.65**	.849	**.353**	1.04	-.010	.716
Decision making	34	**1.29**	.938	34	**1.44**	1.67	**-.147**	1.46	-.656	.362
Appearance	34	**1.06**	1.01	34	**.91**	1.03	**.147**	.821	-.140	.434
Motivation	34	**1.35**	.884	34	**1.29**	.871	**.059**	.814	-.225	.343
Sleep	34	**1.65**	2.14	34	**1.12**	1.12	**.529**	2.19	-.235	1.29
Tiredness	34	**1.38**	.817	34	**1.24**	.741	**.147**	.821	-.140	.434
Appetite	34	**.82**	.869	34	**.74**	.828	**.088**	.452	-.069	.246
Weight	34	**.85**	1.63	34	**.47**	.662	**.382**	1.56	-.161	.926
Physical health	34	**1.03**	1.00	34	**.85**	.857	**.176**	.936	-.150	.503
Sexual health	34	**1.53**	1.79	34	**1.51**	1.73	**.024**	2.08	-.703	.750
Total	34	**22.12**	12.42	34	**18.41**	10.89	**3.71**	8.17	.855	6.557

Table 4

Beck Depression Inventory: Analysis of changes over course of study										
Variable	Mean*	Std. D.	CI [95%]		t. test	df	P value**	Cohen***	CI [95%]	
Sadness	.176	.673	-.058	.411	1.529	33	.136	.262	-.082	.602
The future	**.471**	**.706**	**.224**	**.717**	**3.884**	**33**	**.001**	**.666**	**.290**	**1.03**
Failure	-.265	2.09	-.995	.466	-.737	33	.466	-.126	-.463	.212
Satisfaction	**.206**	**.538**	**.018**	**.394**	**2.231**	**33**	**.033**	**.383**	**.031**	**.728**
Guilt	**.294**	**.524**	**.111**	**.477**	**3.273**	**33**	**.002**	**.561**	**.195**	**.920**
Punishment	**.676**	**1.95**	**-.004**	**1.36**	**2.023**	**33**	**.051**	**.347**	**-.002**	**.691**
Disappointment	.088	.570	-.111	.287	.902	33	.374	.155	-.185	.492
Self-criticism	-.176	1.83	-.816	.463	-.561	33	.578	-.096	-.432	.241
Suicide	.265	1.29	-.184	.714	1.200	33	.239	.206	-.136	.544
Crying	.029	.969	-.309	.367	.177	33	.861	.030	-.306	.366
Irritation	**.471**	**.788**	**.196**	**.745**	**3.484**	**33**	**.001**	**.597**	**.228**	**.959**
Interest in people	**.353**	**1.04**	**-.010**	**.716**	**1.977**	**33**	**.056**	**.339**	**-.009**	**.682**
Decision making	-.147	1.46	-.656	.362	-.588	33	.561	-.101	-.437	.237
Appearance	.147	.821	-.140	.434	1.044	33	.304	.179	-.161	.517
Motivation	.059	.814	-.225	.343	.421	33	.676	.072	-.265	.408
Sleep	.529	2.19	-.235	1.29	1.409	33	.168	.242	-.101	.581
Tiredness	.147	.821	-.140	.434	1.044	33	.304	.179	-.161	.517
Appetite	.088	.452	-.069	.246	1.139	33	.263	.195	-.146	.533
Weight	.382	1.56	-.161	.926	1.432	33	.162	.246	-.098	.585
Physical health	.176	.936	-.150	.503	1.099	33	.280	.188	-.152	.526
Sexual health	.024	2.08	-.703	.750	.066	33	.948	.011	-.325	.347
Total	**3.71**	**8.17**	**.855**	**6.557**	**2.645**	**33**	**.012**	**.454**	**.097**	**.804**

*** Difference in each paired mean **P value two-tailed ***Cohen effect size**

As seen in Table 3, the paired sample t-test of the BDI revealed a lower mean score at post-test intervention time ($\bar{x}$=18.41, Sd=10.89), in comparison to pre-intervention completion of the questionnaire ($\bar{x}$=22.12, Sd=12.42, p<.012, d=.45, n=34), and was statistically significant and moderate in effect size.

As shown in Table 4, 13 of the BDI questions went in the desired direction, decreasing in score. Many of these were of statistical significance (p<.3-.001), and had small to moderate effect sizes (d=.16-.67). 3 of the questions had very little changes following the intervention and were not statistically significant (p<.68-.95) or of any notable effect size (d=.01-0.07). 3 of the questions did not go in the desired direction, increasing in score, however, these were statistically insignificant (p<.47-.58) and of minor effect size (d=-.09- - -.13).

5.5 Hamilton Anxiety Rating Scale (HAM-A)

Table 5 below displays the changes in the HAM-A over the course of the study and Table 6 presents an analysis of these changes.

Table 5

HAMILTON ANXIETY RATING SCALE: CHANGES OVER COURSE OF STUDY

VARIABLE	PRE MEASURES			POST MEASURES			CHANGES IN PAIRED MEANS OVER TIME			
	N=	MEAN	STD. D.	N=	MEAN	STD. D.	MEAN	STD. D.	CI [95%]	
ANXIOUS MOOD	34	**2.35**	1.28	34	**1.79**	.978	**.559**	1.106	.173	.945
TENSION	33	**1.76**	1.23	33	**1.76**	1.15	**.000**	1.000	-.355	.355
FEARS	34	**1.68**	1.22	34	**1.00**	1.16	**.676**	.976	.336	1.02
INSOMNIA	34	**2.18**	1.38	34	**1.85**	1.28	**.324**	.912	.005	.642
INTELLECTUAL	34	**2.21**	1.41	34	**1.68**	1.17	**.529**	1.29	.081	.978
DEPRESSED MOOD	34	**2.38**	1.28	34	**1.68**	1.07	**.706**	1.09	.326	1.09
SOMATIC (MUSCULAR)	34	**1.76**	1.33	34	**1.41**	1.21	**.353**	1.25	-.084	.790
SOMATIC (SENSORY)	33	**1.39**	1.46	33	**1.15**	1.25	**.242**	1.28	-.210	.695
CARDIOVASCULAR	34	**.74**	1.05	34	**.82**	.904	**-.088**	.830	-.378	.201
RESPIRATORY	34	**1.26**	1.33	34	**1.00**	1.18	**.265**	1.14	-.132	.661
GASTROINTESTINAL	34	**1.15**	1.31	34	**.91**	1.14	**.235**	1.21	-.186	.657
GENITOURINARY	33	**1.52**	1.48	33	**1.36**	1.30	**.152**	1.09	-.236	.539
AUTONOMIC	34	**1.41**	1.52	34	**1.41**	1.23	**.000**	1.16	-.403	.403
BEHAVIOUR	31	**1.13**	1.28	31	**.68**	.945	**.452**	1.39	-.057	.960
TOTAL	32	**23.22**	11.36	32	**18.91**	9.38	**4.31**	8.09	1.40	7.23

Table 6

HAMILTON ANXIETY RATING SCALE: ANALYSIS OF CHANGES OVER COURSE OF STUDY										
VARIABLE	MEAN*	STD. D.	CI [95%]		t. test	df	P VALUE**	COHEN***	CI [95%]	
ANXIOUS MOOD	**.559**	**1.106**	**.173**	**.945**	**2.946**	**33**	**.006**	**.505**	**.144**	**.859**
TENSION	.000	1.000	-.355	.355	.000	32	1.00	.000	-.341	.341
FEARS	**.676**	**.976**	**.336**	**1.02**	**4.041**	**33**	**.001**	**.693**	**.314**	**1.064**
INSOMNIA	**.324**	**.912**	**.005**	**.642**	**2.069**	**33**	**.046**	**.355**	**.005**	**.699**
INTELLECTUAL	**.529**	**1.29**	**.081**	**.978**	**2.403**	**33**	**.022**	**.412**	**.059**	**.760**
DEPRESSED MOOD	**.706**	**1.09**	**.326**	**1.09**	**3.783**	**33**	**.001**	**.649**	**.274**	**1.015**
SOMATIC (MUSCULAR)	.353	1.25	-.084	.790	1.643	33	.110	.282	-.063	.623
SOMATIC (SENSORY)	.242	1.28	-.210	.695	1.092	32	.283	.190	-.156	.533
CARDIOVASCULAR	-.088	.830	-.378	.201	-.620	33	.540	-.106	-.443	.232
RESPIRATORY	.265	1.14	-.132	.661	1.358	33	.184	.233	-.110	.572
GASTROINTESTINAL	.235	1.21	-.186	.657	1.136	33	.264	.195	-.146	.533
GENITOURINARY	.152	1.09	-.236	.539	.796	32	.432	.139	-.205	.480
AUTONOMIC	.000	1.16	-.403	.403	.000	33	1.00	.000	-.336	.336
BEHAVIOUR	.452	1.39	-.057	.960	1.813	30	.080	.326	-.038	.685
TOTAL	**4.31**	**8.09**	**1.40**	**7.23**	**3.017**	**31**	**.005**	**.533**	**.159**	**.900**

*** Difference in each paired mean **P value two-tailed ***Cohen effect size**

As presented in Table 5, the cumulative mean scores of the HAM-A increased following the research intervention ($\bar{x}$=18.91, Sd=9.38), when compared to pre-intervention scores ($\bar{x}$=23.22, Sd=11.36, p<.005, d=.53, n=34). These changes were of statistical significance and moderate in effect size.

As displayed in Tables 5 and 6, 11 of the HAM-A questions went in the desired direction, decreasing in score. A number of these were statistically significant (p<.4 -.001) and had small to moderate effect sizes (d=.14-.7). 2 of the questions had minuscule changes and were statistically insignificant (p<1) and had no effect size (d=.00). 1 question did not go in the desired direction, with an increase in score, however, this was not of statistical significance (p<.54) and had a very small effect size (d=-11).

5.6 World Health Organisation - Five Well-Being Index (WHO-5)

Table 7 below displays the changes in the WHO-5 over the course of the study and Table 8 presents an analysis of these changes.

Table 7

WHO Five Well-Being Index: Changes over course of study

Variable	Pre Measures			Post Measures			Changes in Paired Means over Time			
	N=	Mean	Std. D.	N=	Mean	Std. D.	Mean	Std. D.	CI [95%]	
Cheerful in good spirits	34	**3.15**	1.31	34	**3.21**	1.25	**-.059**	1.04	-.423	.305
Calm and relaxed	34	**3.24**	1.21	34	**3.32**	1.04	**-.088**	1.06	-.456	.280
Active and vigorous	34	**2.88**	1.32	34	**2.71**	1.17	**.176**	1.22	-.248	.601
Woke feeling rested	34	**2.65**	1.67	34	**2.47**	1.56	**.176**	1.22	-.248	.601
Daily life interests me	34	**2.94**	1.39	34	**3.21**	1.15	**-.265**	1.58	-.817	.287
Total	34	**14.85**	5.62	34	**14.91**	5.01	**-.059**	3.97	-1.444	1.326

Table 8

WHO Five Well-Being Index: Analysis of changes over course of study

Variable	Mean*	Std. D.	CI [95%]		t. test	df	P value**	Cohen***	CI [95%]	
Cheerful in good spirits	-.059	1.04	-.423	.305	-.329	33	.744	-.056	-.392	.280
Calm and relaxed	-.088	1.06	-.456	.280	-.488	33	.629	-.084	-.420	.254
Active and vigorous	.176	1.22	-.248	.601	.845	33	.404	.145	-.194	.482
Woke feeling rested	.176	1.22	-.248	.601	.845	33	.404	.145	-.194	.482
Daily life interests me	-.265	1.58	-.817	.287	-.975	33	.336	-.167	-.505	.172
Total	**-.059**	**3.97**	**-1.44**	**1.326**	**-.086**	**33**	**.932**	**-.015**	**-.351**	**.321**

*** Difference in each paired mean **P value two-tailed ***Cohen effect size**

As seen in Table 7, the total mean scores of the WHO-5 increased slightly following the therapeutic bog intervention ($\bar{x}$= 14.91, Sd= 5.01), in comparison to prior to the intervention ($\bar{x}$= 14.85, Sd= 5.62, n=34). However, these changes were statistically insignificant (p<.93) with little effect size (d= -.015).

As presented in the Tables 7 and 8, 3 of the indicator scores went in the desired direction, increasing following the intervention, but these changes were statistically insignificant (p< .37-.74) with small effect sizes (d=-.056 - -.17). 2 of the indicator

scores decreased, going in the undesired direction, however, these were of little statistical significance (p< .40) and small effect size (d= .40).

5.7 Nature Relatedness Scale (NR-6)

Table 9 below displays the changes in the NR-6 over the course of the study and Table 10 presents an analysis of these changes.

Table 9

NATURE RELATEDNESS SCALE: CHANGES OVER COURSE OF STUDY

VARIABLE	PRE MEASURES			POST MEASURES			CHANGES IN PAIRED MEANS OVER TIME			
	N=	MEAN	STD. D.	N=	MEAN	STD. D.	MEAN	STD. D.	CI [95%]	
IDEAL VACATION	34	**3.38**	1.44	34	**3.68**	1.39	**-.294**	1.292	.222	-.745
MY ACTIONS ON ENVIRONMENT	34	**3.18**	1.19	34	**3.65**	1.07	**-.471**	1.331	.228	-.935
CONNECTION TO NATURE	34	**3.53**	1.38	34	**3.94**	1.01	**-.412**	1.076	.185	-.787
TAKE NOTICE OF WILDLIFE	34	**3.68**	1.15	34	**4.41**	.821	**-.735**	1.109	.190	-1.12
RELATIONSHIP TO NATURE	34	**3.59**	1.21	34	**4.12**	.880	**-.529**	1.022	.175	-.886
CONNECTED TO LIVING THINGS	34	**3.65**	1.45	34	**4.29**	.836	**-.647**	1.454	.249	-1.15
TOTAL	34	**21.00**	5.53	34	**24.09**	3.77	**-3.09**	-.608	-.971	-.238

Table 10

NATURE RELATEDNESS SCALE: ANALYSIS OF CHANGES OVER COURSE OF STUDY

VARIABLE	MEAN*	STD. D.	CI [95%]		t. test	df	P VALUE**	COHEN***	CI [95%]	
IDEAL VACATION	-.294	1.292	.222	-.745	-1.328	33	.193	-.228	-.567	.115
MY ACTIONS ON ENVIRONMENT	**-.471**	**1.331**	**.228**	**-.935**	**-2.061**	**33**	**.047**	**-.354**	**-.698**	**-.004**
CONNECTION TO NATURE	**-.412**	**1.076**	**.185**	**-.787**	**-2.231**	**33**	**.033**	**-.383**	**-.728**	**-.031**
TAKE NOTICE OF WILDLIFE	**-.735**	**1.109**	**.190**	**-1.12**	**-3.865**	**33**	**.001**	**-.663**	**-1.03**	**-.287**
RELATIONSHIP TO NATURE	**-.529**	**1.022**	**.175**	**-.886**	**-3.020**	**33**	**.005**	**-.518**	**-.873**	**-.156**
CONNECTED TO LIVING THINGS	**-.647**	**1.454**	**.249**	**-1.15**	**-2.595**	**33**	**.014**	**-.445**	**-.795**	**-.089**
TOTAL	**-3.09**	**5.077**	**.871**	**-4.860**	**-3.547**	**33**	**.001**	**-.608**	**-.971**	**-.238**

*** Difference in each paired mean **P value two-tailed ***Cohen effect size**

As presented in Table 9, the overall mean scores of the NR-6 increased following the therapeutic bog intervention ($\bar{x}$= 24.09, Sd= 3.77) when compared to scores prior to the intervention ($\bar{x}$=21, Sd=5.53, n=34). These findings indicate a statistically

significant (p<.001) increase in nature relatedness for the participants following the research, with a moderate effect size (d=.61).

As displayed above in Tables 9 and 10, all 6 of the NR-6 variables went in the desired direction with an increase in mean scores. All of these variables had small to medium effect sizes (d=.23- .66). 5 of these were of statistical significance (p< .05 to .001).

5.8 Qualitative findings

Research participants took part in focus groups to share their experiences of the study, allowing the researcher to gather the qualitative data. Four focus groups were conducted in total. Having analysed the focus groups undertaken in order to collect the qualitative data using Braun and Clarkes thematic analysis, five key themes emerged (Braun and Clarke, 2022).These main themes are blossoming on the bog, nature connection, inclusiveness, human connection, and the bumpy road to the bog. For some of these key themes, sub-themes were identified which provide further insights into the main theme. These key themes and sub themes are displayed in Table 11. The numbering beside the themes and key themes relate to the headings and subheadings they relate to in the subsequent discussion of the findings. The five key themes will now be presented, with reference to the identified sub-themes under certain themes which support understanding. Each identified theme will be explored, accompanied by direct quotations of the participants from the focus groups.

Table 11: Key themes and sub-themes

Themes	Sub themes
1. Blossoming on the bog	• 1.1 A slower pace of life • 1.2 Reminiscence
2. Nature connection	• 2.1 Nature as a therapeutic ally
3. Inclusiveness	• 3.1 Paternalist versus egalitarian
4. Human connection	
5. The bumpy road to the bog	

5.9 Blossoming on the bog

The experiences of participants in relation to their mental wellbeing while taking part in the bog programme emerged as a key theme during focus group analysis. This result supports the hypothesis of the study and the primary aim of exploring the impact of the bog nature programme on the maintenance and improvement of mental health and wellbeing. Participant feedback of the group was positive with many references to its benefits to mental health and wellbeing, and in creating feelings of calmness, stress-reduction and peace. Participants also described that the programme supported them in building self-confidence, self-understanding, and self-acceptance, and that the study facilitated participants to foster more positive ways of thinking.

One participant described improvements in their mental health and a sense of calmness related to their participation in the group.

(S4, Male) *"My mental health, I think it's probably improved. I'm in probably a crisis situation and I think it's probably made me slow down and calm myself a little bit more. And perhaps not be so hectic and frantic."*

This was shared by another participant who described that during their time on the bog, the calm environment allowed them to feel an inner sense of calm and to clear their mind, reducing negative thoughts and preoccupation with their mental health:

(S3, Female) *"It gave me a better understanding of things and I looked at things differently when I was in the bog. It helped kept me calm and helped me understand things better. Once you go into the calmness of something like the bog or somewhere like that it does calm your mind because I think you don't even think about mental health or anything like that. Everything seems to disappear."*

Another participant also shared the mood-boosting and mindful effect they experienced while out on the bog, and that these feelings would last all day.

(S9, Male) *"Being out in nature seemed to give an uplifting feeling that would draw you out of thoughts, and this uplifting feeling would last throughout the day. Nature seemed to give it its own momentum in a way."*

This calming and regulating effect was mirrored by another participant who described the peaceful feeling they felt, and noticed in others.

(S4, Male) *"I think peaceful, a lot of people seem to have a lot more peace about them and it seemed to be a little bit more in control of themselves, while in the bog"*

An uplifting effect while on the bog was also voiced.

(S12, Female) *"Yeah, I find it uplifting. Being outside in the fresh air, you feel good."*

Another participant described a new lease of life and hope for the future.

(S6, Female) *"just give me more of a new lease of life like G said you know I just became locked up in the humdrum of life, I wasn't meeting people and but it gave me impetus to break out of that bad cycle of you know of just the humdrum of everyday life and that you know, so it gave me hope for the future"*

Taking part in the project provided a sense of escapism from the stresses of everyday life.

(S9, Male) *"Step out of the nine to five and the concrete jungle. You're just zoned out of what's happening in day to day, and your brain is focused on the nature and where you are."*

These quotations from participants highlight the perceived benefits they experienced in relation to their mental health and wellbeing, from spending time on the bog and participating in the research over the 8 week period of the programme.

5.9.1 A slower pace of life

A prominent sub-theme that emerged in relation to the mental wellbeing of the research participants was a sense of a slower pace of life. Some participants compared the unhurried and calm rhythm of their time spent on the bog with the usual fast-paced and busy demands of everyday life. This sub-theme captures the therapeutic benefits of slowing down and mindfulness that the group provided to those who took part. It also highlights the tranquil environment of the bog in comparison to other busy and urban environments.

One participant described their time on the bog as a welcome change from the pressures of everyday life.

(S4, Male) *"It was a lovely kind of a slower pace to be living and everything is quite speedy and fast pace regularly. So it's lovely to just take nice deep breaths out in the fresh air of the country"*

This was shared by another participant who reflected on the new perspective this pace of life gave them.

(S3, Female) *"It's good the way it makes you think you don't have to be rushing and tearing and trying to do everything and that there's a slower way of doing things"*

These views suggest that spending time on the bog allowed participants to reflect on their lifestyle choices and the busyness of modern life, and to recognize that there is a slower and more intentional way of being.

5.9.2 Reminiscence

A prominent sub-theme that was evident from the focus groups was the participants' experience of *"going back in time".* Being on the bog invoked feelings of nostalgia and reminiscence of the past. One participant felt reconnected with their childhood memories, while other participants felt a feeling of connection with their ancestors and to primitive eras in Ireland.

For one participants, spending time on the bog reawakened a connection with nature that they remembered from their childhood, fostering a deeper sense of identity.

(S3, Female) *"I did grow up in the country, climbed trees and whatnot but its like when I turned kind of 18 I wasn't in them environments anymore. It just was like, I was kind of happier not being in them environments but now I realised that I missed them."*

One participant stated that it this feeling of going back in time was spiritual for them and allowed them to experience how Ireland was in the past prior to urbanisation.

(S5, Female) *"It's so pure out there and so primitive it was like nearly going back in time to Ireland like 2000 years ago. And how it was give me a sense of how Ireland was you know before all the cars and the roads and the busy busy business that has taken over yeah, there's nothing there there's nothing to distract you from nature you know? No cars no houses no people"*

Another participant shared their sense of being back in time and connected with their grandparents.

(S7, Female) *"You know, the whole thing was very good, it wasn't 2023 at all. Maybe be back to the time of our grandparents and the lifestyle they would have had."*

This person went on to share that they had started painting pictures of their ancestors, suggesting a deeper sense of connection to their heritage.

(S7, Female) *"Well, for some reason, I've started painting old photographs of family. So I sort of must have felt more connected to the past and just connections"*

These responses highlight the bog as a place that allows people to reminisce on childhood memories and the past and to connect with their ancestral and cultural heritage. These connections support the fostering of wellbeing, connection, remembrance and belonging.

5.10 Nature connection

Nature connection and the therapeutic effects of nature was another major theme that emerged from the focus groups. Participants reported an increased feeling of connection to the nature, the world and to themselves. This was reached by sensory stimulation, mindfulness, and connecting with the plants and trees on the bog. For some it brought a deeper spiritual devotion and understanding.

One participant described how the group nurtured their connection to nature, and reminded them of the interconnectedness of all life.

(S2, Male) *"I think I was always well connected to nature, but I felt alienated from it in some sort of way like it was out there and I was in here and I was different. The programme sort of reinforced that we're all one and everything's connected. It was very good like that."*

This sense of interconnectedness and the consolation of this was also experienced by other participant.

(S9, Male) *"It helped me feel connected to everything and that I am a part of something bigger and not alone"*

This newfound sense of interest in the natural world was mirrored by a second participant.

(S8, Female) *"It made me look deeper into nature and just pay more attention to the plants and other things"*

A sense of comfort, relaxation and wildness while on the bog was recounted by one speaker:

(S12, Female) *"I've really enjoyed it. I have found it very relaxing, and peaceful and I love being surrounded with green. It's very comforting I find, I love trees. I love the wildness on the bog. Things just grow as they want to,"*

This feeling of comfort and a sense of being at home was reiterated by another participant.

(S11, Male) *"It also helped my stress management and it helped with my stress as well because I felt so much at home in nature to tell you the truth."*

The bog provided a sense of freedom.

(S12, Female) *"And I just want to say freedom. I felt free in nature free of spirit and free"*

One speaker felt a deepening of their spirituality and a connection with their soul and god after spending time in nature.

(S10, Female) *"It has been getting me in touch with me inner spirit and my soul. Spiritually listening to nature brought me closer to God"*

This experience was shared by another person who agreed with the spiritual presence they noticed at the bog.

(S11, Male) *"Nature and god goes together the beauty and the colours and the air and everything is just lovely."*

These reflections from participants show the increased sense of a connection to nature that the research participants felt following their engagement with the programme, along with the benefits this deepened connection brought into their lives. These findings highlight the correlation between increased feeling of connection to nature and improvements in wellbeing, belonging and a connection to oneself and the world around them.

5.10.1 Nature as a therapeutic ally

During the focus group, participants were asked if they would spend more time in nature as a support for their mental health in the future. Many participants shared that they viewed spending time with nature as a valuable mental health support and that they would utilise this therapeutic intervention going forward.

This speaker shared their increased desire to spend more time outside and with others, and the knowing that this practice would support them in reducing rumination on themselves:

(S5, Male) *"Yeah so, I think it's giving me that desire to you know, to do more things outdoors with people you know, a new kind of perspective."*

Similarly, one participant agreed that they would spend more time outdoor, especially with others in group settings.

(S8, Female) *"Yes I love nature, I've always loved the mountains. I do plan to get out there more in nature for my mental health, with people especially if possible."*

Another participant described a deeper connection with nature and their desire to continue this connection as they recognised its healing potentials.

(S6, Female) *"I feel more connected with nature now you know, and I know where to go now to experience nature so I will definitely use it in the future as it is so healing"*

These views highlight the desire of participants of nature based therapeutic interventions on the bogs to continue to connect with nature spaces to support their mental wellbeing. These findings show that spending time in nature increases ones value of and relationship to these environments.

5.11 Inclusiveness

During the focus group sessions, participants were asked about their experiences of using CP during the research. Participants reported positive feedback regarding the CP, and appreciated the acknowledgment and inclusion of their opinions, decisions

and beliefs. An increased sense of self-confidence and empowerment was reported on an individual level, and witnessed in participants across in the group.

One participant described the benefits of CP in nurturing self-confidence, and how this supported people to feel comfortable within the group as time went on.

(S3, Female) *"It's great and it's even great for building people's confidence. Yes, some people that don't like talking, when they are out in the group and they start talking the confidence, you can see the confidence building and that's fantastic to see.."*

The utilisation of CP ensured that participants opinions mattered, supporting them to feel empowered in their mental health journey.

(S5, Female) *"I suppose it's just good to be involved in the planning, you know, you know, that, that our opinions were taken into account. It is really empowering and I am really grateful to have been a part of it"*

The use of CP ensured the group was well planned, and that participants could advocate in the running of the group.

(S4, Male) *"CP is the key to anything running smoothly and without that, you could have just the same people speaking out and taking over"*

This was reflected by another focus group participant who described the benefits of CP.

(S9, Male) *"I found the CP helpful as we all had a say in what we did and it felt like our opinions and ideas were valued and mattered".*

5.11.1 Paternalist versus egalitarian

The experience of using CP in a natural bog environment paired with the relaxed ethos of the group, gave participants a new perspective of mental health care. Participants reflected on the traditional biomedical approaches to care they had experienced. Some referred to these traditional approaches as authoritative, sterile, and restrictive in comparison to the collaborative and equal approach of CP.

One participant voiced the value of teamwork and a relaxed approach, in comparison to authoritative approaches which can hinder engagement in mental health care settings.

(S3, Female) *"When you're suffering with mental health the last thing you want is someone being authoritative or putting you under pressure. The good thing about here is if you don't like it you don't have to do it. There's never any pressure. A lot of nurses are very authoritative. They stamp their authority and you don't learn anything from that."*

The therapeutic environment of the bog group gave participants a new perspective of mental health care and supports.

(S6, Female) *"Yeah, I thought it was a great initiative you know very unusual you know, because normally mental health takes place in a sterile environment and there's no nature or anything like that in the in an office, you know, environment you know, so I definitely would do it again because it kind of put a new perspective on mental health and recovery."*

Strict practices and protocols were viewed as a barrier to engaging in mental health support.

(S2, Male) *"And everything has to be done by the book and that's really off putting."*

These reflections highlight the barriers and difficulties that service users experience when receiving mental health supports rooted in paternalistic systems. Participation in the research allowed participants to experience a therapeutic NBT, rooted in CP, equality and teamwork. These findings emphasise the need for an egalitarian ethos within the mental health services, and the development of nature-based therapeutic interventions to ensure the best outcomes and empowerment for those who need support.

5.12 Human connection

One of the key objectives of the study was to evaluate the impact the programme may have on social isolation and loneliness through social connection. The feedback from participants was that participation in the group had a positive impact on their social wellbeing, reducing feelings of loneliness, providing a sense of support amongst peers, and acted a reminder of the importance of social connection and spending time with others.

The value of peer support emerged as an important takeaway of the group.

(S2, Male) *"It has made me more outgoing, more likely to come out of my room. And it has taught me the value of peers. And everything is, everything is better with your own peer group I think"*

For some, the bog group and peer support eased feelings of loneliness.

(S4, Male) *"Peer support as you said, is everything, it is actually to be around people, you don't feel you're alone anymore"*

This was reflected by another person who experienced reduced feelings of loneliness during the group, but the recurrence of this loneliness again when the group had ended, showing the value of the project, and potential positive impact future studies and groups could have on individuals.

(S6, Female) *"Like the bog was a bit of release from loneliness, you know, but then when it stopped when the bog visits stopped I kind of went back to my old habits."*

Those in the group came from all walks of life and different backgrounds, but there was a camaraderie in doing something together.

(S13, Male) *"I thought meeting other people was great and we all got on okay and come from different parts and different situations. And it built my confidence up a little too"*

As time went on, participants became more comfortable as they got to know each other better.

(S10, Female) *"Nobody knew anybody on the first day and look at us now like, chat chat chat, we wouldn't have had very much to say at the start."*

These responses show the valuable social benefits the participants experienced during the group in forging social connections and friendships, receiving and giving peer support and relief from loneliness. The relaxed environment of the bog allowed the participants to feel comfortable in expressing themselves and learn from one another.

5.13 The bumpy road to the bog

It is important to acknowledge any barriers voiced by the research participants, the only barrier noted by participants was related to the transportation and accessibility of the site. Due to the geographical remote location of bogs, they are usually inaccessible by public transport and the roads leading to them are often curving and bumpy.

One participant, who had attended the bog via transportation from their local mental health service, found conditions squashed.

(S4, Male) *"I didn't thoroughly enjoy the transportation going and coming from the bog. If I'm 100% honest, I would wake up and I think oh Jesus the thought of going over here now in this jeep because it was like a squash mobiel."*

While another who drove in their personal car, found the bumpy road to the bog off-putting and would have preferred alternative transportation

(S6, Female) *"It's sometimes put me off having to drive to the bog, because it was a very bumpy road. I'd like to do it again if there was transport provided."*

These comments highlight the barriers that participants may face in accessing the bog in its rural location. This stresses the importance of accessibility and appropriate transportation when planning nature based therapeutic interventions, especially in bog environments.

5.14 Conclusion

This chapter has clearly displayed the research findings to the reader, conveying the impact of the nature-based therapeutic bog intervention on the mental health of the participants, with a particular focus on anxiety and depression symptoms, wellbeing and nature relatedness. Many of the positive changes observed were statistically significant and of a small to moderate effect size, highlighting the success of this study in achieving its aims and objectives, and in bog environments in fostering therapeutic benefits for those living with mental health difficulties.

The qualitative data, collected during focus groups with participants, was discussed using thematic analysis to generate themes and sub-themes, along with direct quotations from research participants. These findings clearly display the impact of the intervention for participants in relation to a number of health and wellbeing parameters.

Chapter 6: Discussion

6.1 Introduction

This chapter will discuss and contextualise the research findings presented in the previous chapter of this paper. The findings will be stated, followed by a comparison to current literature on the topic. Conclusions and meanings will then be drawn from these findings and the referenced literature. The literature discussed will include aforementioned research from this paper's literature review, along with other research that had not been considered or included in the earlier literature review section. The previously identified themes and sub-themes from the findings chapter have been grouped into three main concepts under the headings of: mental health, nature connection and social connection. These key concepts will be discussed, supported by the findings from the quantitative questionnaire, and conclusions drawn from the findings to provide clarity and understanding to the reader regarding the outcomes and significance of this research study.

6.2 Mental Health

The findings of this research study showed improvements and maintenance in mental health for the participants after taking part in the therapeutic bog programme. These mental health improvements included an enhancement in mood, feelings of inner peace, calmness, hope, happiness, relaxation and stress reduction.

The study found a significant decrease in anxiety symptoms for the participants, especially in the reduction of anxious and depressed moods, fears, and improvement in concentration and memory. Following the analysis of the HAM-A, it became evident that both pre-test and post-test means fall within the scores of 18-24 which indicates mild to moderate anxiety on the scale. In saying this, the mean post-test score falls closer to mild compared to the pre-test score which may indicate a moderate anxiety prognosis.

This research study also found a significant reduction in depression symptoms for many of the participants during the programme, particularly nurturing a sense of hope

for the future and satisfaction, and reducing feelings of guilt, irritation and hopelessness. The BDI pre-intervention mean score of 22.25 correlates with a 'moderate depression' prognosis which ranges from a total score of 21-30 while the post-intervention mean score of 18.44 correlates with 'borderline clinical depression' ranging from a cumulative score of 17-20. These calculations show a reduction in depression rank prognosis and severity when generalised over the whole population sample.

The analysis of the WHO-5 completed by the research participants revealed a slight increase in overall wellbeing for participants. However, these were not statistically significant or of a noteworthy effect size. The WHO-5 has been found to be reliable and to have high validity for a range of population groups (Sischka et al, 2020; Dadfar et al, 2018). However, the scale was originally developed to assess wellbeing for patients in primary healthcare settings (WHO, 1998). As many of the participants in this study were experiencing long term and enduring mental health difficulties, the WHO-5 may have been too simplistic of a tool to capture a change in overall wellbeing due to a range of health, social and lifestyle determinants in the subject group. The WHO-5 is based largely on a hedonistic philosophy in which wellbeing is equated with pleasure and the frequency of positive emotions and does not consider the presence or absence of negative emotions, and thus may not effectively capture the emotional spectrum and experience of the participants (Kusier and Folker, 2020). In consideration of these factors, it may have been useful to use a wellbeing tool that was more complex and detailed, in order to capture the subjective wellbeing of the participants before and after the bog research intervention.

Only two other studies have explored the specific link between bogs and mental health, these have taken place in the UK and have found corroborating benefits such as reductions of stress, physical health benefits and social connectedness for the participants (Maund et al, 2019; Reeves et al, 2019). The findings of this study are also supported by other research in Ireland and internationally that has evaluated the link between nature and mental health. In Ireland, the woodlands for health initiative shared promising findings with enhanced wellbeing and the promotion of recovery for those who took part (Woodlands for Health, 2020). Many other studies on the subject, in a wide range of habitats have found numerous benefits including enhanced quality of life, reductions in anxiety and depressive moods, enhanced self-esteem, confidence

and resilience, emotional regulation and relaxation (Heard et al, 2022; Takayama et al, 2022; Bloomfield, 2017; Farmer, 2014). Connecting with the natural world may support reflection and understanding of one's existential anxieties like identity, the meaning of life, isolation and death (Yalom, 1980). Exposure to natural environments reduces neural activity in the prefrontal cortex of the brain, physiologically supporting emotional regulation and reducing rumination and preoccupation (Bratman, 2015; Bratman, 2021).

The reduction in stress experienced by the research participants corroborates with the SRT, devised in 1981 by Roger Ulrich. This theory proposes that spending time in nature causes a reduction of stress, rumination and negative thinking because evolution and most of human existence occurred in these natural environments, thus providing a sense of innate comfort and safety (Ulrich, 1981). This theory has also been observed in previous studies which explored the relationship between nature immersion and stress reduction using physiological measures, and found significant reductions in salivary stress markers, cortisol levels, blood pressure and pulse rate (Hunter et al, 2019; Ochiai et al, 2015).

Urban noise has been shown to create a chronic stress response and state of alertness in the brain, correlating to poorer health outcomes including a poorer quality of life, sleep disturbances, stress, distraction, a subconscious sense of danger, and a higher risk of developing dementia (Meng et al, 2022; Stobbe, 2022; Suter, 1991). In contrast to this, listening to nature sounds has shown to increase brain entropy and neural connectivity, which correlated with increased reported wellbeing and cognitive functioning, the opposite effect was exhibited when listening to urban noises (Stobbe et al, 2024). Natural sounds such as water, wind and birdsong, has been correlated to many health benefits including a reduction in stress, anxiety and paranoia, restored attention and improvements in mood. This may be attributed to instinctive human association of safety with these sounds, thus acting as a protective factor for the prevention of, and to those living with, a mental illness (Hammoud, 2022; Stobbe et al, 2022; Ratcliffe, 2021).

These research findings are supported by current literature which explore the connection between spending time in natural landscapes, and improved mental wellbeing. The outcomes of this study highlight the therapeutic benefits of spending

time on bogs, particularly in the reduction of anxiety and depression symptoms, and in the fostering of positive emotions and feelings. These outcomes are supported by other studies which had similar findings, especially those which had also been carried out in bog environments (Maund et al, 2019; Reeves et al, 2019). These improvements in mental health outcomes may be explained by the reduction of neural activity in the brain while in natural habitats, reducing the chronic brain stress and overstimulation caused in urban areas, aiding in the regulation of emotions and reducing rumination. Previous research has shown that immersion in natural environments physiologically reduces stress, and this corroborates with the findings of this study, where participants experienced reductions in stress, calmness and relaxation (Hunter et al, 2019; Ochiai et al, 2015). These results validate Ulrich's SRT, thus highlighting the bog and natural environments as places of innate safety, as the human resonates with their natural habitat. The findings of this study highlight the therapeutic potentials of bog environments in supporting mental health improvement and maintenance for those attending the mental health services in Ireland. These findings provide an opportunity to develop innovative therapeutic interventions on bogs and other natural habitats to support mental health and wellbeing.

Participants in this study reported improvements in their sleep in both the Hamilton anxiety scale and the Becks depression inventory. These included enhanced sleep quality and reductions in insomnia symptoms, sleep disturbances and nightmares. These findings correlate with other studies which have found links between spending time in nature and improved sleep quality and quantity. Gladwell (2016) noted that following a nature walk, participants experienced greater restorative sleep. Another study found that sleep duration was longer following time spent in a natural environment (Johnson et al, 2018). One explanation for this is that spending time in natural habitats can aid in relaxation and also help to regulate circadian rhythms, which are physical and psychological changes that occur in humans in 24 hour cycles (Shah, 2022). It is vital for human health to be aligned with natural cycles of light and darkness, disturbance of this is known as 'circadian disruption', and can lead to psychological, neurological, metabolic and immune health issues (Vetter, 2020). Exposure to daylight has been shown to regulate and support circadian rhythmic function (Schamilow et al, 2023).

These findings highlight the significance of spending time in bog environments in aiding a restful night's sleep and improving symptoms of insomnia and other sleep disturbances for the participants. As found in other research identified above on the topic, spending time outdoors promotes relaxation and can improve circadian function. Exposure to natural daylight may have supported participants in regulating their circadian rhythms and reducing circadian disruption, promoting alignment to light and dark cycles and aiding in enhanced sleep quality and rest for those living with mental health difficulties and related sleep disturbances.

This study found that spending time on the bog allowed participants to slow down and experience an unhurried pace of life, which had therapeutic benefits and supported relaxation and mindfulness. The term 'pace of life' has been defined as the "relative rapidity or density of experiences, meanings, perceptions and activities" (Finnish and Walton, 2008). Research has shown that modern living, increasing urbanisation, mechanization and family needs have contributed to a faster pace of life and hurriedness for many people in today's society, when compared to previous generations, contributing to poorer health and social outcomes such as an increased risk of stress, depression and heart disease (Qidwai et al, 2016). This faster pace of life and focus on productivity has contributed to a sense of 'time scarcity' and a dissociation with natural human rhythms (Giurge et al, 2020). However, spending time in natural environments, can slow down and regulate the human perception of time due to a number of temporal perception factors, positively influencing health and wellbeing (Correia, 2024). Studies have shown that a walk in a natural setting is reported as feeling longer than a walk of the same duration in an urban setting (Davydenko and Peetz, 2017). Similarly in another study, time spent in natural environments was shown to elongate awareness and passage of time, in comparison to time spent in an urban environment (Ehret et al, 2020). Spending time in nature has been shown to result in feelings of awe, thus contributing to mindfulness and being in the present moment, life satisfaction and spaciousness (Rudd et al, 2012).

These findings and the related literature on this concept, highlight the bog as a place where one, particularly those living with mental health difficulties, can go to experience a slower, unhurried pace of life. This reduction in perceived pace of life had many mental health benefits for the participants, as it aided in relaxation and mindfulness. These outcomes are supported by the literature and may be explained by changes in

temporal perceptions while in natural environments, slowing down the passage of time. Spending time on the bog allowed the participants to leave behind their busy lives and separate from everyday stressors and responsibilities, slowing down the passing of time, resulting in increased awareness of their surroundings.

The research found that spending time on the bog brought the participants to a different place in time, and allowed them to reminisce and connect with their childhood memories and ancestry. The bogs in Ireland have been important community meeting places for thousands of years and are a central location of culture and heritage (O'Connor and Gearey, 2020). Intergenerational memory refers to the knowledge one has about their family history and cultural identity, this knowledge is associated with positive mental health and wellbeing as it fosters a sense of identity, understanding and self-esteem (Elias and Brown, 2022). Cultivating connections to one's ancestry and cultural heritage can nurture feelings of belonging and purpose, acting as a protective factor against poor mental health and vulnerability, while also bringing awareness to intergenerational trauma (Savage, 2023).

These findings conclude that the bogs provide a sense of timelessness to those who visit, and deepen ones sense of cultural identity and connection to childhood, heritage and ancestry. This feeling of ancestral and cultural connection is associated with enhanced wellbeing and builds a stronger sense of identity and belonging. This experience may be pivotal in nurturing good mental health and act as a protective factor for those living with mental illness while also bringing a deeper understanding to intergenerational trauma and family histories. This finding also highlights the importance of connection for communities to their local bogs, to maintain these landscapes as meeting places as they have been for thousands of years.

6.3 Nature Connection

This study found that spending time on the bog increased the participant's perceived connection to nature. Participants noticed wildlife more following the programme and had an increased sense of feeling connected to the earth and living things. Participants reported feelings of interconnectedness with all life and spiritual experiences. The analysis of the NR-6 revealed statistically significant findings which support the study's

objective of fostering an increased sense of nature connectedness for the participants through participation in the study. These statistics and interpretations reveal an overall increased perception of nature connectedness.

Research has found that an increased perception of nature connectedness leads to greater therapeutic outcomes, due to enhanced awareness and engagement while in a natural environment, a sense of belonging, and intentional use of nature for therapeutic purposes (Chang et al, 2024). Spirituality and nature are closely linked, as spending time connecting with nature can nurture spirituality and support the wellbeing and nourishment of the soul (Ryff, 2021). Many indigenous cultures believe that everything in nature has a soul and a spiritual essence, this is known as ‘animism’, this wisdom bringing great comfort, ritual and guidance to their lives and ways of being (Garcia, 2020). In animism, the wellbeing of the community is directly linked to the health of the environment around them. While western societies often place value and success on wealth and material objects, indigenous animist communities value their relationship to the natural world and their co-existence with the land, trees and animals around them (Helander-Renvall, 2009). Research has shown that people who value spirituality and relationships tend to be happier, while those who place value on extrinsic worth such as wealth and work were comparatively less happy (Lee and Kawachi, 2019). A higher sense of spirituality is linked with increased psychological wellbeing and healthy behaviours (Bozek et al, 2020). The ancient Irish people and the Celts also lived in animist societies and had deep spiritual relationships with the natural world, which has shaped Irish culture and mythology today (Mulvihill, 2016). Disconnectedness with nature has been shown to correlate with reduced life satisfaction and wellbeing (Barrable and Booth, 2022).

It is evident that participation in this study supported the participants in deepening their connection to nature, and in experiencing a sense of interconnectedness with all life and enhanced spirituality. These connections had therapeutic implications, nurturing mental health, happiness and belonging, as mirrored in previous research on the topic. In this way, spending time on the bog allowed the participants to deepen the human-nature connection and reclaim their ancestral animist wisdom from Ireland and around the world.

This research found that participants were more likely to consider their impact on the environment and their personal ecological actions following their time on the bog. Research has shown that nature relatedness is associated with higher awareness of environmental issues and corresponding sustainable environmental lifestyle choices (Dean et al, 2018). Similarly, a connection to nature may result in a higher prevalence of environmental activism behaviours to bring about change and protection to the natural world (Mackay, 2021). A disconnection from the natural world and increasing urbanisation has contributed to the world's climate crisis (Soga and Gaston, 2016). In a time of ecological destruction and climate change, it is pivotal that individuals and communities deepen in connection with the natural world, as this fosters a sense of guardianship, care and protection for the earth and its ecosystems (Lehmann, 2023).

The outcomes from this research study, along with the discussed previous literature, highlight how spending time on the bog and in natural environments, fosters a connection to nature, and thus increases environmental awareness and sustainable ecological behaviours and protection measures. In a time of climate crisis and species extinction, reconnection to the natural world is pivotal to increase awareness of environmental issues, develop a sense of responsibility and custodianship, and to ensure that action is taken to protect natural environments and the earth.

Participants experienced wonder, beauty and awe while in the bog environment, and particularly related this to the quietness, and the biodiversity, trees, plants and animals. These feelings of wonder, beauty and awe have been termed as 'self-transcendent emotions', which broaden one's perception, bring a sense of pleasure and bond people together in shared experience (Stellar et al, 2017). Self-transcendent emotions have been linked to increased mental and social wellbeing, as the person experiences greater life satisfaction, connection and oneness with others (Rudd et al, 2012). Feelings of awe provide a deeper sense of meaning in life and a connection to something greater than the self, allowing new life perspectives and experiences of interconnectedness and belonging, thus enhancing mental health (Monroy and Keltner, 2023). Bog environments have rich biodiversity and are home to many birds, animals, plants and trees (Irish Wetlands Committee, 2018). Biodiversity and species richness has been correlated to enhanced mental health and wellbeing, especially in areas with diverse species of trees and birds (Buxton et al, 2024; Methorst et al, 2021).

The self-transcendent emotions of awe, beauty and wonder experienced by the research participants deepened the therapeutic and healing potentials of the bog, as these emotions have been shown to enhance mental and social wellbeing and create new perspectives. The abundant and biodiverse bog environment, with its range of birds, animals and trees, appeared to provoke these self-transcendent emotions, and thus a greater sense of wellbeing, for the participants. These findings highlight the importance of protection and conservation of the biodiverse bog landscapes in Ireland. Hence, mental health services, and governmental organisations should advocate for the protection and creation of biodiverse habitats, to foster mental health and overall wellbeing.

This research found that participants were likely to view natural environments like the bog as future beneficial therapeutic supports that they could implement going forward to foster positive mental health. Research has found that spending even 10 minutes connecting with nature every day is likely to have health benefits for those living with a mental illness (Bettmann et al, 2024). An Irish Survey titled ‘Our Lives Outdoors’ was published in 2022 and aimed to explore the relationships between people in Ireland and the outdoors. 98% of the participants (n= 9346) reported to enjoy spending time outdoors. 40% of respondents reported spending time in nature spaces daily for recreational purposes, while 38% reported weekly recreational visits in nature. 98% of participants reported feeling ‘happier’ and 92% recorded feeling ‘healthier’ when they reflected on the time spent outdoors (Central Statistics Office, 2022).With 42% of adults living with a mental health disorder in Ireland in 2022 (Hyland, 2022), and mental health services that are under resourced with long waiting lists (McCárthaigh, 2023), it is vital that innovative, alternative supports such as NBT is developed to ensure early intervention, therapeutic support and positive outcomes. NBT has been shown to reduce pressure on healthcare systems and enhance service user outcomes, resulting in reduced outpatient visits and inpatient treatment stays (Wahrborg et al, 2014). It is clear that people in Ireland have an intrinsic connection with the natural world. Many mental health professionals have a positive view of NBT interventions in the promotion of confidence, ease of expression and symptom management for their clients, while also supporting therapeutic relationship development and service enhancement (Tambyah et al, 2022). Individual client barriers, such as a lack of understanding and motivation to engage in NBTs, and organisational barriers including scepticism,

resistance to change, service availability, limited time and funding, are factors to overcome and consider when planning and implementing nature-based therapies (Tambyah et al, 2022; Robinson, 2020). These highlight the need for organisational commitment and appropriate training to ensure the successful implementation and outcomes of NBT in practice.

The participants of this research viewed nature as a valuable therapeutic support which they would continue to avail of following the study's completion. Considering the resource challenges in the mental health care system, and rising needs for mental health support, this provides an opportunity for the mental health services to develop NBT interventions. This may enhance therapeutic outcomes for service users and reduce pressures on the healthcare system. It is vital that any barriers are considered, and appropriate training and organisational measures are conducted to ensure ongoing success.

6.4 Social Wellbeing

The findings of this research study found significant benefits for the social wellbeing of participants. Those who took part in the study experienced an increased sense of interest in other people and reduced feelings of loneliness. Many participants shared their experiences of connection with peers in their group, feeling understood and accepted as they were. The communal group aspect of the research contributed significantly to the positive experience reported by the participants during the study. Research has shown that social connections and supportive relationships are vital for health and life satisfaction, while isolation and loneliness increase risks of poor health outcomes such as depression, anxiety, cognitive decline and heart disease (Jordan, 2023). Loneliness is especially prevalent for older adults, increasing their risk of mortality and morbidity (Freedman and Nicolle, 2020). A lack of social connections has been shown to have greater risks on health than the effects of multiple social factors, and lifestyle predictors such as a poor diet and smoking (Williams-Farrelly et al, 2024). Those living with chronic depression may receive less social support over time, highlighting the need for consistent social engagement, particularly for those living with a mental illness (Houtjes et al, 2017). Figures have shown that over 20% of

people in Ireland feel lonely, highlighting this issue as a public health crisis (O'Reilly, 2024). Combatting and preventing loneliness requires a multifaceted approach which includes awareness and education, and the development of supportive interventions from organisations and community groups, individuals and society as a whole (Hawkley, 2022). Social connectedness has been correlated with a range of physical, emotional and intellectual benefits, and fosters feelings of belonging, optimism, joy and satisfaction in life, and reductions in stress and depression, acting as a protective factor against health deterioration (Wickramaratne et al, 2022). SP is a strengths-based approach in which community groups and healthcare organisations provide therapeutic activities in non-clinical environments. SP interventions support recovery and foster emotional, psychological and physical health, as well as easing pressure on healthcare systems in the provision of accessible, diverse support (McGrath, et al 2022; Morris et al, 2022; Mahut and Fortune, 2021). Nature-based SP has been shown to enhance social and nature connectedness, and overall wellbeing, reducing symptoms of anxiety and depression (Haywood et al, 2024; Wood et al, 2022; Howarth et al, 2020).

These research findings identify social connectedness as a vital element of mental wellbeing and positive mental health, as experienced by the research participants. Loneliness can have devastating consequences on physical, emotional and social wellbeing. Thus, it is vital that the mental health services, and community organisations develop more group activates and interventions, to provide opportunities for social connection and engagement, to ensure the best health outcomes for those living with mental illness. The expansion of nature-based SP throughout Ireland by community and healthcare organisations, may be a solution in preventing loneliness and providing community support, connection and integration, especially for those who experience loneliness, or those living with, or at risk of, developing a mental illness.

Peer support emerged as an important and meaningful experience for many of the participants, who provided understanding and support to one another throughout the study. For those experiencing mental health difficulties, peer support instils hope, empowerment and purpose, and supports recovery through learning from one another and the promotion of coping strategies from personal lived experiences (Poremski, 2022; Hunt and Byrne, 2019). Formally, peer support workers have been employed in the Irish mental health services to act as advocates, therapeutic supports, to challenge

stigma and enhance communication (Guarino et al, 2024). The availability of peer recovery supports has been shown to increase service user engagement and relatedness and reduce self-criticism and the need for outpatient services (O'Connell et al, 2017). The enhancement of peer support opportunities ensures a person-centred approach, improving mental health service provision (Joo et al, 2022). Peer support services provide healthcare professionals with a referral pathway for clients who may benefit from peer led engagement, however, systemic cultural barriers such as stigma, hierarchy and stereotypes may hinder the development of these supports in mental health systems (Beard et al, 2024; Sunkel and Sartor; 2022).

These findings underline the invaluable experience that peer support gave to the research participants, allowing them to feel understood and empowered, as they received and gave support to each other, drawing from their own life experiences. In previous research, peer support has had therapeutic advantages and ensures a recovery focused approach to care. This highlights the need to expand the opportunities for peer support among services users, and for the mental health services to formally develop more peer support worker roles, promoting advocacy, empowerment and equality.

This study found that there are many benefits to mental and social health when CP is implemented in mental health research. The use of CP provided an ethos of empowerment, equality and teamwork in the bog groups. These findings are reflected in other research on the topic, which have found many beneficial outcomes to CP led groups including the reduction of negative attitudes and stereotypes towards poor mental health, reducing stigma and inequalities, increasing social inclusion and feelings of belonging, empowerment and hope for participants, and fostering systematic change and creative expression (McCaffrey, 2021; Crowther et al, 2019; Jay et al, 2017). Co- productive practices promote the values of empowerment, safety, shared-participation and a recovery orientated approach in mental health care services (Guarino et al, 2024). CP practices can improve care quality, and influence mental health care systems, supporting policy and practice development through shared decision making, however, there have been concerns regarding the true collaborative capacity of CP in health services when compared to its utilization in research, due to power imbalances and hierarchy (Rose and Kalathil, 2019). This outlook is reflected by Oliver (2019) who describes how co-produced interventions and

programmes are more likely to have a positive impact for participants, enhance the quality of care, challenge power inequalities and diminish discrimination, stereotypes and oppression towards those living with mental illness. Nevertheless, doubts have been expressed regarding the true collaborative potential of CP between mental health professionals and those who attend services, due to the ingrained hierarchal values in mental health care systems. It is clear that the implementation of CP in the mental health services has invaluable, meaningful and important benefits for service user experiences and outcomes. Although the reformation of these traditional values may be challenging and complex, the effective integration of equitable relationships and CP in mental health services and systems is possible through the embracement of change, accountability, awareness and learning (Soklaridis et al, 2024).

The outcomes of the CP practices utilised in this research highlight the therapeutic implications of this procedure and is also supported by previous CP research and evaluations. Increasing the opportunity for CP in the mental health services in Ireland may enhance equality, respect, empowerment and collaboration, and challenge negative stereotypes. In saying that, it is clear that reformation of hierarchal attitudes is needed, and this can be achieved through collective dedication, education and awareness of mental health systems, caregivers and educators.

It was evident during the focus groups, that some participants experienced barriers and difficulties in the care they received in traditional biomedical approaches in mental health care, describing these approaches as sterile and authoritative. Traditional biomedical approaches to mental health care which can be authoritative, hierarchal and coercive in nature, often following strict protocols and procedures, result in ineffective treatment and poorer outcomes for those who attend these services for support (Human Rights Council, 2020). In recent years, the recovery-orientated approach to mental health care has been advocated as the favourable approach, with a focus on shared decision making, autonomy and empowerment (Health Service Executive, 2018). The Mental Health Commission continue to promote the recovery model of care in the Irish mental health services to ensure reformation of outdated systems, high standards of care and the best support outcomes (Mental Health Commission, 2018).

It is clear that the biomedical approach to mental health care is outdated and does not align with the recovery approach to care and modern perspectives. Mental health support that embraces empowerment, shared decision making, and autonomy ensures the best possible therapeutic outcomes for service users and respects personal opinions and wants. This highlights the need to abolish hierarchal constructs and continue to develop and promote an ethos of equality, recovery and respect within the Irish mental health services and mental health professional education.

The research identified transportation and the remote location of the bogs as significant barriers to access and utilisation. Transportation issues and geographic location have been highlighted as barriers to engagement and suitability of NBT in previous literature (Fixsen and Barrett, 2022; Tambyah et al, 2022). It is vital that health professionals and policy makers consider accessibility and proximity of the nature space when planning and implementing nature-based therapeutic interventions (Nejade, 2022). The government and environmental organisations should consider transport infrastructure enhancement, to ensure that members of the public can access these locations for their health and wellbeing. Mental health services must consider accessibility and the location of nature spaces when planning NBT interventions.

This chapter has reiterated the findings of this research study, along with a contextualised explanation and dissemination of these findings in relation to previous research on the topic, and thus drawn conclusions and a deeper understanding of these research outcomes. It is clear that the bogs offer a space for deep connection and healing, especially for those experiencing mental health difficulties.

6.5 Conclusion

This chapter has discussed the study's findings in relation to current literature on the research topic, and thus drawn conclusions from their research findings. The next chapter contains the implications, limitations and recommendations drawn from the study and its findings following the discussion and dissemination of the findings.

Chapter 7: Conclusions

7.1 Introduction

This chapter is the final chapter of this research thesis and is known as the conclusions chapter. Following on from the presentation and discussion of the research findings in the previous two chapters, the researcher has identified the implications, limitations and recommendations for mental health practice, policy and education that have emerged from this research study. These concepts will now be described in detail, followed by a conclusion drawn from the overall research process and outcomes.

7.2 Implications

The implications of this research study are outlined below. The research implications describe the meanings and conclusions drawn from the research findings, following their presentation, analysis and discussion. The implications consider how these findings may imply to wider populations and have a broader impact in the specific field, in this case, mental health care in Ireland.

- Engagement with a bog environment can have positive mental health implications on a person living with mental health distress, specifically in improving symptoms of depression and anxiety, reducing stress, and in nurturing feelings of happiness, hope, calmness and relaxation.
- The mental health services could develop and implement therapeutic NBT on bogs in Ireland as social prescriptions to support mental health, and a recovery focused approach to care, ensuring the best therapeutic health outcomes for those seeking mental health support. These interventions may offer an innovative solution to increased pressures and inadequate service provision in the mental health care services.
- Spending time on a bog may aid in improving sleep quality and reducing insomnia symptoms and sleep disturbances for a person living with a mental illness.

- Bog environments may invoke feelings of relaxation and mindfulness, thus reducing the perceived stresses of everyday life and pace of life, resulting in positive emotions and stress reduction.
- Contact with bog environments may create feelings of nostalgia, reminiscence and cultural connection which support a sense of belonging, identity, connection to cultural heritage and one's ancestors.
- Engagement with the peaceful and natural environment of the bog may aid in nervous system regulation and activation of the parasympathetic nervous system, thus increasing the mind-body connection and reducing psychosomatic symptoms and preoccupation with physical health problems.
- Spending time on a bog may increase a person's perceived connectedness to nature, thus instilling feelings of interconnectedness with all life, spirituality and belonging, enhancing mental health and overall wellbeing.
- Connecting with the bog may increase one's environmental awareness, and thus, encourage pro-environmental behaviours and a sense of responsibility to protect natural environments, thus supporting climate change prevention, conservation and sustainability.
- The biodiversity of the bog environment may provoke self-transcendent emotions such as wonder and awe, which provide new perceptions and deeper meaning, supporting mental health and a sense of connection.
- People who participated in NBT on the bog, are likely to continue to view nature as a therapeutic mental health support and seek continued engagement and connection with the natural world.
- Group activities on bogs can provide meaningful social connections to those living with mental health difficulties, reducing feelings of loneliness and isolation and thus enhancing mental, physical and social wellbeing.
- Peer support may be an invaluable experience for those living with mental health distress, and the development of peer support opportunities and roles within the mental health services could increase service user satisfaction, experience and recovery outcomes.
- The use of CP during nature-based therapeutic interventions may promote equality, teamwork and collaboration and empowerment for those involved,

supporting mental wellbeing and the recovery focused approach to mental health care.

- The hierarchal approach to mental health care may be outdated and may not support a recovery focused approach to care, and thus a model of equality and shared decision making could ensure the best possible therapeutic outcomes for users of the mental health services.
- Transportation to rural bog locations is insufficient, and more transportation infrastructure is needed to support service users in accessing and engaging with the bogs for their mental health.

7.3 Limitations

It is important to acknowledge the limitations that have been identified in this research study. Limitations can be described as shortcomings that the researcher encountered during the research that may have impacted on the research processes and outcomes (Ross and Zaidi, 2019).

- The size of the research sample was a limitation. As the sample size was relatively small at 34, it is important to consider how generalizable the research findings are to the wider population. However, the use of qualitative focus groups ensured a large collection of rich data and insights for the study.
- Transportation was another significant limitation for this research study. Public transportation to and from the rural bog locations was non-existent. Transport was provided by the mental health services for some of the participants and groups. While for other groups, the researcher was able to organise transportation with local link transportation services. In saying this, some participants still struggled to get transportation from their homes to the pickup locations for the organised transport. These transportation barriers prevented the implementation of the research in Counties Cavan and Monaghan.
- This research study was carried out in one region in the Northeast of Ireland, in Counties Louth and Meath. Originally, the study was also going to be carried out in Counties Cavan and Monaghan, but as described previously, difficulties

in acquiring appropriate transportation to the rural bog sites in these Counties meant that carrying out the research in these regions was not feasible.

7.4 Recommendations

The recommendations that have been identified in this research study will be outlined below, in relation to mental health care practice, policy and education. These recommendations are suggestions from the researcher into possible actions, changes, and further areas of research that may be beneficial in enhancing and promoting therapeutic bog and NBT interventions in Ireland.

7.4.1 Practice

- The Health Service Executive should develop nature-based therapies on bogs throughout Ireland as part of their overall range of therapies to support the mental, physical and social health of those attending the mental health services.
- Bog and other NBTs should be implemented as part of a social prescribing scheme. This could be supported by mental healthcare professionals, and other health professionals such as GPs and public health nurses, making it an accessible and beneficial support for anyone who needs it.
- Bog and other NBT interventions should be considered as an early intervention treatment, for those with mild symptomology and pre-clinical symptoms of mental health distress. This may act as a protective and beneficial intervention and prevent worsening of the person's mental health, ensuring the best possible outcome for the individual.
- The implementation of bog and NBT interventions should be beneficial in reducing pressure on the mental health care system, acting as a cost effective and accessible solution to under resourced services which result in long waiting lists, inadequate care provision and burnout for staff.
- Nature connectedness should be included on mental health assessments as a wellbeing indicator when a person presents to the mental health services. Engagement with nature could then be recommended to support their mental wellbeing and incorporated into their care plan if desired by the person.

- The mental health services should consider how they may introduce and encourage nature connection throughout the service. This may include delegating time to nature connection and nature walks; the planning of mental health units to contain gardens with flowers and trees, and indoor potted plants; pictures of natural environments in care settings; and the encouragement from staff to clients to connect with nature.
- CP practices should be expanded in the mental health services to promote empowerment, equality and teamwork, ensuring a recovery focused ethos to care.
- Peer support roles should be increased throughout the mental health services to empower those with lived experience to support and advocate for others, ensuring the best outcomes for service users.
- The Health Service Executive and governmental organisations such as the National Parks and Wildlife Service should develop transport infrastructure to bogs in Ireland to ensure that these locations are accessible to people who wish to engage with them to support their mental health and overall wellbeing.

7.4.2 Policy

- The mental health commission and the department of health should develop policies that support the planning and implementation of NBT interventions on bogs throughout Ireland.
- Social prescribing policies should be developed that will include bog and NBT, allowing mental health professionals and GPS to refer their clients for support, reducing pressure on the healthcare system, ensuring early intervention and promoting a recovery approach to care.

7.4.3 Education

- NBT education should be incorporated into undergraduate and postgraduate health professional programmes to provide an understanding of the potential therapeutic benefits of nature and bog engagement for service users and clients.

- A training programme should be developed for current mental health professionals, providing education and enhancing their understanding of NBT and its benefits.
- A recovery college course should be developed for service users to promote and provide education on the benefits of spending time in nature and on bogs for wellbeing.

This research study has identified potential subjects of further studies and investigations in these areas, such as;

- A study implemented throughout Ireland should be undertaken to investigate the benefits of therapeutic bog interventions on a larger population group of people attending the mental health services.
- A study should be conducted to explore the use of a bog programme as an early intervention for people experiencing pre-clinical symptoms of mental health distress, acting as a therapeutic support and preventing mental health deterioration.
- A study should explore the physiological impact of bog engagement and the relation of this to mental and physical health, measuring pulse rate, blood pressure and cortisol levels.
- A study should be conducted that investigates the cultural and social connections of Irish people with the bogs, and the impact this has had on mental and social wellbeing, and if so, the importance of maintaining this connection in the face of cultural and societal change.

7.5 Conclusion

In conclusion, the researcher has achieved their aim of planning, implementing and evaluating a research study that explores the impact of bog environments on the improvement and maintenance of mental health for a group of people attending the mental health services in the Counties of Louth and Meath in Ireland. The potential of NBT and the impact of utilising CP along with the effects of the programme on the social health and overall wellbeing was also explored during the research. This thesis has clearly outlined each step of the research process in its seven chapters; the introduction, literature review, methodology, methods, findings, discussion, and the

conclusion chapter containing the research implications, limitations and recommendations for policy, practice and education. It is clear from the outcomes of the research that engaging with the bog has therapeutic healing potentials for those living with mental health difficulties, especially in the reduction of symptoms of anxiety and depression, the improvement of sleep, and in the development of social connections. The mental health services in Ireland have an opportunity to develop NBT interventions on bogs and in other habitats as social prescriptions to ensure the best outcomes for service user's and to promote an empowering, recovery orientated and person focused approach to mental health care and wellbeing. As the bogs in Ireland undergo a paradigm shift, from fuel source locations to areas of conservation and rich biodiverse habitats, it is important to continue to utilise these spaces as community meeting places, areas of health, rejuvenation and heritage, now, and for the generations to come.

References

Abukari, A. (2009). Review of *Research Methods for the Social Sciences*, by J. Wellington & M. Szczerbinski. *British Educational Research Journal*, *35*(1), 158–159. Available from: http://www.jstor.org/sTable/40375562 [accessed 21 March 2023].

Adams, M. and Morgan, J. (2018). Mental Health Recovery and Nature: How Social and Personal Dynamics Are Important. *Ecopsychology* [online], 10(1), pp.44–52. Available from: http://www.liebertpub.com/doi/10.1089/eco.2017.0032 [accessed 26 October 2022].

Adevi, A.A., Uvnäs-Moberg, K. and Grahn, P. (2018). Therapeutic interventions in a rehabilitation garden may induce temporary extrovert and/or introvert behavioural changes in patients, suffering from stress-related disorders. *Urban Forestry & Urban Greening* [online], 30, pp.182–193. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1618866717304351 [accessed 26 October 2022].

Alharahsheh, H. H., & Pius, A. (2020). A review of key paradigms: Positivism VS interpretivism. *Global Academic Journal of Humanities and Social Sciences*, *2*(3), 39-43. Available from: https://www.researchgate.net/publication/338244145_A_Review_of_key_paradigms_positivism_VS_interpretivism [accessed 14 March 2023].

Ali, I., Benkwitz, A., McDonald, P., Allen, K. and Glover, A. (2022). Reflections on CP, Lived Experience and the Shared Learning Environment within the Development and Early Delivery of a Recovery College. *Journal of Recovery in Mental Health* [online], 5(2), pp.19–33. Available from: https://jps.library.utoronto.ca/index.php/rmh/article/view/37890 [accessed 3 December 2022].

Al-Saadi, H. (2014). Demystifying Ontology and Epistemology in research methods. *Research gate*, *1*(1), pp.1-10. Available from: https://www.researchgate.net/publication/260244813_Demystifying_Ontology_and_Epistemology_in_Research_Methods [accessed 12 March 2023].

Andrade, C. (2018). Internal, External, and Ecological Validity in Research Design, Conduct, and Evaluation. *Indian Journal of Psychological Medicine* [online], 40(5), pp.498–499. Available from: http://journals.sagepub.com/doi/10.4103/IJPSYM.IJPSYM_334_18 [accessed 22 February 2023].

Andrade, C. (2019). The P Value and Statistical Significance: Misunderstandings, Explanations, Challenges, and Alternatives. *Indian Journal of Psychological Medicine* [online], 41(3), pp.210–215. Available from: http://journals.sagepub.com/doi/10.4103/IJPSYM.IJPSYM_193_19 [accessed 27 September 2024].

Andrade, C. (2020). Sample Size and its Importance in Research. *Indian Journal of Psychological Medicine* [online], 42(1), pp.102–103. Available from: http://journals.sagepub.com/doi/10.4103/IJPSYM.IJPSYM_504_19 [accessed 14 February 2023].

Anthony, W.A. (1993). Recovery from mental illness: The guiding vision of the mental health service system in the 1990s. *Psychosocial Rehabilitation Journal* [online], 16(4), pp.21. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/h0095655 [accessed 19 December 2022].

Apori, S.O., Mcmillan, D., Giltrap, M. and Tian, F. (2022). Mapping the restoration of degraded peatland as a research area: A scientometric review. *Frontiers in Environmental Science* [online], 10, p.942788. Available from: https://www.frontiersin.org/articles/10.3389/fenvs.2022.942788/full [accessed 1 February 2023].

Arkkelin, D. (2014). Using SPSS to Understand Research and Data Analysis. *Psychology Curricular Materials*. Available from: https://scholar.valpo.edu/cgi/viewcontent.cgi?article=1000&context=psych_oer[accessed 21 February 2023].

Asfeldt, M. and Beames, S. (2017). Trusting the Journey: Embracing the UnpredicTable and Difficult to Measure Nature of Wilderness Educational Expeditions. *Journal of Experiential Education* [online], 40(1), pp.72–86. Available

from: http://journals.sagepub.com/doi/10.1177/1053825916676101 [accessed 26 October 2022].

Aughterson, H., Baxter, L. and Fancourt, D. (2020). Social prescribing for individuals with mental health problems: a qualitative study of barriers and enablers experienced by general practitioners. *BMC Family Practice* [online], 21(1), p.194. Available from: https://bmcfampract.biomedcentral.com/articles/10.1186/s12875-020-01264-0 [accessed 2 February 2023].

Baker, A., Simon, N., Keshaviah, A., Farabaugh, A., Deckersbach, T., Worthington, J.J., Hoge, E., Fava, M. and Pollack, M.P. (2019). Anxiety Symptoms Questionnaire (ASQ): development and validation. *General Psychiatry* [online], 32(6), p.e100144. Available from: http://gpsych.bmj.com/lookup/doi/10.1136/gpsych-2019-100144 [accessed 20 March 2025].

Barrable, A. and Booth, D. (2022). Disconnected: What Can We Learn from Individuals with Very Low Nature Connection?.*International Journal of Environmental Research and Public Health* [online], 19(13), p.8021. Available from: https://www.mdpi.com/1660-4601/19/13/8021 [accessed 10 October 2024].

Barrow, J.M., Brannan, G.D. and Khandhar, P.B. (2022). Research Ethics. *StatPearls Publishing*. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459281/ [accessed 22 February 2023].

Bashan, D., Colléony, A. and Shwartz, A. (2021). Urban versus rural? The effects of residential status on species identification skills and connection to nature. Hoyle, H., ed. *People and Nature* [online], 3(2), pp.347–358. Available from: https://onlinelibrary.wiley.com/doi/10.1002/pan3.10176 [accessed 16 December 2022].

Beard, D., Cottam, C. and Painter, J. (2024). Evaluation of the Perceived Benefits of a Peer Support Group for People with Mental Health Problems. *Nursing Reports* [online], 14(3), pp.1661–1675. Available from: https://www.mdpi.com/2039-4403/14/3/124 [accessed 14 October 2024].

Beck, A. T., Epstein, N., Brown, G., & Steer, R. (1988). *Beck Anxiety Inventory*. *APA PsycTests.*

Beck, A. T., Steer, R. A., and Brown, G. K. (1996). *BDI-II: Beck Depression Inventory Manual,* 2nd Edn, Psychological Corporation. San Antonio, TX.

Beck, A.T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961) An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

Begum, F., Mutsatsa, S., Gul, N., Thomas, B. and Flood, C. (2020). Antipsychotic medication side effects knowledge amongst registered mental health nurses in England: A national survey. *Journal of Psychiatric and Mental Health Nursing* [online], 27(5), pp.521–532. Available from: https://onlinelibrary.wiley.com/doi/10.1111/jpm.12600 [accessed 4 December 2022].

Bergman, M. (2008). Advances in Mixed Methods Research. Continuum Available from: https://dokumen.pub/advances-in-mixed-methods-research-theories-and-applications-1412948088-9781412948081.html [accessed 18 March 2023].
Bettmann, J.E., Speelman, E., Blumenthal, E., Couch, S. and Schmalz, D.L. (2024). Nature Exposure, Even as Little as 10 Minutes, is Likely to Yield Short-Term Benefits for Adults with Mental Illness: A Meta Analysis. *Ecopsychology* [online], 16(3), pp.174–190. Available from: https://www.liebertpub.com/doi/10.1089/eco.2023.0063 [accessed 9 October 2024].

Bhandari, P. (2023). What Is Standard Error? | How to Calculate (Guide with Examples). *Scribbr.* Retrieved September 23, 2024, from https://www.scribbr.com/statistics/standard-error

Bhangu, S., Provost, F. and Caduff, C. (2023). Introduction to qualitative research methods – Part I. *Perspectives in Clinical Research* [online], 14(1), p.39. Available from: http://www.picronline.org/text.asp?2023/14/1/39/367304 [accessed 14 March 2023].

Bhardwaj, P. (2019). Types of sampling in research. *Journal of the Practice of Cardiovascular Sciences* [online], 5(3), p.157. Available from: http://www.j-pcs.org/text.asp?2019/5/3/157/273754 [accessed 13 February 2023].

Bielinis, E., Jaroszewska, A., Łukowski, A. and Takayama, N. (2019). The Effects of a Forest Therapy Programme on Mental Hospital Patients with Affective and Psychotic Disorders. *International Journal of Environmental Research and Public*

Health [online], 17(1), p.118. Available from: https://www.mdpi.com/1660-4601/17/1/118 [accessed 22 December 2022].

Blake, T. and Reilly, F. (2013). *Ancient Ireland: exploring Irish historic monuments*. Cork: The Collins Press.

Bloomfield, D. (2017). What makes NBT for mental health successful? *BJPsych. International* [online], 14(4), pp.82–85. Available from: https://www.cambridge.org/core/product/identifier/S2056474000002063/type/journal_article [accessed 27 November 2022].

Bloomfield, J. and Fisher, M. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses' Association* [online], 22(2), pp.27–30. Available from: https://www.arna.com.au [accessed 21 February 2023].

Bloomfield, J. and Fisher, M. (2019). Quantitative research design. *Journal of the Australasian Rehabilitation Nurses' Association* [online], 22(2), pp.27–30. Available from: https://www.arna.com.au [accessed 21 February 2023].

Blue Prescribing. (2022). Wildfowl and Wetlands Trust [online]. Available from: https://www.wwt.org.uk/our-work/projects/blue-prescribing [accessed 14 November 2022].

Bonham-Corcoran, M., Armstrong, A., O'Briain, A., Cassidy, A. and Turner, N. (2022). The benefits of nature-based therapy for the individual and the environment: an integrative review. *Irish Journal of Occupational Therapy* [online], 50(1), pp.16–27. Available from: https://www.emerald.com/insight/content/doi/10.1108/IJOT-06-2021-0015/full/html [accessed 27 October 2022].

Bord na Mona (2018). *Bord na Móna Reinforces Bog Rehabilitation Programme* [online]. Available from: https://www.bordnamona.ie/bord-na-mona-reinforces-bog-rehabilitation-programme/ [accessed 2 March 2023].

Bord na Mona. (2021). Bord na Móna announce formal end to all peat harvesting on its lands [online]. Available from: https://www.bordnamona.ie/bord-na-mona-announce-formal-end-to-all-peat-harvesting-on-its-lands/ [accessed 22 October 2024].

Bos, J. (2020). Confidentiality. In: Research Ethics for Students in the Social Sciences. *Springer International Publishing*, pp.149–173. Available from: https://link.springer.com/10.1007/978-3-030-48415-6_7 [accessed 23 October 2024].

Bourke, J., Kirby, A. and Doran, J. (2016). Survey & questionnaire design: collecting primary data to answer research questions. Ireland: NuBooks, an imprint of Oak Tree Press.

Bowers, H., Kendrick, T., Van Ginneken, N., Glowacka, M., Williams, S., Leydon, G.M., May, C., Dowrick, C., Moncrieff, J., Johnson, C.F., Moore, M., Laine, R. and Geraghty, A.W.A. (2021). A Digital Intervention for Primary Care Practitioners to Support Antidepressant Discontinuation (Advisor for Health Professionals): Development Study. *Journal of Medical Internet Research* [online], 23(7), p.e25537. Available from: https://www.jmir.org/2021/7/e25537 [accessed 26 March 2025].

Bożek, A., Nowak, P.F. and Blukacz, M. (2020). The Relationship Between Spirituality, Health-Related Behavior, and Psychological Well-Being. *Frontiers in Psychology* [online], 11, p.1997. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2020.01997/full [accessed 10 October 2024].

Bragg, R. & Leck, C. (2017) Good Practice in Social Prescribing for Mental Health: The Role of NBT. *Natural England Commissioned Reports*, Number 228. Available from: http://publications.naturalengland.org.uk/publication/5134438692814848[accessed 27 November 2022].

Brand, S. and Timmons, S. (2021). Knowledge sharing to support long-term condition self-management—Patient and health-care professional perspectives. *Health Expectations* [online], 24(2), pp.628–637. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hex.13209 [accessed 22 December 2022].

Bratman, G.N., Hamilton, J.P., Hahn, K.S., Daily, G.C. and Gross, J.J. (2015). Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proceedings of the National Academy of Sciences* [online], 112(28), pp.8567–8572. Available from: https://pnas.org/doi/full/10.1073/pnas.1510459112 [accessed 22 December 2022].

Bratman, G.N., Young, G., Mehta, A., Lee Babineaux, I., Daily, G.C. and Gross, J.J. (2021). Affective Benefits of Nature Contact: The Role of Rumination. *Frontiers in Psychology* [online], 12, p.643866. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.643866/full [accessed 22 December 2022].

Brauer, R., Alfageh, B., Blais, J.E., Chan, E.W., Chui, C.S.L., Hayes, J.F., Man, K.K.C., Lau, W.C.Y., Yan, V.K.C., Beykloo, M.Y., Wang, Z., Wei, L. and Wong, I.C.K. (2021). Psychotropic medicine consumption in 65 countries and regions, 2008–19: a longitudinal study. *The Lancet Psychiatry* [online], 8(12), pp.1071–1082. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2215036621002923 [accessed 26 March 2025].

Brauman, K.A., Garibaldi, L.A., Polasky, S., Aumeeruddy-Thomas, Y., Brancalion, P.H.S., DeClerck, F., Jacob, U., Mastrangelo, M.E., Nkongolo, N.V., Palang, H., Pérez-Méndez, N., Shannon, L.J., Shrestha, U.B., Strombom, E. and Verma, M. (2020). Global trends in nature's contributions to people. *Proceedings of the National Academy of Sciences* [online], 117(51), pp.32799–32805. Available from: https://pnas.org/doi/full/10.1073/pnas.2010473117 [accessed 19 December 2022].

Braun, V. and Clarke, V. (2022). Thematic analysis: a practical guide. Los Angeles London New Delhi Singapore Washington DC Melbourne: SAGE.

Brennan, D. (2015). *Irish insanity, 1800-2000*. Abingdon: Routledge.

Brenner, A.M. and Howe-Martin, L.S., eds. (2021*). Psychotherapy: a practical introduction*. Philadelphia: Wolters Kluwer.

Bressan, V., Bagnasco, A., Aleo, G., Timmins, F., Barisone, M., Bianchi, M., Pellegrini, R. and Sasso, L. (2017). Mixed-methods research in nursing - a critical review. *Journal of Clinical Nursing* [online], 26(19–20), pp.2878–2890. Available from: https://onlinelibrary.wiley.com/doi/10.1111/jocn.13631 [accessed 3 March 2023].

Broom, A. (2005). Using qualitative interviews in CAM research: A guide to study design, data collection and data analysis. *Complementary Therapies in Medicine* [online], 13(1), pp.65–73. Available from:

https://linkinghub.elsevier.com/retrieve/pii/S0965229905000099 [accessed 18 March 2023].

Brown, M.E.L. and Dueñas, A.N. (2020). A Medical Science Educator's Guide to Selecting a Research Paradigm: Building a Basis for Better Research. *Medical Science Educator* [online], 30(1), pp.545–553. Available from: http://link.springer.com/10.1007/s40670-019-00898-9 [accessed 2 March 2023].

Bryman, A. (2016). *Social research methods*. Fifth Edition. Oxford ; New York: Oxford University Press.

Bunniss, S. and Kelly, D.R. (2010). Research paradigms in medical education research. *Medical Education* [online], 44(4), pp.358–366. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1365-2923.2009.03611.x [accessed 14 March 2023].

Butler, M.I., Mörkl, S., Sandhu, K.V., Cryan, J.F. and Dinan, T.G. (2019). The Gut Microbiome and Mental Health: What Should We Tell Our Patients?.*The Canadian Journal of Psychiatry* [online], 64(11), pp.747–760. Available from: http://journals.sagepub.com/doi/10.1177/0706743719874168 [accessed 19 December 2022].

Butterly, L. (2014). Institutional reform in mental healthcare in Ireland: the establishment of the Ardee Mental Hospital, 1933, in its historical context. Available from: https://mural.maynoothuniversity.ie/id/eprint/7716/ [accessed 5 September 2024].

Buxton, R.T., Hudgins, E.J., Lavigne, E., Villeneuve, P.J., Prince, S.A., Pearson, A.L., Halsall, T., Robichaud, C. and Bennett, J.R. (2024). Mental health is positively associated with biodiversity in Canadian cities. *Communications Earth & Environment* [online], 5(1), p.310. Available from: https://www.nature.com/articles/s43247-024-01482-9 [accessed 10 October 2024].

Carper, B. (1978) *Fundamental patterns of knowing in nursing*. Advances in Nursing Sciences; pp 1, 13- 23

Carrozzino, D., Christensen, K.S., Patierno, C., Woźniewicz, A., Møller, S.B., Arendt, I.-M.T.P., Zhang, Y., Yuan, Y., Sasaki, N., Nishi, D., Berrocal Montiel, C., Ceccatelli, S., Mansueto, G. and Cosci, F. (2022). Cross-cultural validity of the WHO-5 Well-

Being Index and Euthymia Scale: A clinimetric analysis. *Journal of Affective Disorders* [online], 311, pp.276–283. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0165032722006322 [accessed 21 February 2023].

Carter, N, Bryant-Lukosius, D, DiCenso, A, Blythe, J, & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncol Nurs Forum*. 41(5), pp. 545-7. Available from: https://onf.ons.org/onf/41/5/use-triangulation-qualitative-research [accessed 19 March 2023].

Casteel, A. and Bridier, N. (2021). Describing Populations and Samples in Doctoral Student Research. *International Journal of Doctoral Studies* [online], 16, pp.339–362. Available from: https://www.informingscience.org/Publications/4766 [accessed 13 February 2023].

Central Statistics Office. (2022). Our Lives Outdoors. Available from: https://www.cso.ie/en/releasesandpublications/fp/fp-olod/pulsesurveyapril-may2022-ourlivesoutdoorssnapshotofresults/introduction/.

Chang, C., Lin, B.B., Feng, X., Andersson, E., Gardner, J. and Astell-Burt, T. (2024). A lower connection to nature is related to lower mental health benefits from nature contact. *Scientific Reports* [online], 14(1), p.6705. Available from: https://www.nature.com/articles/s41598-024-56968-5 [accessed 9 October 2024].

Chang, Y.-C., Chang, L.-H., Hsu, S.-T. and Huang, M.-W. (2021). Professional perspectives on providing recovery-oriented services in Taiwan: a qualitative study. *BMC Psychiatry* [online], 21(1), p.154. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-021-03152-y [accessed 19 December 2022].

Chapman, H., Gearey, B., Bunting, J., Davies, K., Whitehouse, N. and Conversation, T. (2018). Bogs are unique records of history – here's why [online]. Available from: https://phys.org/news/2018-09-bogs-unique-history.html [accessed 2 March 2023].

Chaudhury, P. and Banerjee, D. (2020). "Recovering With Nature": A Review of Ecotherapy and Implications for the COVID-19 Pandemic. *Frontiers in Public Health* [online], 8, p.604440. Available from:

https://www.frontiersin.org/articles/10.3389/fpubh.2020.604440/full [accessed 27 October 2022].

Chavaly, D. and Naachimuthu, K.P. (2020). Human-Nature Connection And Mental Health: What Do We Know So Far?. *Indian Journal of Health and Well-being* [online], 11(01). Available from: http://iahrw.com/article.php?article=S2cxbVZNeUNacWltbmgyRFdhQ3paZz09 [accessed 14 December 2022].

Cipriani, A., Furukawa, T.A., Salanti, G., Chaimani, A., Atkinson, L.Z., Ogawa, Y., Leucht, S., Ruhe, H.G., Turner, E.H., Higgins, J.P.T., Egger, M., Takeshima, N., Hayasaka, Y., Imai, H., Shinohara, K., Tajika, A., Ioannidis, J.P.A. and Geddes, J.R. (2018). Comparative Efficacy and Acceptability of 21 Antidepressant Drugs for the Acute Treatment of Adults With Major Depressive Disorder: A Systematic Review and Network Meta-Analysis. *FOCUS* [online], 16(4), pp.420–429. Available from: https://psychiatryonline.org/doi/10.1176/appi.focus.16407 [accessed 4 December 2022].

Clapp, M., Aurora, N., Herrera, L., Bhatia, M., Wilen, E. and Wakefield, S. (2017). Gut Microbiota's Effect on Mental Health: The Gut-Brain Axis. *Clinics and Practice* [online], 7(4), p.987. Available from: https://www.mdpi.com/2039-7283/7/4/987 [accessed 19 December 2022].

Claris Fisher, J., Emmerson Bicknell, J., Nesbitt Irvine, K., Fernandes, D., Mistry, J. and Georgina Davies, Z. (2021). Exploring how urban nature is associated with human well-being in a neotropical city. *Landscape and Urban Planning* [online], 212, p.104119. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0169204621000827 [accessed 16 December 2022].

Clarke, F.J., Kotera, Y. and McEwan, K. (2021). A Qualitative Study Comparing Mindfulness and Shinrin-Yoku (Forest Bathing): Practitioners' Perspectives. *Sustainability* [online], 13(12), p.6761. Available from: https://www.mdpi.com/2071-1050/13/12/6761 [accessed 23 January 2023].

Cohen, J. (1998*). Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates.

Cohen, L., Manion, L. and Morrison, K. (2018). *Research methods in education*. Eighth edition. London ; New York: Routledge.

Colding, J., Gren, Å. and Barthel, S. (2020). The Incremental Demise of Urban Green Spaces. *Land* [online], 9(5), p.162. Available from: https://www.mdpi.com/2073-445X/9/5/162 [accessed 27 October 2022].

Coleman, E., O'Sullivan, L., Crowley, R., HaNBTdge, M., Driver, S., Kroll, T., Kelly, A., Nichol, A., McCarthy, O., Sukumar, P. and Doran, P. (2021). Preparing accessible and understandable clinical research participant information leaflets and consent forms: a set of guidelines from an expert consensus conference. *Research Involvement and Engagement* [online], 7(1), p.31. Available from: https://researchinvolvement.biomedcentral.com/articles/10.1186/s40900-021-00265-2 [accessed 22 February 2023].

Collado, S., Corraliza, J.A., Staats, H. and Ruiz, M. (2015). Effect of frequency and mode of contact with nature on children's self-reported ecological behaviors. *Journal of Environmental Psychology* [online], 41, pp.65–73. Available from: https://linkinghub.elsevier.com/retrieve/pii/S027249441400098X [accessed 16 December 2022].

Collins, C., Larkin, J. and Pericin, I. (2019). *Promoting the Physical Health of Patients with Enduring Mental Illness.* Irish College of General Practitioners. Dublin.

Collins, P., Naughton, L., Heslin, R. and Ryan, M. (2016) Advancing Recovery in Ireland: A guidance paper on implementing organisational and cultural change in mental health services in Ireland

Comeragh Wilderness Camp (2024) [online]. About our Therapeutic Wilderness Camping Programme. Available from: https://www.wilderness.ie/about-us/ [accessed 12 November 2022].

Corazon, S.S., Stigsdotter, U.K., Moeller, M.S. and Rasmussen, S.M. (2012). Nature as therapist: Integrating permaculture with mindfulness- and acceptance-based therapy in the Danish Healing Forest Garden Nacadia. *European Journal of Psychotherapy & Counselling* [online], 14(4), pp.335–347. Available from: http://www.tandfonline.com/doi/abs/10.1080/13642537.2012.734471 [accessed 28 October 2022].

Corine Landcover (2018) - data.gov.ie. Available from: https://data.gov.ie/dataset/corine-landcover-2018#:~:text=Corine%20Land%20Cover%202018%20is,2018%20landcover%20map%20of%20Europe. [accessed 1 March 2023].

Correia, R.A. (2024). Acknowledging and understanding the contributions of nature to human sense of time. *People and Nature* [online], 6(2), pp.358–366. Available from: https://besjournals.onlinelibrary.wiley.com/doi/10.1002/pan3.10601 [accessed 3 October 2024].

Corry, M., Porter, S. and McKenna, H. (2019). The redundancy of positivism as a paradigm for nursing research. *Nursing Philosophy* [online], 20(1), p.e12230. Available from: https://onlinelibrary.wiley.com/doi/10.1111/nup.12230 [accessed 4 March 2023].

Cox, D.T.C., Shanahan, D.F., Hudson, H.L., Fuller, R.A. and Gaston, K.J. (2018). The impact of urbanisation on nature dose and the implications for human health. *Landscape and Urban Planning* [online], 179, pp.72–80. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0169204618306571 [accessed 19 December 2022].

Creswell, J.W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. 3rd ed. Thousand Oaks, Calif: Sage Publications. Available from: https://www.ucg.ac.me/skladiste/blog_609332/objava_105202/fajlovi/Creswell.pdf [accessed 20 March 2023].

Creswell, J.W. and Clark, V.L.P., (2017). *Designing and conducting mixed methods research*. Sage publications.

Creswell, J.W. and Creswell, J.D., (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Thousand Oaks, CA: Sage

Crowther, A., Taylor, A., Toney, R., Meddings, S., Whale, T., Jennings, H., Pollock, K., Bates, P., Henderson, C., Waring, J. and Slade, M. (2019). The impact of Recovery Colleges on mental health staff, services and society. *Epidemiology and*

Psychiatric Sciences [online], 28(5), pp.481–488. Available from: https://www.cambridge.org/core/product/identifier/S204579601800063X/type/journal_article [accessed 3 December 2022].

Cuijpers, P., Cristea, I.A., Karyotaki, E., Reijnders, M. and Huibers, M.J.H. (2016). How effective are cognitive behavior therapies for major depression and anxiety disorders? A meta-analytic update of the evidence. *World Psychiatry* [online], 15(3), pp.245–258. Available from: https://onlinelibrary.wiley.com/doi/10.1002/wps.20346 [accessed 19 December 2022].

Cusack, E. (2021). A Narrative History of Psychiatric / Mental Health Nursing in the Asylum / Mental Hospital System in Ireland from 1940 to 1970. , Available from: https://doras.dcu.ie/25320/ [accessed 23 December 2022].

Dadfar, M., Momeni Safarabad, N., Asgharnejad Farid, A.A., Nemati Shirzy, M. and Ghazie Pour Abarghouie, F. (2018). Reliability, validity, and factorial structure of the World Health Organization-5 Well-Being Index (WHO-5) in Iranian psychiatric outpatients. *Trends in Psychiatry and Psychotherapy* [online], 40(2), pp.79–84. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S2237-60892018000200079&lng=en&tlng=en [accessed 18 November 2024].

Daly, A. and Craig, S. (2020). Annual Report on the Activities of Irish Psychiatric Units and Hospitals 2020.

Davies, J. et al. (2023). Politicians, experts, and patient representatives call for the UK government to reverse the rate of antidepressant prescribing. *BMJ* [online], 5 December 2023, p.p2730. Available from: https://www.bmj.com/lookup/doi/10.1136/bmj.p2730 [accessed 26 March 2025].

Davydenko, M. and Peetz, J. (2017). Time grows on trees: The effect of nature settings on time perception. *Journal of Environmental Psychology* [online], 54, pp.20–26. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0272494417301081 [accessed 3 October 2024].

Dawadi, S., Shrestha, S. and Giri, R.A. (2021). Mixed-Methods Research: A Discussion on its Types, Challenges, and Criticisms. *Journal of Practical Studies in Education* [online], 2(2), pp.25–36. Available from:

https://www.jpse.gta.org.uk/index.php/home/article/view/20 [accessed 22 March 2023].
De Vocht, F., Katikireddi, S.V., McQuire, C., Tilling, K., Hickman, M. and Craig, P. (2021). Conceptualising natural and quasi experiments in public health. *BMC Medical Research Methodology* [online], 21(1), p.32. Available from: https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-021-01224-x [accessed 21 February 2023].

De Vocht, F., Katikireddi, S.V., McQuire, C., Tilling, K., Hickman, M. and Craig, P. (2021). Conceptualising natural and quasi experiments in public health. *BMC Medical Research Methodology* [online], 21(1), p.32. Available from: https://bmcmedresmethodol.biomedcentral.com/articles/10.1186/s12874-021-01224-x [accessed 21 February 2023].

Dean, J., Shanahan, D., Bush, R., Gaston, K., Lin, B., Barber, E., Franco, L. and Fuller, R. (2018). Is Nature Relatedness Associated with Better Mental and Physical Health?. *International Journal of Environmental Research and Public Health* [online], 15(7), p.1371. Available from: http://www.mdpi.com/1660-4601/15/7/1371 [accessed 28 October 2022].

Denzin, N.K. (2010). Moments, Mixed Methods, and Paradigm Dialogs. *Qualitative Inquiry* [online], 16(6), pp.419–427. Available from: http://journals.sagepub.com/doi/10.1177/1077800410364608 [accessed 17 March 2023].

Department of Health (2020), "*Sharing the vision: a mental health policy for everyone*", Government of Ireland, Dublin, available at: www.gov.ie/en/publication/2e46f-sharing-the-vision-a-mental-health-policy-for-everyone

Department of Health. (2022). Minister Butler announces additional investment in primary care psychology and mental health as part of 2022 Waiting List Action Plan. Available from: https://www.gov.ie/en/press-release/53039-minister-butler-announces-additional-investment-in-primary-care-psychology-and-mental-health-as-part-of-2022-waiting-list-action-plan/.

Devlin, A.S. (2021). *The research experience: planning, conducting, and reporting research*. Second edition. Los Angeles: SAGE Publications, Inc.

Dew, J. and Foreman, M. (2020). How Do We Know? An Introduction to Epistemology. Available from: https://www.ivpress.com/Media/Default/Downloads/Excerpts-and-Samples/5512-excerpt.pdf. [accessed 20 November 2022].

Donovan, N.J. and Blazer, D. (2020). Social Isolation and Loneliness in Older Adults: Review and Commentary of a National Academies Report. *The American Journal of Geriatric Psychiatry* [online], 28(12), pp.1233–1244. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7437541/ [accessed 3 February 2023].

Dr. Swarooprani. K. (2022). A Study of Research Methodology. *International Journal of Scientific Research in Science, Engineering and Technology* [online], 28 June 2022, pp.537–543. Available from: https://ijsrset.com/IJSRSET2293175 [accessed 23 October 2024].

Driessen, E., Hollon, S.D., Bockting, C.L.H., Cuijpers, P. and Turner, E.H. (2015). Does Publication Bias Inflate the Apparent Efficacy of Psychological Treatment for Major Depressive Disorder? A Systematic Review and Meta-Analysis of US National Institutes of Health-Funded Trials. Lu, L., ed. *PLOS ONE* [online], 10(9), p.e0137864. Available from: https://dx.plos.org/10.1371/journal.pone.0137864 [accessed 19 December 2022].

Drinkwater, C., Wildman, J. and Moffatt, S. (2019). Social prescribing. *BMJ* [online], 28 March 2019, p.l1285. Available from: https://www.bmj.com/lookup/doi/10.1136/bmj.l1285 [accessed 9 February 2023].

Duffy, J. T. (2022). The Draw of the Wild: How to Easily Integrate Nature into Clinical Practice. *Journal of Counsellor Preparation and Supervision*, 15(2) Available from: https://digitalcommons.sacredheart.edu/cgi/viewcontent.cgi?article=1552&context=jcps [accessed 7 December 2022].

Duffy, J.T., Springer, S., Delaney, M. and Luke, M. (2020). Eco-Education: Integrating Nature into Counselor Education. *Journal of Creativity in Mental Health* [online], 15(1), pp.55–68. Available from:

https://www.tandfonline.com/doi/full/10.1080/15401383.2019.1640152 [accessed 7 December 2022].

Duron-Ramos, M.F., Collado, S., García-Vázquez, F.I. and Bello-Echeverria, M. (2020). The Role of Urban/Rural Environments on Mexican Children's Connection to Nature and Pro-environmental Behavior. *Frontiers in Psychology* [online], 11, p.514. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2020.00514/full [accessed 16 December 2022].

Ee, C., Lake, J., Firth, J., Hargraves, F., de Manincor, M., Meade, T., Marx, W. and Sarris, J. (2020). An integrative collaborative care model for people with mental illness and physical comorbidities. *International Journal of Mental Health Systems* [online], 14(1), p.83. Available from: https://doi.org/10.1186/s13033-020-00410-6 [accessed 4 December 2022].

Ehret, S., Roth, S., Zimmermann, S.U., Selter, A. and Thomaschke, R. (2020). Feeling time in nature: The influence of directed and undirected attention on time awareness. *Applied Cognitive Psychology* [online], 34(3), pp.737–746. Available from: https://onlinelibrary.wiley.com/doi/10.1002/acp.3664 [accessed 3 October 2024].

Ejeta, F., Aferu, T., Feyisa, D., Kebede, O., Siraj, J., Hammeso, W.W., Tadesse, E. and Tinishku, A. (2021). Adverse Drug Reaction and Its Predictors Among Psychiatric Patients Taking Psychotropic Medications at the Mizan-Tepi University Teaching Hospital. *Neuropsychiatric Disease and Treatment* [online], Volume 17, pp.3827–3835. Available from: https://www.dovepress.com/adverse-drug-reaction-and-its-predictors-among-psychiatric-patients-ta-peer-reviewed-fulltext-article-NDT [accessed 4 December 2022].

El Omda S, Sergent SR. (2024) Standard Deviation. Treasure Island (FL): StatPearls., Available from: https://www.ncbi.nlm.nih.gov/books/NBK574574/ [accessed 13 November 2024].

El Omda S, Sergent SR. Standard Deviation. (2023) *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK574574/ [accessed 19 December 2023].

Elias, A. and Brown, A.D. (2022). The role of intergenerational family stories in mental health and wellbeing. *Frontiers in Psychology* [online], 13, p.927795. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.927795/full [accessed 3 October 2024].

Expert Group on Mental Health Policy (2006*) A Vision for Change: Report of the Expert Group on Mental Health Policy.* Dublin: The Stationery Office.

Farmer, P. (2014). *Eco Minds: Putting eco-therapy on the Map*. *Mind*. Available from: https://www.mind.org.uk/information-support/your-stories/ecominds-putting-ecotherapy-on-the-map/ [accessed 14 November 2022].

Farmus, L., Arpin-Cribbie, C.A. and Cribbie, R.A. (2019). Continuous Predictors of Pretest-Posttest Change: Highlighting the Impact of the Regression Artifact. *Frontiers in Applied Mathematics and Statistics* [online], 4, p.64. Available from: https://www.frontiersin.org/article/10.3389/fams.2018.00064/full [accessed 17 February 2023].

Fetters, M.D. (2016). “Haven’t We Always Been Doing Mixed Methods Research?”: Lessons Learned From the Development of the Horseless Carriage. *Journal of Mixed Methods Research* [online], 10(1), pp.3–11. Available from: http://journals.sagepub.com/doi/10.1177/1558689815620883 [accessed 22 March 2023].

Filipe, A., Renedo, A. and Marston, C. (2017). The CP of what? Knowledge, values, and social relations in health care. Marris, C., ed. *PLOS Biology* [online], 15(5), p.e2001403. Available from: https://dx.plos.org/10.1371/journal.pbio.2001403 [accessed 7 December 2022].

Finnis, K.K. and Walton, D. (2008). Field observations to determine the influence of population size, location and individual factors on pedestrian walking speeds. *Ergonomics* [online], 51(6), pp.827–842. Available from: https://www.tandfonline.com/doi/full/10.1080/00140130701812147 [accessed 3 October 2024].

Fisher, A. (2013). *Radical ecopsychology: psychology in the service of life*. 2nd ed. Albany: State University of New York Press.

Fixsen, A. and Barrett, S. (2022). Challenges and Approaches to Green Social Prescribing During and in the Aftermath of COVID-19: A Qualitative Study. *Frontiers in Psychology* [online], 13, p.861107. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.861107/full [accessed 3 February 2023].

Flemming K. (2007) The knowledge base for evidence-based nursing: a role for mixed methods research? *Advances in Nursing Science*;30(1):41-51. https://doi.org/10.1097/00012272-200701000-00005 10.1097/00012272-200701000-00005 [accessed 2 December 2022].

Fogarty, P. (2021). The Urgency of Rewilding. *Irish Wildlife Trust* [online], 5 June 2021. Available from: https://iwt.ie/the-urgency-of-rewilding/ [accessed 2 March 2023].

Forero, R., Nahidi, S., De Costa, J., Mohsin, M., Fitzgerald, G., Gibson, N., McCarthy, S. and Aboagye-Sarfo, P. (2018). Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine. *BMC Health Services Research* [online], 18(1), p.120. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-2915-2 [accessed 22 February 2023].

Foster, A., Thompson, J., Holding, E., Ariss, S., Mukuria, C., Jacques, R., Akparido, R. and Haywood, A. (2021). Impact of social prescribing to address loneliness: A mixed methods evaluation of a national social prescribing programme. *Health & Social Care in the Community* [online], 29(5), pp.1439–1449. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hsc.13200 [accessed 3 February 2023].

Freedman, A. and Nicolle, J., (2020). *Social isolation and loneliness: the new geriatric giants: approach for primary care*. Canadian Family Physician, 66(3), pp.176-182.

Frostick, C. and Bertotti, M. (2019). Social prescribing in general practice. *British Journal of General Practice* [online], 69(688), pp.538–539. Available from: https://bjgp.org/lookup/doi/10.3399/bjgp19X706157 [accessed 3 February 2023].

Frumkin, H., Bratman, G.N., Breslow, S.J., Cochran, B., Kahn Jr, P.H., Lawler, J.J., Levin, P.S., Tandon, P.S., Varanasi, U., Wolf, K.L. and Wood, S.A. (2017). Nature

Contact and Human Health: A Research Agenda. *Environmental Health Perspectives* [online], 125(7), p.075001. Available from: https://ehp.niehs.nih.gov/doi/10.1289/EHP1663 [accessed 29 October 2022].

Furuyashiki, A., Tabuchi, K., Norikoshi, K., Kobayashi, T. and Oriyama, S. (2019). A comparative study of the physiological and psychological effects of forest bathing (Shinrin-yoku) on working age people with and without depressive tendencies. *Environmental Health and Preventive Medicine* [online], 24(1), p.46. Available from: https://environhealthprevmed.biomedcentral.com/articles/10.1186/s12199-019-0800-1 [accessed 23 January 2023].

Gage, J. (2020). An Evaluation of Get Well Connected. South Dublin County Partnership Social Prescribing pilot project. Available from: https://sdcpartnership.ie/wp-content/uploads/2021/02/Final-SDCP-Social-Prescribing-Evaluation.pdf [accessed 30 January 2023].

García-Batista, Z.E., Guerra-Peña, K., Cano-Vindel, A., Herrera-Martínez, S.X. and Medrano, L.A. (2018). Validity and reliability of the Beck Depression Inventory (BDI-II) in general and hospital population of Dominican Republic. Lin, C.-Y., ed. *PLOS ONE* [online], 13(6), p.e0199750. Available from: https://dx.plos.org/10.1371/journal.pone.0199750 [accessed 21 February 2023].

Gesiarz, F., Cahill, D. and Sharot, T. (2019). Evidence accumulation is biased by motivation: A computational account. Otto, R., ed. *PLOS Computational Biology* [online], 15(6), p.e1007089. Available from: https://dx.plos.org/10.1371/journal.pcbi.1007089 [accessed 14 February 2023].

Gheduzzi, E., Masella, C., Morelli, N. and Graffigna, G. (2021). How to prevent and avoid barriers in CP with family carers living in rural and remote area: an Italian case study. *Research Involvement and Engagement* [online], 7(1), p.16. Available from: https://researchinvolvement.biomedcentral.com/articles/10.1186/s40900-021-00259-0 [accessed 22 December 2022].

Ghosh, T.S., Shanahan, F. and O'Toole, P.W. (2022). Toward an improved definition of a healthy microbiome for healthy aging. *Nature Aging* [online], 2(11), pp.1054–1069. Available from: https://www.nature.com/articles/s43587-022-00306-9 [accessed 19 December 2022].

Gianfaldoni, S., Tchernev, G., Wollina, U., Roccia, M.G., Fioranelli, M., Gianfaldoni, R. and Lotti, T. (2017). History of the Baths and Thermal Medicine. *Open Access Macedonian Journal of Medical Sciences* [online], 5(4), pp.566–568. Available from: https://spiroski.migration.publicknowledgeproject.org/index.php/mjms/article/view/oamjms.2017.126 [accessed 1 November 2022].

Giurge, L.M., Whillans, A.V. and West, C. (2020). Why time poverty matters for individuals, organisations and nations. *Nature Human Behaviour* [online], 4(10), pp.993–1003. Available from: https://www.nature.com/articles/s41562-020-0920-z [accessed 3 October 2024].

Gladwell, V., Kuoppa, P., Tarvainen, M. and Rogerson, M. (2016). A Lunchtime Walk in Nature Enhances Restoration of Autonomic Control during Night-Time Sleep: Results from a Preliminary Study. *International Journal of Environmental Research and Public Health* [online], 13(3), p.280. Available from: http://www.mdpi.com/1660-4601/13/3/280 [accessed 22 December 2022].

Glover, H. (2012). Recovery, Lifelong Learning, Empowerment and Social Inclusion: Is a New Paradigm Emerging?. In: Ryan, P., Ramon, S., and Greacen, T., eds. *Empowerment, Lifelong Learning and Recovery in Mental Health*. London: Palgrave Macmillan UK, pp.15–35. Available from: http://link.springer.com/10.1007/978-0-230-39135-2_2 [accessed 1 November 2022].

Government of Ireland. (2020). Bord na Mona bog rehabilitation scheme [online]. *https://www.gov.ie/en/publication/136a7-bord-na-mona-bog-rehabilitation-scheme/*. Available from: https://www.gov.ie/en/publication/136a7-bord-na-mona-bog-rehabilitation-scheme/.

Guarino, A., Negrogno, L., Compare, C., Madeo, A., Bolognini, P., Degli Esposti, L., Filippi, M., Lamberini, F., Morrone, M., Masetti, M., Serra, A.M. and Albanesi, C. (2024). “A Feeling of Safeness and Freedom”: The Promotion of Mental Health Recovery Through CP in an Italian Community Organization. *Community Mental Health Journal* [online], 26 April 2024. Available from: https://link.springer.com/10.1007/s10597-024-01279-2 [accessed 7 October 2024].

Guest, G., Namey, E. and McKenna, K. (2017). How Many Focus Groups Are Enough? Building an Evidence Base for Nonprobability Sample Sizes. *Field Methods*

[online], 29(1), pp.3–22. Available from: http://journals.sagepub.com/doi/10.1177/1525822X16639015 [accessed 17 February 2023].

Guiffrida, D. (2015). A Constructive Approach to Counseling and Psychotherapy Supervision. *Journal of Constructivist Psychology* [online], 28(1), pp.40–52. Available from: http://www.tandfonline.com/doi/abs/10.1080/10720537.2014.922911 [accessed 7 December 2022].

Gupta, A.K. (2021). Social prescribing in ethnic minority communities. *British Journal of General Practice* [online], 71(704), p.109.2-109. Available from: http://bjgp.org/lookup/doi/10.3399/bjgp21X715037 [accessed 24 January 2023].

Habib, W. and Connolly, J. (2023). A national-scale assessment of land use change in peatlands between 1989 and 2020 using Landsat data and Google Earth Engine—a case study of Ireland. *Regional Environmental Change* [online], 23(4), p.124. Available from: https://link.springer.com/10.1007/s10113-023-02116-0 [accessed 22 October 2024].

Haddaway, N.R., Bethel, A., Dicks, L.V., Koricheva, J., Macura, B., Petrokofsky, G., Pullin, A.S., Savilaakso, S. and Stewart, G.B. (2020). Eight problems with literature reviews and how to fix them. *Nature Ecology & Evolution* [online], 4(12), pp.1582–1589. Available from: https://www.nature.com/articles/s41559-020-01295-x [accessed 26 March 2025].

Hallit, S., Haddad, C., Hallit, R., Akel, M., Obeid, S., Haddad, G., Soufia, M., Khansa, W., Khoury, R., Kheir, N., Elias Hallit, C.A. and Salameh, P. (2020). Validation of the Hamilton Anxiety Rating Scale and State Trait Anxiety Inventory A and B in Arabic among the Lebanese population. *Clinical Epidemiology and Global Health* [online], 8(4), pp.1104–1109. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2213398420300956 [accessed 21 February 2023].

Hallit, S., Haddad, C., Hallit, R., Akel, M., Obeid, S., Haddad, G., Soufia, M., Khansa, W., Khoury, R., Kheir, N., Elias Hallit, C.A. and Salameh, P. (2020). Validation of the Hamilton Anxiety Rating Scale and State Trait Anxiety Inventory A and B in Arabic among the Lebanese population. *Clinical Epidemiology and Global Health* [online],

8(4), pp.1104–1109. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2213398420300956 [accessed 21 February 2023].

Hamilton M. (1959). *The assessment of anxiety states by rating*. Br J Med Psychol 1959; 32:50–55.

Hammoud, R., Tognin, S., Burgess, L., Bergou, N., Smythe, M., Gibbons, J., Davidson, N., Afifi, A., Bakolis, I. and Mechelli, A. (2022). Smartphone-based ecological momentary assessment reveals mental health benefits of birdlife. *Scientific Reports* [online], 12(1), p.17589. Available from: https://www.nature.com/articles/s41598-022-20207-6 [accessed 27 November 2022].

Handerer, F., Kinderman, P., Timmermann, C. and Tai, S.J. (2021). How did mental health become so biomedical? The progressive erosion of social determinants in historical psychiatric admission registers. *History of Psychiatry* [online], 32(1), pp.37–51. Available from: http://journals.sagepub.com/doi/10.1177/0957154X20968522 [accessed 24 January 2023].

Harper, N., Rose, K. and Segal, D. (2019). *Nature-based therapy: a practitioner's guide to working outdoors with children, youth, and families*. Gabriola Island, BC, Canada: New Society Publishers.

Hasija, Y. (2023). *Paired Sample t-Test - an overview | ScienceDirect Topics* [online]. Available from: https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/paired-sample-t-test [accessed 13 November 2024].

Hasija, Y. (2023). Paired Sample t-Test - an overview. *ScienceDirect* [online]. Available from: https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/paired-sample-t-test [accessed 13 November 2024].

Hawkley, L.C. (2022). Loneliness and health. *Nature Reviews Disease Primers* [online], 8(1), p.22. Available from: https://www.nature.com/articles/s41572-022-00355-9 [accessed 14 October 2024].

Haywood, A., Dayson, C., Garside, R., Foster, Lovell, R., Husk, K., Holding, E. (2024) National Evaluation of the Preventing and Tackling Mental Ill Health through Green Social Prescribing Project: Final Report. *Department for Environment, Food*

and Rural Affairs (London). Available from: https://beyondgreenspace.net/wp-content/uploads/2024/09/21196_gspevaluationfinalreport-policybriefingjan2024-1.pdf [accessed 22 October 2024].

Heale, R. and Forbes, D. (2013). Understanding triangulation in research. *Evidence Based Nursing* [online], 16(4), pp.98–98. Available from: https://ebn.bmj.com/lookup/doi/10.1136/eb-2013-101494 [accessed 22 March 2023].

Health Service Executive (2016). Advancing Recovery Ireland: A Guidance Paper on Implementing Organisational and Cultural Change in Mental Health Services in Ireland. Available from: https://www.lenus.ie/handle/10147/613321 [accessed 20 November 2022].

Health Service Executive (2017). *National Framework for Recovery in Mental Health*. Available from: https://www.getirelandwalking.ie/_files/recovery-framework.pdf. [accessed 21 February 2023].

Health Service Executive (2019). *Model of Care for People with Severe and Enduring Mental Illness and Complex Needs*. Available from: https://www.hse.ie/eng/services/list/4/mental-health-services/rehabilitation-recovery-mental-health-services/model-of-care-for-people-with-severe-and-enduring-mental-illness-and-complex-needs.pdf. [accessed 4 March 2023].

Health Service Executive (2021). *Research Ethics Committees*. *HSE.ie* [online]. Available from: https://www.hse.ie/eng/services/list/5/publichealth/publichealthdepts/research/rec.html [accessed 22 February 2023].

Health Service Executive.ie (2021). Social prescribing. Available from: https://www.hse.ie/eng/health/hl/selfmanagement/donegal/programmes-services/social-prescribing/social-prescribing.html [accessed 28 November 2022].

Healthy Ireland (2021) *Healthy Ireland Survey 2021 Summary Report*. Available from: file:///C:/Users/clare/Downloads/206555_260f3b84-bf78-41a2-91d7-f14c7c03d99f.pdf [accessed 21 January 2023].

Heard, C.P., Scott, J. and Yeo, S. (2022). Ecospirituality in Forensic Mental Health: A Preliminary Outcome Study. *The Open Journal of Occupational Therapy* [online],

10(1), pp.1–15. Available from: https://scholarworks.wmich.edu/ojot/vol10/iss1/7 [accessed 23 January 2023].

Heidigger,M. (2004) *Being and Time*, Blackwell, Oxford UK
Hennink, M.M. (2014). *Focus group discussions*. Oxford: Oxford University Press.

Hennink, M.M., Hutter, I. and Bailey, A. (2020). *Qualitative research methods*. 2nd ed. London ; Thousand Oaks, Calif: SAGE.

Hinde, S., Bojke, L. and Coventry, P. (2021). The Cost Effectiveness of Ecotherapy as a Healthcare Intervention, Separating the Wood from the Trees. *International Journal of Environmental Research and Public Health* [online], 18(21), p.11599. Available from: https://www.mdpi.com/1660-4601/18/21/11599 [accessed 8 December 2022].

Holtslander, L.F. (2008). Ways of knowing hope: Carper's fundamental patterns as a guide for hope research with bereaved palliative caregivers. *Nursing Outlook* [online], 56(1), pp.25–30. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0029655407001832 [accessed 4 March 2023].

Holwerda, A., Fokkens, A.S., Engbers, C. and Brouwer, S. (2016). Collaboration between mental health and employment services to support employment of individuals with mental disorders. *Disability and Rehabilitation* [online], 38(13), pp.1250–1256. Available from: http://www.tandfonline.com/doi/full/10.3109/09638288.2015.1076075 [accessed 23 January 2023].

Houtjes, W., Deeg, D., Van De Ven, P.M., Van Meijel, B., Van Tilburg, T. and Beekman, A. (2017). Is the naturalistic course of depression in older people related to received support over time? Results from a longitudinal population-based study. *International Journal of Geriatric Psychiatry* [online], 32(6), pp.657–663. Available from: https://onlinelibrary.wiley.com/doi/10.1002/gps.4508 [accessed 14 October 2024].

Howarth, M., Griffiths, A., da Silva, A. and Green, R. (2020). Social prescribing: a 'natural' community-based solution. *British Journal of Community Nursing* [online], 25(6), pp.294–298. Available from:

http://www.magonlinelibrary.com/doi/10.12968/bjcn.2020.25.6.294 [accessed 10 January 2023].

Hubbard, G., Thompson, C.W., Locke, R., Jenkins, D., Munoz, S.-A., Van Woerden, H., Maxwell, M., Yang, Y. and Gorely, T. (2020). CP of “nature walks for well-being” public health intervention for people with severe mental illness: use of theory and practical know-how. *BMC Public Health* [online], 20(1), p.428. Available from: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-08518-7 [accessed 22 December 2022].

Human Rights Council. (2020). *Right of everyone to the enjoyment of the highest attainable standard of physical and mental health*. Available from: https://documents.un.org/doc/undoc/gen/g20/094/45/pdf/g2009445.pdf.

Hunt, E., & Byrne, M. (2019). The Impact of Peer Support Workers in Mental Health Services. Available from: https://www.researchgate.net/publication/340716658_The_Impact_of_Peer_Support_Workers_in_Mental_Health_Services [accessed 20 February 2023].

Hunter, M.R., Gillespie, B.W. and Chen, S.Y.-P. (2019). Urban Nature Experiences Reduce Stress in the Context of Daily Life Based on Salivary Biomarkers. *Frontiers in Psychology* [online], 10, p.722. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2019.00722/full [accessed 27 November 2022].

Hurley, M. and Tenny, S. (2024). *Mean.* StatPearls. Treasure Island (FL): StatPearls Publishing. Available from: http://www.ncbi.nlm.nih.gov/books/NBK546702/ [accessed 27 September 2024].

Husk, K., Elston, J., Gradinger, F., Callaghan, L. and Asthana, S. (2019). Social prescribing: where is the evidence?. *British Journal of General Practice* [online], 69(678), pp.6–7. Available from: https://bjgp.org/lookup/doi/10.3399/bjgp19X700325 [accessed 24 January 2023].

Hyland, P., Vallières, F., Shevlin, M., Bentall, R.P., Butter, S., Hartman, T.K., Karatzias, T., Martinez, A.P., McBride, O., Murphy, J. and Fox, R. (2022). State of Ireland’s mental health: findings from a nationally representative survey. *Epidemiology and Psychiatric Sciences* [online], 31, p.e47. Available from:

https://www.cambridge.org/core/product/identifier/S2045796022000312/type/journal_article [accessed 19 December 2022].

Inspector of Mental Hospitals (1956) *Report of the Inspector of Mental Hospitals for the year 1956.* Dublin. The Stationary Office

Irish Independent (2023). *Irish people experience highest level of difficulty accessing mental health services across EU* [online]. Available from: https://www.independent.ie/irish-news/irish-people-experience-highest-level-of-difficulty-accessing-mental-health-services-across-eu/a371483866.html [accessed 9 October 2024].

Irish Peatland Conservation Council (2022). *History of the Irish Peatland Conservation Council* [online]. Available from: http://www.ipcc.ie/about-us/history-of-the-ipcc/ [accessed 1 February 2023].

Irish Trees (2021). *The Slow Disappearance of Irish Trees* [online]. Available from: https://irishtrees.ie/the-slow-disappearance-of-irish-trees/ [accessed 19 December 2022].

Irvine, F.E., Clark, M.T., Efstathiou, N., Herber, O.R., Howroyd, F., Gratrix, L., Sammut, D., Trumm, A., Hanssen, T.A., Taylor, J. and Bradbury-Jones, C. (2020). The state of mixed methods research in nursing: A focused mapping review and synthesis. *Journal of Advanced Nursing* [online], 76(11), pp.2798–2809. Available from: https://onlinelibrary.wiley.com/doi/10.1111/jan.14479 [accessed 4 March 2023].

Ivanov, I. and Schwartz, J.M. (2021). Why Psychotropic Drugs Don’t Cure Mental Illness—But Should They? *Frontiers in Psychiatry* [online], 12, p.579566. Available from: https://www.frontiersin.org/articles/10.3389/fpsyt.2021.579566/full [accessed 6 December 2022].

Ives, C.D., Abson, D.J., von Wehrden, H., Dorninger, C., Klaniecki, K. and Fischer, J. (2018). Reconnecting with nature for sustainability. *Sustainability Science* [online], 13(5), pp.1389–1397. Available from: http://link.springer.com/10.1007/s11625-018-0542-9 [accessed 1 November 2022].

Ives, C.D., Abson, D.J., von Wehrden, H., Dorninger, C., Klaniecki, K. and Fischer, J. (2018). Reconnecting with nature for sustainability. *Sustainability Science* [online],

13(5), pp.1389–1397. Available from: https://doi.org/10.1007/s11625-018-0542-9 [accessed 16 December 2022].

Jacob, K.S. (2015). Recovery Model of Mental Illness: A Complementary Approach to Psychiatric Care. *Indian Journal of Psychological Medicine* [online], 37(2), pp.117–119. Available from: http://journals.sagepub.com/doi/10.4103/0253-7176.155605 [accessed 2 November 2022].

Jaiswal, A., Carmichael, K., Gupta, S., Siemens, T., Crowley, P., Carlsson, A., Unsworth, G., Landry, T. and Brown, N. (2020). Essential Elements That Contribute to the Recovery of Persons With Severe Mental Illness: A Systematic Scoping Study. *Frontiers in Psychiatry* [online], 11, p.586230. Available from: https://www.frontiersin.org/articles/10.3389/fpsyt.2020.586230/full [accessed 26 March 2025].

Javadi, M., & Zarea, K. (2016). Understanding Thematic Analysis and its Pitfall. *Journal of Computational Chemistry, 1*, 33. Available from: https://www.researchgate.net/publication/307179806_Understanding_Thematic_Analysis_and_its_Pitfall [accessed 21 February 2023].

Jennings, V. and Bamkole, O. (2019). The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. *International Journal of Environmental Research and Public Health* [online], 16(3), p.452. Available from: http://www.mdpi.com/1660-4601/16/3/452 [accessed 19 December 2022].

Johnson, B.S., Malecki, K.M., Peppard, P.E. and Beyer, K.M.M. (2018). Exposure to neighborhood green space and sleep: evidence from the Survey of the Health of Wisconsin. *Sleep Health* [online], 4(5), pp.413–419. Available from: https://linkinghub.elsevier.com/retrieve/pii/S235272181830130X [accessed 22 December 2022].

Johnson, R.B. and Onwuegbuzie, A.J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come. *Educational Researcher* [online], 33(7), pp.14–26. Available from: http://journals.sagepub.com/doi/10.3102/0013189X033007014 [accessed 8 March 2023].

Joo, J.H., Bone, L., Forte, J., Kirley, E., Lynch, T. and Aboumatar, H. (2022). The benefits and challenges of established peer support programmes for patients, informal caregivers, and healthcare providers. *Family Practice* [online], 39(5), pp.903–912. Available from: https://academic.oup.com/fampra/article/39/5/903/6519467 [accessed 14 October 2024].

Jordan, M. (2023). The power of connection: Self-care strategies of social wellbeing. *Journal of Interprofessional Education & Practice* [online], 31, p.100586. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2405452622000933 [accessed 15 October 2024].

Kang, E. and Hwang, H.-J. (2023). The Importance of Anonymity and Confidentiality for Conducting Survey Research. *Journal of Research and Publication Ethics* [online], 4(1), pp.1–7. Available from: https://doi.org/10.15722/JRPE.4.1.202303.1 [accessed 23 October 2024].

Kaplan, R. and Kaplan, S. (1989). *The experience of nature: a psychological perspective*. Cambridge ; New York: Cambridge University Press.

Katzmarzyk, P.T., Friedenreich, C., Shiroma, E.J. and Lee, I.-M. (2022). Physical inactivity and non-communicable disease burden in low-income, middle-income and high-income countries. *British Journal of Sports Medicine* [online], 56(2), pp.101–106. Available from: https://bjsm.bmj.com/content/56/2/101 [accessed 19 December 2022].

Kellert, S. R., and Wilson, E. O. (1993). *The Biophilia Hypothesis.* Olympia, WA: Island Press.

Kellezi, B., Wakefield, J.R.H., Stevenson, C., McNamara, N., Mair, E., Bowe, M., Wilson, I. and Halder, M.M. (2019). The social cure of social prescribing: a mixed-methods study on the benefits of social connectedness on quality and effectiveness of care provision. *BMJ Open* [online], 9(11), p.e033137. Available from: https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2019-033137 [accessed 4 February 2023].

Kelly, B. (2019). *Hearing Voices: the history of psychiatry in Ireland*. Place of publication not identified: IRISH ACADEMIC.

Kennelly, B., O'Callaghan, M., Coughlan, D., Cullinan, J., Doherty, E., Glynn, L., Moloney, E. and Queally, M. (2020). The COVID-19 pandemic in Ireland: An overview of the health service and economic policy response. *Health Policy and Technology* [online], 9(4), pp.419–429. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2211883720300952 [accessed 19 December 2022].

Kenny, B., Kavanagh, E., Mc Sherry, H., Brady, G., Kelly, J., Mac Gabhann, L., Griffi n, M., Farrelly, M., Kelly, N., Ross, P., Barron, R., Watt er, R., Keati ng, S. (2020). Dublin North, North East Recovery College: Informing and transforming communiti es, shaping the way forward for mental health recovery. Dublin City University. Available from: https://recoverycollege.ie/wp-content/uploads/2020/07/DCU-Recovery-College-Report-proof04-1.pdf [accessed 5 March 2023].

Kiely, B., Connolly, D., Clyne, B., Boland, F., O'Donnell, P., Shea, E.O. and Smith, S.M. (2021). Primary care-based link workers providing social prescribing to improve health and social care outcomes for people with multimorbidity in socially deprived areas: Pilot study for a pragmatic randomised controlled trial. *Journal of Multimorbidity and Comorbidity* [online], 11, p.263355652110177. Available from: http://journals.sagepub.com/doi/10.1177/26335565211017781 [accessed 4 February 2023].

Kiely, B., Croke, A., O'Shea, M., Boland, F., O'Shea, E., Connolly, D. and Smith, S.M. (2022). Effect of social prescribing link workers on health outcomes and costs for adults in primary care and community settings: a systematic review. *BMJ Open* [online], 12(10), p.e062951. Available from: https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2022-062951 [accessed 4 February 2023].

Kiger, M.E. and Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher* [online], 42(8), pp.846–854. Available from: https://www.tandfonline.com/doi/full/10.1080/0142159X.2020.1755030 [accessed 21 February 2023].

Kivunja, C. and Kuyini, A.B. (2017). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education* [online], 6(5), p.26. Available from:

http://www.sciedu.ca/journal/index.php/ijhe/article/view/12169 [accessed 6 March 2023].

Kohrt, B.A., Jordans, M.J.D., Turner, E.L., Rai, S., Gurung, D., Dhakal, M., Bhardwaj, A., Lamichhane, J., Singla, D.R., Lund, C., Patel, V., Luitel, N.P. and Sikkema, K.J. (2021). Collaboration With People With Lived Experience of Mental Illness to Reduce Stigma and Improve Primary Care Services: A Pilot Cluster Randomized Clinical Trial. *JAMA Network Open* [online], 4(11), p.e2131475. Available from: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2785795 [accessed 3 December 2022].

Kokol, P. and Blažun Vošner, H. (2019). Historical, descriptive and exploratory analysis of application of bibliometrics in nursing research. *Nursing Outlook* [online], 67(6), pp.680–695. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0029655418307309 [accessed 22 February 2023].

Koporc, Z., ed. (2019). *Ethics and integrity in health and life sciences research*. First edition. United Kingdom: Emerald Publishing.

Kumar, R. (2019). *Research methodology: a step-by-step guide for beginners*. 5th edition. Thousand Oaks, CA: SAGE Publications.

Kusier, A.O. and Folker, A.P. (2020). The Well-Being Index WHO-5: hedonistic foundation and practical limitations. *Medical Humanities* [online], 46(3), pp.333–339. Available from: https://mh.bmj.com/lookup/doi/10.1136/medhum-2018-011636 [accessed 18 November 2024].

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. Frontiers in Psychology [online], 4. Available from: http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00863/abstract [accessed 13 November 2024].

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: a practical primer for t-tests and ANOVAs. *Frontiers in Psychology* [online]. Available from: http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00863/abstract [accessed 13 November 2024].

Le Boutillier, C., Chevalier, A., Lawrence, V., Leamy, M., Bird, V.J., Macpherson, R., Williams, J. and Slade, M. (2015). Staff understanding of recovery-orientated mental health practice: a systematic review and narrative synthesis. *Implementation Science* [online], 10(1), p.87. Available from: http://implementationscience.biomedcentral.com/articles/10.1186/s13012-015-0275-4 [accessed 3 December 2022].

Leamy, M., Bird, V., Boutillier, C.L., Williams, J. and Slade, M. (2011). Conceptual framework for personal recovery in mental health: systematic review and narrative synthesis. *British Journal of Psychiatry* [online], 199(6), pp.445–452. Available from: https://www.cambridge.org/core/product/identifier/S0007125000256766/type/journal_article [accessed 2 November 2022].

Lederbogen, F., Kirsch, P., Haddad, L., Streit, F., Tost, H., Schuch, P., Wüst, S., Pruessner, J.C., Rietschel, M., Deuschle, M. and Meyer-Lindenberg, A. (2011). City living and urban upbringing affect neural social stress processing in humans. *Nature* [online], 474(7352), pp.498–501. Available from: http://www.nature.com/articles/nature10190 [accessed 3 November 2022].

Lee, M.-A. and Kawachi, I. (2019). The keys to happiness: Associations between personal values regarding core life domains and happiness in South Korea. Ha, S. E., ed. *PLOS ONE* [online], 14(1), p.e0209821. Available from: https://dx.plos.org/10.1371/journal.pone.0209821 [accessed 10 October 2024].

Leedy, P.D. and Ormrod, J.E. (2005). *Practical research: planning and design*. 8. ed., internat. ed. Upper Saddle River, NJ: Pearson/Merrill Prentice Hall. Available from: https://pce-fet.com/common/library/books/51/2590_%5BPaul_D._Leedy,_Jeanne_Ellis_Ormrod%5D_Practical_Res(b-ok.org).pdf [accessed 20 March 2023].

Lehmann, S. (2023). Reconnecting with nature: developing urban spaces in the age of climate change. *Emerald Open Research* [online], 1(5). Available from: https://www.emerald.com/insight/content/doi/10.1108/EOR-05-2023-0001/full/html [accessed 7 October 2024].

Leichsenring, F., Steinert, C., Rabung, S. and Ioannidis, J.P.A. (2022). The efficacy of psychotherapies and pharmacotherapies for mental disorders in adults: an umbrella review and meta-analytic evaluation of recent meta-analyses. *World*

Psychiatry [online], 21(1), pp.133–145. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8751557/ [accessed 6 December 2022].

Li, Q., Kobayashi, M., Kumeda, S., Ochiai, T., Miura, T., Kagawa, T., Imai, M., Wang, Z., Otsuka, T. and Kawada, T. (2016). Effects of Forest Bathing on Cardiovascular and Metabolic Parameters in Middle-Aged Males. *Evidence-Based Complementary and Alternative Medicine* [online], 2016, pp.1–7. Available from: http://www.hindawi.com/journals/ecam/2016/2587381/ [accessed 16 December 2022].

Liang, C., Mei, J., Liang, Y., Hu, R., Li, L. and Kuang, L. (2019). The effects of gatekeeping on the quality of primary care in Guangdong Province, China: a cross-sectional study using primary care assessment tool-adult edition. *BMC Family Practice* [online], 20(1), p.93. Available from: https://bmcfampract.biomedcentral.com/articles/10.1186/s12875-019-0982-z [accessed 13 February 2023].

Lincoln, YS. & Guba, EG. (1985). Naturalistic Inquiry. Newbury Park, CA: Sage Publications.

Loan Nguyen, T.T. (2019). Selection of Research Paradigms in English Language Teaching: Personal Reflections and Future Directions. *KnE Social Sciences* [online], 1 August 2019. Available from: https://knepublishing.com/index.php/Kne-Social/article/view/4826 [accessed 6 March 2023].

LoBiondo-Wood, G. and Haber, J., eds. (2018). *Nursing research: methods and critical appraisal for evidence-based practice*. 9th edition. St. Louis, Missouri: Elsevier.

Louv, R. (2005). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder.* Chapel Hill, NC: Algonquin Books

Lucey, J. (2019). *Why do we prescribe antidepressants?* [online]. *St Patrick's Mental Health Services* [online]. Available from: https://www.stpatricks.ie/media-centre/podcasts/2017/july/why-do-we-prescribe-antidepressants [accessed 26 March 2025].

Luke, M. and Goodrich, K.M. (2019). Focus Group Research: An Intentional Strategy for Applied Group Research?. *The Journal for Specialists in Group Work* [online], 44(2), pp.77–81. Available from: https://www.tandfonline.com/doi/full/10.1080/01933922.2019.1603741 [accessed 17 February 2023].

Luong, R. (2022). Factor structure, measurement equivalence, and reliability of the Nature Relatedness Scale Short Form (NR-6) across males and females. *Journal of Environmental Psychology* [online], 82, p.101828. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0272494422000731 [accessed 3 November 2022].

Mac Domhnaill, C., Douglas, O., Lyons, S., Murphy, E. and Nolan, A. (2022). Road traffic noise, quality of life, and mental distress among older adults: evidence from Ireland. *Cities & Health* [online], 6(3), pp.564–574. Available from: https://www.tandfonline.com/doi/full/10.1080/23748834.2022.2084806 [accessed 2 March 2023].

Mackay, C.M.L., Cristoffanini, F., Wright, J.D., Neufeld, S.D., Ogawa, H.F. and Schmitt, M.T. (2021). Connection to nature and environmental activism: Politicized environmental identity mediates a relationship between identification with nature and observed environmental activist behaviour. *Current Research in Ecological and Social Psychology* [online], 2, p.100009. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2666622721000022 [accessed 3 October 2024].

Maguire, M., Delahunt, B. (2017) Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. *Dundalk Institute of Technology*. Available online: file:///C:/Users/clare/Downloads/335-Article%20Text-1557-1-10-20171031.pdf [accessed 21 February 2023].

Mahut, M. and Fortune, D. (2021). Social Prescribing and Therapeutic Recreation: Making the Connection. *Therapeutic Recreation Journal* [online], 55(2). Available from: https://js.sagamorepub.com/trj/article/view/10694 [accessed 29 November 2022].

Maier, J. and Jette, S. (2016). Promoting Nature-Based Activity for People With Mental Illness Through the US “Exercise Is Medicine” Initiative. *American Journal of Public Health* [online], 106(5), pp.796–799. Available from: https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2016.303047 [accessed 16 December 2022].

Manandhar, N. and Joshi, S.K. (2020). Importance of consent in the research. *International Journal of Occupational Safety and Health* [online], 10(2), pp.89–91. Available from: https://www.nepjol.info/index.php/IJOSH/article/view/33284 [accessed 22 February 2023].

Manti, S. and Licari, A. (2018). How to obtain informed consent for research. *Breathe* [online], 14(2), pp.145–152. Available from: http://publications.ersnet.org/lookup/doi/10.1183/20734735.001918 [accessed 23 October 2024].

Maund, Irvine, Reeves, Strong, Cromie, Dallimer, and Davies. (2019). Wetlands for Well-being: Piloting a Nature-Based Health Intervention for the Management of Anxiety and Depression. *International Journal of Environmental Research and Public Health* [online], 16(22), p.4413. Available from: https://www.mdpi.com/1660-4601/16/22/4413 [accessed 16 December 2022].

Mavoa, S., Davern, M., Breed, M. and Hahs, A. (2019). Higher levels of greenness and biodiversity associate with greater subjective well-being in adults living in Melbourne, Australia. *Health & Place* [online], 57, pp.321–329. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1353829218307780 [accessed 19 December 2022].

Mayer, C. and McKenzie, K. (2017). ‘…it shows that there’s no limits’: the psychological impact of CP for experts by experience working in youth mental health. *Health & Social Care in the Community* [online], 25(3), pp.1181–1189. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hsc.12418 [accessed 3 December 2022].

Maynooth University. (2022). Over 40% of Irish adults have a mental health disorder and one in ten have attempted suicide – *MU, NCI and Trinity College research* | *Maynooth University* [online]. Available from:

https://www.maynoothuniversity.ie/news-events/over-40-irish-adults-have-mental-health-disorder-and-one-ten-have-attempted-suicide-mu-nci-and [accessed 22 October 2024].

McCaffrey, T., Higgins, P., Morrison, H., Nelligan, S., Clancy, A., Cheung, P.S. and Moloney, S. (2021). Exploring the role and impact of visual art groups with multiple stakeholders in recovery-oriented mental health services. *The Arts in Psychotherapy* [online], 72, p.101748. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0197455620301210 [accessed 23 January 2023].

McGeeney, A. (2016). *With nature in mind: the ecotherapy manual for mental health professionals*. London ; Philadelphia: Jessica Kingsley Publishers.

McGrath, A., Murphy, N., Egan, T. and Richardson, N. (2022). Sheds for life: health and well-being outcomes of a tailored community-based health promotion initiative for men's sheds in Ireland. *BMC Public Health* [online], 22(1), p.1590. Available from: https://doi.org/10.1186/s12889-022-13964-6 [accessed 16 December 2022].

Mead,G. (1962) *Mind, self, and society*, University of Chicago Press, Chicago USA

Meng, L., Zhang, Y., Zhang, S., Jiang, F., Sha, L., Lan, Y. and Huang, L. (2022). Chronic Noise Exposure and Risk of Dementia: A Systematic Review and Dose-Response Meta-Analysis. *Frontiers in Public Health* [online], 10, p.832881. Available from: https://www.frontiersin.org/articles/10.3389/fpubh.2022.832881/full [accessed 27 November 2022].

Mental Health Commission (2018), "*Annual report*", Mental Health Commission, Dublin. Available from: https://www.mhcirl.ie/publications/mental-health-commission-annual-report-2018 [accessed 15 October 2022].

Mental Health Commission. (2023). Independent Review of the provision of Child and Adolescent Mental Health Services *(CAMHS*) in the State by the Inspector of Mental Health Services. Available from: https://www.mhcirl.ie/sites/default/files/2023-07/Mental%20Health%20Commission%20Independent%20Reviews%20of%20CAMHS%20services%20in%20the%20State.pdf.

Mental Health Ireland (2022). Mental Health Services Available from: https://www.mentalhealthireland.ie/mental-health-services/ [accessed 22 October 2024].

Mental Health Ireland. (2016). Research – Health at a glance findings. , 2016. Available from: https://www.mentalhealthireland.ie/research/ [accessed 26 March 2025].

Mental Health Ireland. (2020). Woodlands for Health evaluation report. NBT and well-being: A preliminary study. Available from: https://www.mentalhealthireland.ie/woodlandsforhealth/ [accessed 18 November 2022].

Mental Health Ireland. (2023). *Research*. Available from: https://www.mentalhealthireland.ie/research/ [accessed 19 December 2022].

Mental Health Reform. (2023). *Social Prescribing* [online]. Available from: https://mentalhealthreform.ie/social-prescribing/ [accessed 22 October 2024].

Mertens, D.M. (2018). *Mixed methods design in evaluation*. Los Angeles: SAGE.pp 1-10

Methorst, J., Bonn, A., Marselle, M., Böhning-Gaese, K. and Rehdanz, K. (2021). Species richness is positively related to mental health – A study for Germany. *Landscape and Urban Planning* [online], 211, p.104084. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0169204621000475 [accessed 10 October 2024].

Methorst, J., Bonn, A., Marselle, M., Böhning-Gaese, K. and Rehdanz, K. (2021). Species richness is positively related to mental health – A study for Germany. *Landscape and Urban Planning* [online], 211, p.104084. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0169204621000475 [accessed 19 December 2022].

Mishra, P., Pandey, C., Singh, U., Keshri, A. and Sabaretnam, M. (2019). Selection of appropriate statistical methods for data analysis. *Annals of Cardiac Anaesthesia* [online], 22(3), p.297. Available from: http://www.annals.in/text.asp?2019/22/3/297/262097[accessed 21 February 2023].

Molina-Azorin, J.F. (2016). Mixed methods research: An opportunity to improve our studies and our research skills. *European Journal of Management and Business Economics* [online], 25(2), pp.37–38. Available from: http://linkinghub.elsevier.com/retrieve/pii/S244484511630012X [accessed 10 March 2023].

Momen, N.C., Plana-Ripoll, O., Agerbo, E., Christensen, M.K., Iburg, K.M., Laursen, T.M., Mortensen, P.B., Pedersen, C.B., Prior, A., Weye, N. and McGrath, J.J. (2022). Mortality Associated With Mental Disorders and Comorbid General Medical Conditions. *JAMA Psychiatry* [online], 79(5), p.444. Available from: https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2790723 [accessed 16 December 2022].

Monroy, M. and Keltner, D. (2023). Awe as a Pathway to Mental and Physical Health. *Perspectives on Psychological Science* [online], 18(2), pp.309–320. Available from: https://journals.sagepub.com/doi/10.1177/17456916221094856 [accessed 9 October 2024].

Moran, D. (2019). Back to nature? Attention restoration theory and the restorative effects of nature contact in prison. *Health & Place* [online], 57, pp.35–43. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1353829218309869 [accessed 27 November 2022].

Moreno, A., Baker, S., Varey, K. and Hinze-Pifer, R. (2018). Bringing attention restoration theory to the classroom: A Tablet app using nature videos to replenish effortful cognition. *Trends in Neuroscience and Education* [online], 12, pp.7–21. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2211949318300036 [accessed 28 November 2022].

Morris, D., Thomas, P., Ridley, J. and Webber, M. (2022). Community-Enhanced Social Prescribing: Integrating Community in Policy and Practice. *International Journal of Community Well-Being* [online], 5(1), pp.179–195. Available from: https://link.springer.com/10.1007/s42413-020-00080-9 [accessed 4 February 2023].

Mulvihill, C. (2016). How Nature Shaped Celtic Culture in Ireland. , 2016. Available from: https://greennews.ie/how-nature-shaped-celtic-culture-in-

ireland/#:~:text=The%20ancient%20Celts%20in%20Ireland,a%20rapport%20with%20these%20beings.

Muro, A., Mateo, C., Parrado, E., Subirana-Malaret, M., Moya, M., Garriga, A., Canals, J., CHAM-Arro, A. and Sanz, A. (2023). Forest bathing and hiking benefits for mental health during the COVID-19 pandemic in Mediterranean regions. *European Journal of Forest Research* [online], 142(2), pp.415–426. Available from: https://link.springer.com/10.1007/s10342-023-01531-6 [accessed 9 October 2024].

Murphy, M.P., Staffileno, B.A. and Foreman, M.D., eds. (2018). *Research for advanced practice nurses: from evidence to practice*. Third edition. New York, NY: Springer Publishing Company, LLC.

Nádúr (2022) *Integrative Forest Therapy. Nature-based Well-being. Nadur Forest Therapy* [online]. Available from: https://nadurforesttherapy.com/ [accessed 11 November 2022]

Naor, L. (2017). Expressing the Fullness of Human Nature Through the Natural Setting. In: Kopytin, A. and Rugh, M., eds. *Environmental Expressive Therapies*. 1st ed. Routledge, pp.204–225. Available from: https://www.taylorfrancis.com/books/9781315310442/chapters/10.4324/9781315310459-11 [accessed 4 November 2022].

Naor, L. and Mayseless, O. (2021). The Therapeutic Process in Nature-Based Therapies from the Perspectives of Facilitators: A Qualitative Inquiry. *Ecopsychology* [online], 13(4), pp.284–293. Available from: https://www.liebertpub.com/doi/10.1089/eco.2021.0004 [accessed 4 November 2022].

Napierala, H., Krüger, K., Kuschick, D., Heintze, C., Herrmann, W.J. and Holzinger, F. (2022). Social Prescribing: Systematic Review of the Effectiveness of Psychosocial Community Referral Interventions in Primary Care. *International Journal of Integrated Care* [online], 22(3), p.11. Available from: https://www.ijic.org/article/10.5334/ijic.6472/ [accessed 9 February 2023].

Nath, T.K., Zhe Han, S.S. and Lechner, A.M. (2018). Urban green space and well-being in Kuala Lumpur, Malaysia. *Urban Forestry & Urban Greening* [online], 36, pp.34–41. Available from:

https://linkinghub.elsevier.com/retrieve/pii/S1618866718300815 [accessed 16 December 2022].

National Parks & Wildlife Service. (2024). *Peatlands and Turf-cutting*. Available from: https://www.npws.ie/peatlands-and-turf-cutting [accessed 1 February 2023].

Nature Therapy (2022) *Nature Therapy Ireland* [online]. Available from: https://www.naturetherapyireland.com/nature-therapy [accessed 11 November 2022].

Naughton, L., Collins, P. & Ryan, M. (2015) *Peer Support Workers: A Guidance Paper. National Office for Advancing Recovery in Ireland*. HSE: Mental Health Division. Dublin.

Nejade, R., Grace, D. and Bowman, L.R. (2022). Enabling Health Outcomes of NBTs: A Systematic Scoping Review. , 18 March 2022. Available from: http://medrxiv.org/lookup/doi/10.1101/2022.03.16.22272412 [accessed 3 October 2024].

NHS England (2020). *Universal Personalised Care: Implementing the Comprehensive Model*. Available from: https://www.england.nhs.uk/publication/universal-personalised-care-implementing-the-comprehensive-model/ [accessed 22 December 2022].

NHS England (2021). *Green social prescribing*. Available from: https://www.england.nhs.uk/personalisedcare/social-prescribing/green-social-prescribing/ [accessed 22 December 2022].

Niigaaniin, M. and MacNeill, T. (2022). Indigenous culture and nature relatedness: Results from a collaborative study. *Environmental Development* [online], 44, p.100753. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2211464522000550 [accessed 6 November 2022].

Nisbet, E.K. and Zelenski, J.M. (2013). The NR-6: a new brief measure of nature relatedness. *Frontiers in Psychology* [online], 4. Available from: http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00813/abstract [accessed 21 February 2023].

Norton, M. (2019). Implementing CP in traditional statutory mental health services. *Mental Health Practice* [online], 29 January 2019. Available from: https://journals.rcni.com/doi/10.7748/mhp.2019.e1304 [accessed 7 December 2022].

Norton, M.J. (2021). CP within Child and Adolescent Mental Health: A Systematic Review. *International Journal of Environmental Research and Public Health* [online], 18(22), p.11897. Available from: https://www.mdpi.com/1660-4601/18/22/11897 [accessed 4 December 2022].

Norton, M.J. (2022). Coproduction and mental health service provision: a protocol for a scoping review. *BMJ Open* [online], 12(5), p.e058428. Available from: https://bmjopen.bmj.com/lookup/doi/10.1136/bmjopen-2021-058428 [accessed 7 November 2022].

Norton, M.J. and Swords, C. (2021). Creating Equality for those in Crisis. *Academic Quarter | Akademisk kvarter* [online], Nr. 23, pp.64-79 Sider. Available from: https://journals.aau.dk/index.php/ak/article/view/7029 [accessed 7 November 2022].

Novosel, L.M. (2022). Understanding the Evidence: Quantitative Research Designs. *Urologic Nursing* [online], 42(6), p.303. Available from: https://library.suna.org/suna/articles/2280/view [accessed 21 February 2023].

Nudzor, H, P. (2009). A critical commentary on combined methods approach to researching educational and social issues. *Issues in educational research*, *19*(2), pp.114-127.Available from: https://www.iier.org.au/iier19/nudzor.pdf [accessed 22 March 2023].

Nursing and Midwifery Board of Ireland (2021) Code of Professional Conduct and Ethics for Registered Nurses and Registered Midwives. Available from: https://www.nmbi.ie/Standards-Guidance/Code [accessed 14 January 2023].

O'Connell, M.J., Flanagan, E.H., Delphin-Rittmon, M.E. and Davidson, L. (2020). Enhancing outcomes for persons with co-occurring disorders through skills training and peer recovery support. *Journal of Mental Health* [online], 29(1), pp.6–11. Available from: https://www.tandfonline.com/doi/full/10.1080/09638237.2017.1294733 [accessed 14 October 2024].

O'Connor, K., Wrigley, M., Jennings, R., Hill, M. and Niazi, A. (2021). Mental health impacts of COVID-19 in Ireland and the need for a secondary care mental health service response. *Irish Journal of Psychological Medicine* [online], 38(2), pp.99–107. Available from: https://www.cambridge.org/core/product/identifier/S0790966720000646/type/journal_article [accessed 14 December 2022].

O'Connor, M. and Gearey, B. (2020). 'Black butter melting and opening underfoot': the 'peat harvest' in Irish literature and culture. *Green Letters* [online], 24(4), pp.381–390. Available from: https://www.tandfonline.com/doi/full/10.1080/14688417.2021.1878049 [accessed 1 February 2023].

O'Doherty, J., Hannigan, A., Hickey, L., Meagher, D., Cullen, W., O'Connor, R. and O'Regan, A. (2018). The prevalence and treatment of mental health conditions documented in general practice in Ireland. *Irish Journal of Psychological Medicine* [online], 37(1), pp.24–31. Available from: https://www.cambridge.org/core/product/identifier/S0790966718000484/type/journal_article [accessed 29 November 2022].

O'Keeffe, D., Sheridan, A., Kelly, A., Doyle, R., Madigan, K., Lawlor, E. and Clarke, M. (2018). 'Recovery' in the Real World: Service User Experiences of Mental Health Service Use and Recommendations for Change 20 Years on from a First Episode Psychosis. *Administration and Policy in Mental Health and Mental Health Services Research* [online], 45(4), pp.635–648. Available from: https://doi.org/10.1007/s10488-018-0851-4 [accessed 24 January 2023].

O'Reilly, P. (2024). *Loneliness*. Available from: https://www.oireachtas.ie/en/debates/debate/seanad/2024-05-01/12/. [accessed 2 February 2024].

O'Shea, L., Watkins, E. and Farrand, P. (2017). Psychological interventions for the treatment of depression, anxiety, alcohol misuse or anger in armed forces veterans and their families: systematic review and meta-analysis protocol. *Systematic Reviews* [online], 6(1), p.112. Available from: http://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-017-0513-8 [accessed 8 February 2023].

Ochiai, H., Ikei, H., Song, C., Kobayashi, M., Miura, T., Kagawa, T., Li, Q., Kumeda, S., Imai, M. and Miyazaki, Y. (2015). Physiological and Psychological Effects of a Forest Therapy Program on Middle-Aged Females. *International Journal of Environmental Research and Public Health* [online], 12(12), pp.15222–15232. Available from: http://www.mdpi.com/1660-4601/12/12/14984 [accessed 2 March 2023].

Oh, K.H., Shin, W.S., Khil, T.G. and Kim, D.J. (2020). Six-Step Model of Nature-Based Therapy Process. *International Journal of Environmental Research and Public Health* [online], 17(3), p.685. Available from: https://www.mdpi.com/1660-4601/17/3/685 [accessed 9 November 2022].

Ohiri, S.C., Ihebom, Dr. and Nnennaya, C. (2024). Psychometric Properties of a Test: An Overview. International Journal of Research Publication and Reviews [online], 5(2), pp.2217–2224. Available from: https://ijrpr.com/uploads/V5ISSUE2/IJRPR22798.pdf [accessed 4 November 2024].

Ohly, H., White, M.P., Wheeler, B.W., Bethel, A., Ukoumunne, O.C., Nikolaou, V. and Garside, R. (2016). Attention Restoration Theory: A systematic review of the attention restoration potential of exposure to natural environments. *Journal of Toxicology and Environmental Health, Part B* [online], 19(7), pp.305–343. Available from: https://www.tandfonline.com/doi/full/10.1080/10937404.2016.1196155 [accessed 28 November 2022].

Oliver, K., Kothari, A. and Mays, N. (2019). The dark side of coproduction: do the costs outweigh the benefits for health research?. *Health Research Policy and Systems* [online], 17(1), p.33. Available from: https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-019-0432-3 [accessed 4 October 2024].

Ørjasæter, K.B. and Almvik, A. (2022). Challenges in Adopting Recovery-oriented Practices in Specialized Mental Health Care: “How Far Should Self-Determination Go; Should One be Allowed to Perish?” *Journal of Psychosocial Rehabilitation and Mental Health* [online], 9(4), pp.395–407. Available from: https://link.springer.com/10.1007/s40737-022-00276-6 [accessed 19 December 2022].

Otto, S. and Pensini, P. (2017). Nature-based environmental education of children: Environmental knowledge and connectedness to nature, together, are related to ecological behaviour. *Global Environmental Change* [online], 47, pp.88–94. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0959378016305787 [accessed 9 November 2022].

Pallant, J. (2020). SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS [online]. 7th ed. Routledge. Available from: https://www.taylorfrancis.com/books/9781000248777 [accessed 27 September 2024].

Parahoo, K. (2014). *Nursing Research Principles, Process and Issues.* [online]. London: Macmillan Education UK. Available from: http://public.eblib.com/choice/PublicFullRecord.aspx?p=6418084 [accessed 22 February 2023].

Parenti, C. and Moore, J.W., eds. (2016). *Anthropocene or capitalocene? Nature, history, and the crisis of capitalism*. Oakland, CA: PM Press.

Park, Y.S., Konge, L. and Artino, A.R.J. (2020). The Positivism Paradigm of Research. *Academic Medicine* [online], 95(5), p.690. Available from:https://journals.lww.com/academicmedicine/Fulltext/2020/05000/The_Positivism_Paradigm_of_Research.16.aspx [accessed 3 March 2023].

Patil, S. (2020). *Research methodology in social sciences*. New Delhi: New India Publishing Agency.

Patino, C.M. and Ferreira, J.C. (2018). Inclusion and exclusion criteria in research studies: definitions and why they matter. *Jornal Brasileiro de Pneumologia* [online], 44(2), pp.84–84. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1806-37132018000200084&lng=en&tlng=en [accessed 13 February 2023].

Patten, M., 2016. *Questionnaire research: A practical guide*. Routledge.pp1-3

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks: Sage.

Paul, S.M. and Potter, W.Z. (2024). Finding new and better treatments for psychiatric disorders. *Neuropsychopharmacology* [online], 49(1), pp.3–9. Available from: https://www.nature.com/articles/s41386-023-01690-5 [accessed 22 October 2024].

Peen, J., Schoevers, R.A., Beekman, A.T. and Dekker, J. (2010). The current status of urban-rural differences in psychiatric disorders. *Acta Psychiatrica Scandinavica* [online], 121(2), pp.84–93. Available from: https://onlinelibrary.wiley.com/doi/10.1111/j.1600-0447.2009.01438.x [accessed 10 November 2022].

Pelgrims, I., Devleesschauwer, B., Guyot, M., Keune, H., Nawrot, T.S., Remmen, R., Saenen, N.D., Trabelsi, S., Thomas, I., Aerts, R. and De Clercq, E.M. (2021). Association between urban environment and mental health in Brussels, Belgium. *BMC Public Health* [online], 21(1), p.635. Available from: https://doi.org/10.1186/s12889-021-10557-7 [accessed 16 December 2022].

Pervin, N. and Mokhtar, M. (2022). The Interpretivist Research Paradigm: A Subjective Notion of a Social Context. *International Journal of Academic Research in Progressive Education and Development* [online], 11(2), p.Pages 419-428. Available from: https://hrmars.com/journals/papers/IJARPED/v11-i2/12938 [accessed 11 March 2023].

Petersen, E., Fiske, A.P. and Schubert, T.W. (2019). The Role of Social Relational Emotions for Human-Nature Connectedness. *Frontiers in Psychology* [online], 10, p.2759. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2019.02759/full [accessed 8 February 2023].

Pham, L. (2018). A Review of key paradigms: positivism, interpretivism and critical inquiry. Available from: http://rgdoi.net/10.13140/RG.2.2.13995.54569 [accessed 20 March 2023].

Pincus, H.A., Spaeth-Rublee, B., Sara, G., Goldner, E.M., Prince, P.N., Ramanuj, P., Gaebel, W., Zielasek, J., Großimlinghaus, I., Wrigley, M., van Weeghel, J., Smith, M., Ruud, T., Mitchell, J.R. and Patton, L. (2016). A review of mental health recovery programs in selected industrialized countries. *International Journal of Mental Health Systems* [online], 10(1), p.73. Available from: https://doi.org/10.1186/s13033-016-0104-4 [accessed 19 December 2022].

Plana-Ripoll, O. et al. (2019). A comprehensive analysis of mortality-related health metrics associated with mental disorders: a nationwide, register-based cohort study. *The Lancet* [online], 394(10211), pp.1827–1835. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0140673619323165 [accessed 16 December 2022].

Pledger, A.B. (2018). The Value of Lived Experience: CP and Collaboration in Recovery Colleges. *Journal of Recovery in Mental Health* [online], 1(3), pp.21–28. Available from: https://jps.library.utoronto.ca/index.php/rmh/article/view/29572 [accessed 3 December 2022].

Plevin, J. (2018). From haiku to shinrin-yoku, a brief history of forest bathing. Available from: https://foresthistory.org/wp-content/uploads/2019/06/3-Plevin_Forest_Bathing.pdf [accessed 19 January 2023].

Pocobello, R., Sehity, T., Negrogno, L., Minervini, C., Guida, M. and Venerito, C. (2020). Comparison of a co-produced mental health service to traditional services: A co-produced mixed-methods cross-sectional study. *International Journal of Mental Health Nursing* [online], 29(3), pp.460–475. Available from: https://onlinelibrary.wiley.com/doi/10.1111/inm.12681 [accessed 3 December 2022].

Polgar, S. and Thomas, S.A. (2020). *Introduction to research in the health sciences*. Seventh edition. Edinburgh London New York Oxford Philadelphia St Louis Sydney: Elsevier.

Polit, D.F. and Beck, C.T. (2021). *Nursing research: generating and assessing evidence for nursing practice*. Eleventh edition, international edition. Philadelphia Baltimore New York: Wolters Kluwer.

Polit, D.F. and Beck, C.T. (2021). *Nursing research: generating and assessing evidence for nursing practice*. Eleventh edition, international edition. Philadelphia Baltimore New York: Wolters Kluwer.

Priorr, P. (2017). *ASYLUMS, MENTAL HEALTH CARE AND THE IRISH: historical studies, 1800-2010.* Place of publication not identified: IRISH ACADEMIC.

Pulla, V. and Carter, E. (2018). Employing Interpretivism in Social Work Research. *International Journal of Social Work and Human Services Practice* [online], 6(1),

pp.9–14. Available from: http://www.hrpub.org/journals/article_info.php?aid=6837 [accessed 17 March 2023].
Pye, V., Taylor, N., Clay-Williams, R. and Braithwaite, J. (2016). When is enough, enough? Understanding and solving your sample size problems in health services research. *BMC Research Notes* [online], 9(1), p.90. Available from: http://www.biomedcentral.com/1756-0500/9/90 [accessed 14 February 2023].

Qidwai, W., Khushk, I.A., Shamim, U., Altaf, S., Hadi, H. and Nanji, K. (2016). FAST PACE OF LIFE AND ITS IMPACT ON HEALTH: RESULTS OF A STUDY FROM THE LARGEST CITY OF PAKISTAN. *Pakistan Journal of Public Health* [online], 6(4), pp.10–16. Available from: https://pjph.org/index.php/pjph/article/view/5 [accessed 3 October 2024].

Queirós, A., Faria, D. and Almeida, F. (2017). Strengths And Limitations Of Qualitative And Quantitative Research Methods. Available from: https://zenodo.org/record/887089 [accessed 10 March 2023].

Rahman, A. and Muktadir, Md.G. (2021). SPSS: An Imperative Quantitative Data Analysis Tool for Social Science Research. *International Journal of Research and Innovation in Social Science* [online], 05(10), pp.300–302. Available from: https://www.rsisinternational.org/journals/ijriss/Digital-Library/volume-5-issue-10/300-302.pdf [accessed 21 February 2023].

Randall F. Moore, M.D. (2022). What Is an Effect Size?. Available from: https://www.psychiatrictimes.com/view/what-is-an-effect-size [accessed 13 November 2024].

Ratcliffe, E. (2021). Sound and Soundscape in Restorative Natural Environments: A Narrative Literature Review. *Frontiers in Psychology* [online], 12, p.570563. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.570563/full [accessed 25 November 2022]

Recovery College. (2018). *Our Story – Recovery College*. Available from: https://recoverycollege.ie/about-us/our-story/ [accessed 4 December 2022].

Redman, S., Greenhalgh, T., Adedokun, L., Staniszewska, S., Denegri, S. (2021). CP of knowledge: the future. *BMJ* [online], 372, p.n434. Available from: https://www.bmj.com/content/372/bmj.n434 [accessed 3 December 2022].

Reese, R.F. and Gosling, M. (2020). The Group EcoWellness Model of Change: A Conceptual Framework for Facilitating Groups in Nature. *The Journal for Specialists in Group Work* [online], 45(4), pp.331–352. Available from: https://www.tandfonline.com/doi/full/10.1080/01933922.2020.1799465 [accessed 7 December 2022].

Reeves, J.P., Knight, A.T., Strong, E.A., Heng, V., Neale, C., Cromie, R. and Vercammen, A. (2019). The Application of Wearable Technology to Quantify Health and Well-being Co-benefits From Urban Wetlands. *Frontiers in Psychology* [online], 10, p.1840. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2019.01840/full [accessed 16 December 2022].

Reinhardt, G., Vidovic, D. and Hammerton, C. (2021). Understanding loneliness: a systematic review of the impact of social prescribing initiatives on loneliness. *Perspectives in Public Health* [online], 141(4), pp.204–213. Available from: http://journals.sagepub.com/doi/10.1177/1757913920967040 [accessed 9 February 2023].

Richter, D., Löbner, M., Riedel-Heller, S.G. and Gühne, U. (2021). Was wissen wir über die Zusammenhänge von Urbanisierung und psychischen Erkrankungen?. *Psychiatrische Praxis* [online], 48(05), pp.231–241. Available from: http://www.thieme-connect.de/DOI/DOI?10.1055/a-1347-4812 [accessed 19 November 2022].

Ritchie, H. and Roser, M. (2018). Urbanization. *Our World in Data* [online], 13 June 2018. Available from: https://ourworldindata.org/urbanization [accessed 15 November 2022].

Ritchie, J. and Lewis, J., eds. (2003). *Qualitative research practice: a guide for social science students and researchers*. London ; Thousand Oaks, Calif: Sage Publications. Available from: https://mthoyibi.files.wordpress.com/2011/10/qualitative-research-practice_a-guide-for-social-science-students-and-researchers_jane-ritchie-and-jane-lewis-eds_20031.pdf [accessed 20 March 2023].

Roberts, R., Neasham, A., Lambrinudi, C. and Khan, A. (2018). A quantitative analysis of antipsychotic prescribing trends for the treatment of schizophrenia in England and Wales. *JRSM Open* [online], 9(4), p.2054270418758570. Available from: https://journals.sagepub.com/doi/10.1177/2054270418758570 [accessed 26 March 2025].

Robinson, J.M., Jorgensen, A., Cameron, R. and Brindley, P. (2020). Let Nature Be Thy Medicine: A Socioecological Exploration of Green Prescribing in the UK. *International Journal of Environmental Research and Public Health* [online], 17(10), p.3460. Available from: https://www.mdpi.com/1660-4601/17/10/3460 [accessed 19 November 2022].

Rodriguez-Seijas, C., Thompson, J.S., Diehl, J.M. and Zimmerman, M. (2020). A comparison of the dimensionality of the Hamilton Rating Scale for anxiety and the DSM-5 Anxious-Distress Specifier Interview. *Psychiatry Research* [online], 284, p.112788. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0165178119322000 [accessed 21 February 2023].

Rodriguez-Seijas, C., Thompson, J.S., Diehl, J.M. and Zimmerman, M. (2020). A comparison of the dimensionality of the Hamilton Rating Scale for anxiety and the DSM-5 Anxious-Distress Specifier Interview. *Psychiatry Research* [online], 284, p.112788. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0165178119322000 [accessed 21 February 2023].

Rosa, C.D. and Collado, S. (2019). Experiences in Nature and Environmental Attitudes and Behaviors: Setting the Ground for Future Research. *Frontiers in Psychology* [online], 10, p.763. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2019.00763/full [accessed 16 December 2022].

Rose, D. and Kalathil, J. (2019). Power, Privilege and Knowledge: the Untenable Promise of CP in Mental “Health”. *Frontiers in Sociology* [online], 4, p.57. Available from: https://www.frontiersin.org/article/10.3389/fsoc.2019.00057/full [accessed 4 October 2024].

Rose, D., Carr, S. and Beresford, P. (2018). 'Widening cross-disciplinary research for mental health': what is missing from the Research Councils UK mental health agenda? *Disability & Society* [online], 33(3), pp.476–481. Available from: https://www.tandfonline.com/doi/full/10.1080/09687599.2018.1423907 [accessed 7 October 2024].

Ross, A. and Willson, V.L. (2017). Paired Samples T-Test. In: Basic and Advanced Statistical Tests. Rotterdam*: Sense Publishers*, pp.17–19. Available from: http://link.springer.com/10.1007/978-94-6351-086-8_4 [accessed 13 November 2024].

Ross, P.T. and Bibler Zaidi, N.L. (2019). Limited by our limitations. *Perspectives on Medical Education* [online], 8(4), pp.261–264. Available from: http://link.springer.com/10.1007/s40037-019-00530-x [accessed 14 February 2023].

Roszak, T. (2001). *The voice of the earth: an exploration of ecopsychology*. 2. ed. Grand Rapids: Phanes Press.

Rudd, M., Vohs, K.D. and Aaker, J. (2012). Awe Expands People's Perception of Time, Alters Decision Making, and Enhances Well-Being. *Psychological Science* [online], 23(10), pp.1130–1136. Available from: https://journals.sagepub.com/doi/10.1177/0956797612438731 [accessed 3 October 2024].

Ruokolainen, L., Hertzen, L., Fyhrquist, N., Laatikainen, T., Lehtomäki, J., Auvinen, P., Karvonen, A.M., Hyvärinen, A., Tillmann, V., Niemelä, O., Knip, M., Haahtela, T., Pekkanen, J. and Hanski, I. (2015). Green areas around homes reduce atopic sensitization in children. *Allergy* [online], 70(2), pp.195–202. Available from: https://onlinelibrary.wiley.com/doi/10.1111/all.12545 [accessed 19 December 2022].

Ryan, G. (2017). *Introduction to positivism, interpretivism and critical theory* [online]. Available from: https://journals.rcni.com/nurse-researcher/introduction-to-positivism-interpretivism-and-critical-theory-nr.2018.e1466 [accessed 21 March 2023].

Ryff, C.D. (2021). Spirituality and Well-Being: Theory, Science, and the Nature Connection. *Religions* [online], 12(11), p.914. Available from: https://www.mdpi.com/2077-1444/12/11/914 [accessed 10 October 2024].

Schamilow, S., Santonja, I., Weitzer, J., Strohmaier, S., Klösch, G., Seidel, S., Schernhammer, E. and Papantoniou, K. (2023). Time Spent Outdoors and Associations with Sleep, Optimism, Happiness and Health before and during the COVID-19 Pandemic in Austria. *Clocks & Sleep* [online], 5(3), pp.358–372. Available from: https://www.mdpi.com/2624-5175/5/3/27 [accessed 15 October 2024].

Schober, P., Mascha, E.J. and Vetter, T.R. (2021). Statistics From A (Agreement) to Z (z Score): A Guide to Interpreting Common Measures of Association, Agreement, Diagnostic Accuracy, Effect Size, Heterogeneity, and Reliability in Medical Research. *Anesthesia & Analgesia* [online], 11 October 2021. Available from: https://journals.lww.com/10.1213/ANE.0000000000005773 [accessed 27 September 2024].

Schoonenboom, J. and Johnson, R.B. (2017). How to Construct a Mixed Methods Research Design. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie* [online], 69(S2), pp.107–131. Available from: http://link.springer.com/10.1007/s11577-017-0454-1 [accessed 7 March 2023].

Schroll, M. (2007) Remembering Eco psychology's Origins: A chronicle of meetings, conversations and significant publications. Available from: https://www.ecopsychology.org/journal/ezine/ep_origins.html. [accessed 20 March 2022].

Schultz, P.W. (2002). Inclusion with Nature: The Psychology Of Human-Nature Relations. In: Schmuck, P. and Schultz, W. P., eds. *Psychology of Sustainable Development*. Boston, MA: Springer US, pp.61–78. Available from: http://link.springer.com/10.1007/978-1-4615-0995-0_4 [accessed 16 December 2022].

Schwartz, R., Estein, O., Komaroff, J., Lamb, J., Myers, M., Stewart, J., Vacaflor, L. and Park, M. (2013). Mental health consumers and providers dialogue in an institutional setting: A participatory approach to promoting recovery-oriented care. *Psychiatric Rehabilitation Journal* [online], 36(2), pp.113–115. Available from: http://doi.apa.org/getdoi.cfm?doi=10.1037/h0094980 [accessed 24 January 2023].

Scopelliti, M., Carrus, G. and Bonaiuto, M. (2019). Is it Really Nature That Restores People? A Comparison With Historical Sites With High Restorative

Potential. *Frontiers in Psychology* [online], 9, p.2742. Available from: https://www.frontiersin.org/article/10.3389/fpsyg.2018.02742/full [accessed 28 November 2022].

Seidler, A., Schubert, M., Romero-Starke, K., Freiberg, A., Zeeb, H., Riedel-Heller, S. and Hegewald, J. (2019). Traffic noise and mental illness–a systematic review. *Environmental Epidemiology*, *3*, p.360. Available from:http://journals.lww.com/10.1097/01.EE9.0000609984.76129.9e [accessed 16 November 2022].

Selvaraj, P., Krishnamoorthy, A., Vivekanandhan, S. and Manoharan, H. (2022). COVID-19: A crisis or fortune? Examining the relationship between nature relatedness and mental well-being during the pandemic. *Heliyon* [online], 8(4), p.e09327. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2405844022006156 [accessed 14 December 2022].

Shepherd, G., Boardman, J. and Burns, M. (2010). Implementing recovery. *A methodology for organisation change. London: Sainsbury Centre for Mental Health*. Available from: https://www.meridenfamilyprogramme.com/download/recovery/what-does-recovery-mean/implementing_recovery_methodology.pdf [accessed 1 March 2023].

Shera, W. and Ramon, S. (2013). Challenges in the Implementation of Recovery-Oriented Mental Health Policies and Services: Analysis of Developments in England and Canada. *International Journal of Mental Health* [online], 42(2–3), pp.17–42. Available from: https://www.tandfonline.com/doi/full/10.2753/IMH0020-7411420202 [accessed 23 January 2023].

Shreffler, J. and Huecker, M.R. (2024). Hypothesis Testing, P Values, Confidence Intervals, and Significance*. StatPearls*. Treasure Island (FL): StatPearls Publishing. Available from: http://www.ncbi.nlm.nih.gov/books/NBK557421/ [accessed 27 September 2024].

Sinead Ryan, G. (2019). Postpositivist critical realism: philosophy, methodology and method for nursing research. *Nurse Researcher* [online], 27(3), pp.20–26. Available

from: https://journals.rcni.com/doi/10.7748/nr.2019.e1598 [accessed 21 March 2023].

Singh, A.S. (2017). Common procedures for development, validity and reliability of a questionnaire. *International Journal of Economics, Commerce and Management*, *5*(5), pp.790-801. Available from: file:///C:/Users/clare/Downloads/2017COMMONPROCEDURESFORDEVELOPMENTVALIDITYandReliability.pdf [accessed 22 February 2023].

Singh, S. and Wassenaar, D. (2016). Contextualising the role of the gatekeeper in social science research. *South African Journal of Bioethics and Law* [online], 9(1), p.42. Available from: http://www.sajbl.org.za/index.php/sajbl/article/view/465 [accessed 13 February 2023].

Sinnott, R. and Rowlís, M. (2021). A gardening and woodwork group in mental health: a step towards recovery. *Irish Journal of Occupational Therapy* [online], 49(2), pp.96–103. Available from: https://www.emerald.com/insight/content/doi/10.1108/IJOT-08-2021-0018/full/html [accessed 23 January 2023].

Sischka, P.E., Costa, A.P., Steffgen, G. and Schmidt, A.F. (2020). The WHO-5 well-being index – validation based on item response theory and the analysis of measurement invariance across 35 countries. *Journal of Affective Disorders Reports* [online], 1, p.100020. Available from: https://linkinghub.elsevier.com/retrieve/pii/S2666915320300202 [accessed 18 November 2024].

Sivasubramaniam, S., Dlabolová, D.H., Kralikova, V. and Khan, Z.R. (2021). Assisting you to advance with ethics in research: an introduction to ethical governance and application procedures. *International Journal for Educational Integrity* [online], 17(1), p.14. Available from: https://edintegrity.biomedcentral.com/articles/10.1007/s40979-021-00078-6 [accessed 22 February 2023].

Slade, M. (2017). Implementing shared decision making in routine mental health care: FORUM - SHARED DECISION MAKING IN MENTAL HEALTH CARE. *World Psychiatry* [online], 16(2), pp.146–153. Available from: https://onlinelibrary.wiley.com/doi/10.1002/wps.20412 [accessed 4 December 2022].

Sobko, T., Liang, S., Cheng, W.H.G. and Tun, H.M. (2020). Impact of outdoor nature-related activities on gut microbiota, fecal serotonin, and perceived stress in preschool children: the Play&Grow randomized controlled trial. *Scientific Reports* [online], 10(1), p.21993. Available from: https://www.nature.com/articles/s41598-020-78642-2 [accessed 19 December 2022].

Soga, M. and Gaston, K.J. (2016). Extinction of experience: the loss of human-nature interactions. *Frontiers in Ecology and the Environment* [online], 14(2), pp.94–101. Available from: https://onlinelibrary.wiley.com/doi/10.1002/fee.1225 [accessed 16 December 2022].

Soklaridis, S., Harris, H., Shier, R., Rovet, J., Black, G., Bellissimo, G., Gruszecki, S., Lin, E. and Di Giandomenico, A. (2024). A balancing act: navigating the nuances of CP in mental health research. *Research Involvement and Engagement* [online], 10(1), p.30. Available from: https://researchinvolvement.biomedcentral.com/articles/10.1186/s40900-024-00561-7 [accessed 4 October 2024].

Sol, K. and Heng, K. (2022). Understanding epistemology and its key approaches in research. *CAMBODIAN JOURNAL*, p.80. Available from: https://cefcambodia.com/2023/01/21/understanding-epistemology-and-its-key-approaches-in-research/ [accessed 10 March 2023].
Solas Donegal. (2022). *Walking, Talking, Listening*. Available from: https://solasdonegal.org/ [accessed 12 November 2022].

Sommer, J., Gill, K. and Stein-Parbury, J. (2018). Walking side-by-side: Recovery Colleges revolutionising mental health care. *Mental Health and Social Inclusion* [online], 22(1), pp.18–26. Available from: https://www.emerald.com/insight/content/doi/10.1108/MHSI-11-2017-0050/full/html [accessed 24 January 2023].

Soulé, I., Littzen-Brown, C., Vermeesch, A.L. and Garrigues, L. (2022). Expanding the Mind–Body–Environment Connection to Enhance the Development of Cultural Humility. *International Journal of Environmental Research and Public Health* [online], 19(20), p.13641. Available from: https://www.mdpi.com/1660-4601/19/20/13641 [accessed 8 December 2022].

Spacey, A., Harvey, O. and Casey, C. (2021). Postgraduate researchers' experiences of accessing participants via gatekeepers: 'wading through treacle!' *Journal of Further and Higher Education* [online], 45(4), pp.433–450. Available from: https://www.tandfonline.com/doi/full/10.1080/0309877X.2020.1774051 [accessed 13 February 2023].

SSM Health (2022). *Nature can reset your circadian rhythm and bring better sleep* | *SSM Health* [online]. Available from: https://www.ssmhealth.com/newsroom/blogs/ssm-health-matters/april-2022/nature-can-reset-your-circadian-rhythm [accessed 3 October 2024].

St Patrick's Mental Health Services. (2016) *Gardening; sowing the seeds of good mental health*. [online]. Available from: https://www.stpatricks.ie/media-centre/news/2016/april/gardening-sowing-the-seeds-of-good-mental-health [accessed 25 November 2022].

Stadnick, N.A., Poth, C.N., Guetterman, T.C. and Gallo, J.J. (2021). Advancing discussion of ethics in mixed methods health services research. *BMC Health Services Research* [online], 21(1), p.577. Available from: https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-06583-1 [accessed 22 February 2023].

Stahl, N.A. and King, J.R., (2020). Expanding approaches for research: Understanding and using trustworthiness in qualitative research. *Journal of Developmental Education*, *44*(1), pp.26-28.Available from: https://files.eric.ed.gov/fulltext/EJ1320570.pdf [accessed 22 February 2023].

Steen, O.D., Ori, A.P.S., Wardenaar, K.J. and van Loo, H.M. (2022). Loneliness associates strongly with anxiety and depression during the COVID pandemic, especially in men and younger adults. *Scientific Reports* [online], 12(1), p.9517. Available from: https://www.nature.com/articles/s41598-022-13049-9 [accessed 9 February 2023].

Steer, R.A., Beck, A.T. and Garrison, B. (1986). Applications of the Beck Depression Inventory. In: Sartorius, N. and Ban, T. A., eds. *Assessment of Depression*. Berlin, Heidelberg: Springer Berlin Heidelberg, pp.123–142. Available from:

http://link.springer.com/10.1007/978-3-642-70486-4_13 [accessed 21 February 2023].

Steer, R.A., Beck, A.T. and Garrison, B. (1986). Applications of the Beck Depression Inventory. In: Sartorius, N. and Ban, T. A., eds. *Assessment of Depression*. Berlin, Heidelberg: Springer Berlin Heidelberg, pp.123–142. Available from: http://link.springer.com/10.1007/978-3-642-70486-4_13 [accessed 21 February 2023].

Stein, D.J., Shoptaw, S.J., Vigo, D.V., Lund, C., Cuijpers, P., Bantjes, J., Sartorius, N. and Maj, M. (2022). Psychiatric diagnosis and treatment in the 21st century: paradigm shifts versus incremental integration. *World Psychiatry* [online], 21(3), pp.393–414. Available from: https://onlinelibrary.wiley.com/doi/10.1002/wps.20998 [accessed 10 March 2023].

Stellar, J.E., Gordon, A.M., Piff, P.K., Cordaro, D., Anderson, C.L., Bai, Y., Maruskin, L.A. and Keltner, D. (2017). Self-Transcendent Emotions and Their Social Functions: Compassion, Gratitude, and Awe Bind Us to Others Through Prosociality. *Emotion Review* [online], 9(3), pp.200–207. Available from: http://journals.sagepub.com/doi/10.1177/1754073916684557 [accessed 7 October 2024].

Stirrat, S., McCallion, M., Azura, Y. (2013) An Evaluation of the Green Prescribing Programme in County Donegal. Available from: https://www.hse.ie/eng/services/publications/corporate/evaluationgreenprescription.pdf [accessed 9 February 2023].

Stobbe, E., Forlim, C.G. and Kühn, S. (2024). Impact of exposure to natural versus urban soundscapes on brain functional connectivity, BOLD entropy and behavior. *Environmental Research* [online], 244, p.117788. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0013935123025926 [accessed 9 October 2024].

Stobbe, E., Sundermann, J., Ascone, L. and Kühn, S. (2022). Birdsongs alleviate anxiety and paranoia in healthy participants. *Scientific Reports* [online], 12(1), p.16414. Available from: https://www.nature.com/articles/s41598-022-20841-0 [accessed 27 November 2022].

Stratton, S.J. (2021). Population Research: Convenience Sampling Strategies. *Prehospital and Disaster Medicine* [online], 36(4), pp.373–374. Available from: https://www.cambridge.org/core/product/identifier/S1049023X21000649/type/journal_article [accessed 14 February 2023].

Sunkel, C. and Sartor, C. (2022). Perspectives: involving persons with lived experience of mental health conditions in service delivery, development and leadership. *BJPsych Bulletin* [online], 46(3), pp.160–164. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9346508/ [accessed 3 December 2022].

Suter, A. H. (1991). *Noise and its effects. In Administrative conference of the United States* (pp. 1-47).

Swords, C. and Houston, S. (2020). Exploring the Concept of Recovery in Irish Mental Health Services: A Case Study of Perspectives within an Inter-Professional Team. Available from: https://arrow.tudublin.ie/ijass/vol20/iss1/4/ [accessed 19 December 2022].

Taherdoost, H. (2016). Validity and Reliability of the Research Instrument; How to Test the Validation of a Questionnaire/Survey in a Research. *SSRN Electronic Journal* [online], 2016. Available from: https://www.ssrn.com/abstract=3205040 [accessed 22 February 2023].

Tambyah, R., Olcoń, K., Allan, J., Destry, P. and Astell-Burt, T. (2022). Mental health clinicians' perceptions of NBT within community mental health services: evidence from Australia. *BMC Health Services Research* [online], 22(1), p.841. Available from: https://doi.org/10.1186/s12913-022-08223-8 [accessed 21 November 2022].

Thacker, L.R. (2020). What Is the Big Deal About Populations in Research?. *Progress in Transplantation* [online], 30(1), pp.3–3. Available from: http://journals.sagepub.com/doi/10.1177/1526924819893795 [accessed 13 February 2023].

Thomas, F.B., (2022). The Role of Purposive Sampling Technique as a Tool for Informal Choices in a Social Sciences in Research Methods. Available from: https://justagriculture.in/files/newsletter/2022/january/47.%20The%20Role%20of%20

Purposive%20Sampling%20Technique%20as%20a%20Tool%20for%20Informal%20Choices%20in%20a%20Social%20Sciences%20in%20Research%20Methods.pdf

Timans, R., Wouters, P. and Heilbron, J. (2019). Mixed methods research: what it is and what it could be. *Theory and Society* [online], 48(2), pp.193–216. Available from: https://doi.org/10.1007/s11186-019-09345-5 [accessed 22 March 2023].
Toledano-Toledano, F. and Contreras-Valdez, J.A. (2018). Validity and reliability of the Beck Depression Inventory II (BDI-II) in family caregivers of children with chronic diseases. Seedat, S., ed. *PLOS ONE* [online], 13(11), p.e0206917. Available from: https://dx.plos.org/10.1371/journal.pone.0206917 [accessed 21 February 2023].

Trenoweth, S. (2016). *Promoting recovery in mental health nursing*. 1st edition. Thousand Oaks, CA: Sage.

Ulrich, R.S. (1981). Natural Versus Urban Scenes: Some Psychophysiological Effects. *Environment and Behavior* [online], 13(5), pp.523–556. Available from: http://journals.sagepub.com/doi/10.1177/0013916581135001 [accessed 27 November 2022].

Vaeggemose, U., Ankersen, P.V., Aagaard, J. and Burau, V. (2018). CP of community mental health services: Organising the interplay between public services and civil society in Denmark. *Health & Social Care in the Community* [online], 26(1), pp.122–130. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hsc.12468 [accessed 7 December 2022].

Vaismoradi, M. and Snelgrove, S. (2019). Theme in Qualitative Content Analysis and Thematic Analysis. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* [online], 20(3). Available from: https://www.qualitative-research.net/index.php/fqs/article/view/3376 [accessed 21 February 2023].

Van den Berg, A.E. and Beute, F. (2021). Walk it off! The effectiveness of walk and talk coaching in nature for individuals with burnout- and stress-related complaints. *Journal of Environmental Psychology* [online], 76, p.101641. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0272494421000943 [accessed 22 December 2022].

Varkey, B. (2021). Principles of Clinical Ethics and Their Application to Practice. *Medical Principles and Practice* [online], 30(1), pp.17–28. Available from: https://www.karger.com/Article/FullText/509119 [accessed 22 February 2023].

Vassos, E., Pedersen, C.B., Murray, R.M., Collier, D.A. and Lewis, C.M. (2012). Meta-Analysis of the Association of Urbanicity With Schizophrenia. *Schizophrenia Bulletin* [online], 38(6), pp.1118–1123. Available from: https://academic.oup.com/schizophreniabulletin/article-lookup/doi/10.1093/schbul/sbs096 [accessed 15 November 2022].

Vetter, C. (2020). Circadian disruption: What do we actually mean?. European Journal of Neuroscience [online], 51(1), pp.531–550. Available from: https://onlinelibrary.wiley.com/doi/10.1111/ejn.14255 [accessed 15 October 2024].

Vimal, R. (2022). The impact of the COVID-19 lockdown on the human experience of nature. *Science of The Total Environment* [online], 803, p.149571. Available from: https://linkinghub.elsevier.com/retrieve/pii/S0048969721046465 [accessed 14 December 2022].

Wahrborg, P., Petersson, I. and Grahn, P. (2014). Nature-assisted rehabilitation for reactions to severe stress and/or depression in a rehabilitation garden: Long-term follow-up including comparisons with a matched population-based reference cohort. *Journal of Rehabilitation Medicine* [online], 46(3), pp.271–276. Available from: https://medicaljournalssweden.se/jrm/article/view/15666 [accessed 9 October 2024].

Wainberg, M., Jones, S.E., Beaupre, L.M., Hill, S.L., Felsky, D., Rivas, M.A., Lim, A.S.P., Ollila, H.M. and Tripathy, S.J. (2021). Association of accelerometer-derived sleep measures with lifetime psychiatric diagnoses: A cross-sectional study of 89,205 participants from the UK Biobank. Patel, V., ed. *PLOS Medicine* [online], 18(10), p.e1003782. Available from: https://dx.plos.org/10.1371/journal.pmed.1003782 [accessed 22 December 2022].

Wallace, G., Bird, V., Leamy, M., Bacon, F., Le Boutillier, C., Janosik, M., MacPherson, R., Williams, J. and Slade, M. (2016). Service user experiences of REFOCUS: a process evaluation of a pro-recovery complex intervention. *Social Psychiatry and Psychiatric Epidemiology* [online], 51(9), pp.1275–1284. Available

from: http://link.springer.com/10.1007/s00127-016-1257-9 [accessed 20 December 2022].

Walsh, D. and Daly, A. (2004). *Mental Illness in Ireland 1750–2002 REFLECTIONS ON THE RISE AND FALL OF INSTITUTIONAL CARE*. Health Research Board.

Wang, J., Lloyd-Evans, B., Marston, L., Mann, F., Ma, R. and Johnson, S. (2020). Loneliness as a predictor of outcomes in mental disorders among people who have experienced a mental health crisis: a 4-month prospective study. *BMC Psychiatry* [online], 20(1), p.249. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/s12888-020-02665-2 [accessed 9 February 2023].

Ward, M. (2024). *Psychology waiting lists have doubled under this government – Mark Ward TD*. Available from: https://vote.sinnfein.ie/psychology-waiting-lists-have-doubled-under-this-government-mark-ward-td/#:~:text=21%2C132%20people%20are%20now%20waiting,children%20waiting%20over%20a%20year.

Ward, M., Layte, R., Kenny, R. (2019) Loneliness, social isolation, and their discordance among older adults. *The Irish Longitudinal Study on Ageing*. Available from: https://tilda.tcd.ie/publications/reports/pdf/Report_Loneliness.pdf [accessed 30 January 2023].

Wasti, S.P., Simkhada, P., Van Teijlingen, E., Sathian, B. and Banerjee, I. (2022). The Growing Importance of Mixed-Methods Research in Health. *Nepal Journal of Epidemiology* [online], 12(1), pp.1175–1178. Available from: https://www.nepjol.info/index.php/NJE/article/view/43633 [accessed 17 February 2023].

Wasti, S.P., Simkhada, P., Van Teijlingen, E., Sathian, B. and Banerjee, I. (2022). The Growing Importance of Mixed-Methods Research in Health. *Nepal Journal of Epidemiology* [online], 12(1), pp.1175–1178. Available from: https://www.nepjol.info/index.php/NJE/article/view/43633 [accessed 11 March 2023].

Weber, M. (1947) *The theory of social and economic organization*, AM Henderson and T Parsons, Free Press, New York USA.

Wen, Y., Gu, X., Deng, W., Zou, Q., Hu, Y., Yan, Q., Pan, Y., Wen, Z., Wan, R., Sheng, G., Liu, Y. and He, M. (2023). The Effects of Dynamic and Static Forest

Bathing (Shinrin-yoku) on Physiological and Psychological Health in Males and Females. *Forests* [online], 14(8), p.1592. Available from: https://www.mdpi.com/1999-4907/14/8/1592 [accessed 9 October 2024].
What is a men's shed? Irish Men's Sheds Association [online]. Available from: https://menssheds.ie/about-mens-sheds/ [accessed 16 December 2022].

Wickramaratne, P.J., Yangchen, T., Lepow, L., Patra, B.G., Glicksburg, B., Talati, A., Adekkanattu, P., Ryu, E., Biernacka, J.M., Charney, A., Mann, J.J., Pathak, J., Olfson, M. and Weissman, M.M. (2022). Social connectedness as a determinant of mental health: A scoping review. Pan, X., ed. *PLOS ONE* [online], 17(10), p.e0275004. Available from: https://dx.plos.org/10.1371/journal.pone.0275004 [accessed 15 October 2024].
Wildman, J.M., Moffatt, S., Penn, L., O'Brien, N., Steer, M. and Hill, C. (2019). Link workers' perspectives on factors enabling and preventing client engagement with social prescribing. *Health & Social Care in the Community* [online], 27(4), pp.991–998. Available from: https://onlinelibrary.wiley.com/doi/10.1111/hsc.12716 [accessed 9 February 2023].

Williams, B.N., Kang, S.-C. and Johnson, J. (2016). (Co)-Contamination as the Dark Side of CP: Public value failures in CP processes. *Public Management Review* [online], 18(5), pp.692–717. Available from: http://www.tandfonline.com/doi/full/10.1080/14719037.2015.1111660 [accessed 22 December 2022].

Wiśniowski, A., Sakshaug, J.W., Perez Ruiz, D.A. and Blom, A.G. (2020). Integrating Probability and Nonprobability Samples for Survey Inference. *Journal of Survey Statistics and Methodology* [online], 8(1), pp.120–147. Available from: https://academic.oup.com/jssam/article/8/1/120/5716393 [accessed 13 February 2023].

Wong, Y.S. and Osborne, N.J. (2022). Biodiversity Effects on Human Mental Health via Microbiota Alterations. *International Journal of Environmental Research and Public Health* [online], 19(19), p.11882. Available from: https://www.mdpi.com/1660-4601/19/19/11882 [accessed 20 December 2022].

Wood, C.J., Polley, M., Barton, J.L. and Wicks, C.L. (2022). Therapeutic Community Gardening as a Green Social Prescription for Mental Ill-Health: Impact, Barriers, and

Facilitators from the Perspective of Multiple Stakeholders. *International Journal of Environmental Research and Public Health* [online], 19(20), p.13612. Available from: https://www.mdpi.com/1660-4601/19/20/13612 [accessed 24 January 2023].

Woodall, A., Morgan, C., Sloan, C. and Howard, L. (2010). Barriers to participation in mental health research: are there specific gender, ethnicity and age related barriers?*. BMC Psychiatry* [online], 10(1), p.103. Available from: https://bmcpsychiatry.biomedcentral.com/articles/10.1186/1471-244X-10-103 [accessed 23 October 2024].

World Health Organisation (1998). *Wellbeing Measures in Primary Health Care/The Depcare Project*. WHO Regional Office for Europe: Copenhagen.

World Health Organisation. (2019). Code of Conduct for Professional Research. Available from: https://cdn.who.int/media/docs/default-source/documents/ethics/code-of-conduct-for-responsible-research-pamphlet-en.pdf?sfvrsn=93f07bc9_7 [accessed 22 February 2023].

World Health Organisation. (2020). *World Mental Health Day: an opportunity to kick-start a massive scale-up in investment in mental health*. Available from: https://www.who.int/news/item/27-08-2020-world-mental-health-day-an-opportunity-to-kick-start-a-massive-scale-up-in-investment-in-mental-health [accessed 30 January 2023].

Wright, S., O'Brien, B.C., Nimmon, L., Law, M. and Mylopoulos, M. (2016). Research Design Considerations. *Journal of Graduate Medical Education* [online], 8(1), pp.97–98. Available from: https://meridian.allenpress.com/jgme/article/8/1/97/201032/Research-Design-Considerations [accessed 21 February 2023].

Wright, S., O'Brien, B.C., Nimmon, L., Law, M. and Mylopoulos, M. (2016). Research Design Considerations. *Journal of Graduate Medical Education* [online], 8(1), pp.97–98. Available from: https://meridian.allenpress.com/jgme/article/8/1/97/201032/Research-Design-Considerations [accessed 21 February 2023].

Yakar, H. (2018). From Mythological Ages to Anthropocene: Nature and Human Relationship. *International Education Studies* [online], 11(5), p.94. Available from:

http://www.ccsenet.org/journal/index.php/ies/article/view/73159 [accessed 19 December 2022].

Yalom Irvin D. (1980). *Existential Psychotherapy.* New York.

Yan, T., Fricker, S. and Tsai, S. (2020). Response Burden: What Is It and What Predicts It?. In: Beatty, P. et al., eds. *Advances in Questionnaire Design, Development, Evaluation and Testing*. 1st ed. Wiley, pp.193–212. Available from: https://onlinelibrary.wiley.com/doi/10.1002/9781119263685.ch8 [accessed 20 March 2025].

Yu, C.-P., Lin, C.-M., Tsai, M.-J., Tsai, Y.-C. and Chen, C.-Y. (2017). Effects of Short Forest Bathing Program on Autonomic Nervous System Activity and Mood States in Middle-Aged and Elderly Individuals. *International Journal of Environmental Research and Public Health* [online], 14(8), p.897. Available from: http://www.mdpi.com/1660-4601/14/8/897 [accessed 16 December 2022].

Yuan, N., Chen, Y., Xia, Y., Dai, J. and Liu, C. (2019). Inflammation-related biomarkers in major psychiatric disorders: a cross-disorder assessment of reproducibility and specificity in 43 meta-analyses. *Translational Psychiatry* [online], 9(1), p.233. Available from: https://www.nature.com/articles/s41398-019-0570-y [accessed 19 December 2022].

Zabel, E., Donegan, G., Lawrence, K. and French, P. (2016). Exploring the impact of the recovery academy: a qualitative study of Recovery College experiences. *The Journal of Mental Health Training, Education and Practice* [online], 11(3), pp.162–171. Available from: https://www.emerald.com/insight/content/doi/10.1108/JMHTEP-12-2015-0052/full/html [accessed 30 January 2023].

Appendices

This thesis includes the following documentation:	Appendix
Becks Depression Inventory	**A**
Hamilton Anxiety Scale	**B**
World Health Organisation- Five Well-Being Index	**C**
Nature Relatedness Scale	**D**
Participant information leaflet	**E**
Table of activities from one of the programmes	**F**
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Appendix A- Becks Depression Inventory

Reference: Beck, A.T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961) An inventory for measuring depression. *Archives of General Psychiatry, 4*, 561-571.

E –

Beck's Depression Inventory

This depression inventory can be self-scored. The scoring scale is at the end of the questionnaire.

1.
- 0 I do not feel sad.
- 1 I feel sad
- 2 I am sad all the time and I can't snap out of it.
- 3 I am so sad and unhappy that I can't stand it.

2.
- 0 I am not particularly discouraged about the future.
- 1 I feel discouraged about the future.
- 2 I feel I have nothing to look forward to.
- 3 I feel the future is hopeless and that things cannot improve.

3.
- 0 I do not feel like a failure.
- 1 I feel I have failed more than the average person.
- 2 As I look back on my life, all I can see is a lot of failures.
- 3 I feel I am a complete failure as a person.

4.
- 0 I get as much satisfaction out of things as I used to.
- 1 I don't enjoy things the way I used to.
- 2 I don't get real satisfaction out of anything anymore.
- 3 I am dissatisfied or bored with everything.

5.
- 0 I don't feel particularly guilty
- 1 I feel guilty a good part of the time.
- 2 I feel quite guilty most of the time.
- 3 I feel guilty all of the time.

6.
- 0 I don't feel I am being punished.
- 1 I feel I may be punished.
- 2 I expect to be punished.
- 3 I feel I am being punished.

7.
- 0 I don't feel disappointed in myself.
- 1 I am disappointed in myself.
- 2 I am disgusted with myself.
- 3 I hate myself.

8.
- 0 I don't feel I am any worse than anybody else.
- 1 I am critical of myself for my weaknesses or mistakes.
- 2 I blame myself all the time for my faults.
- 3 I blame myself for everything bad that happens.

9.
- 0 I don't have any thoughts of killing myself.
- 1 I have thoughts of killing myself, but I would not carry them out.
- 2 I would like to kill myself.
- 3 I would kill myself if I had the chance.

10.
- 0 I don't cry any more than usual.
- 1 I cry more now than I used to.
- 2 I cry all the time now.
- 3 I used to be able to cry, but now I can't cry even though I want to.

11.

0 I am no more irritated by things than I ever was.
1 I am slightly more irritated now than usual.
2 I am quite annoyed or irritated a good deal of the time.
3 I feel irritated all the time.

12.

0 I have not lost interest in other people.
1 I am less interested in other people than I used to be.
2 I have lost most of my interest in other people.
3 I have lost all of my interest in other people.

13.

0 I make decisions about as well as I ever could.
1 I put off making decisions more than I used to.
2 I have greater difficulty in making decisions more than I used to.
3 I can't make decisions at all anymore.

14.

0 I don't feel that I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel there are permanent changes in my appearance that make me look unattractive
3 I believe that I look ugly.

15.

0 I can work about as well as before.
1 It takes an extra effort to get started at doing something.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.

16.

0 I can sleep as well as usual.
1 I don't sleep as well as I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up several hours earlier than I used to and cannot get back to sleep.

17.

0 I don't get more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing almost anything.
3 I am too tired to do anything.

18.

0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all anymore.

19.

0 I haven't lost much weight, if any, lately.
1 I have lost more than five pounds.
2 I have lost more than ten pounds.
3 I have lost more than fifteen pounds.

20.

0 I am no more worried about my health than usual.
1 I am worried about physical problems like aches, pains, upset stomach, or constipation.
2 I am very worried about physical problems and it's hard to think of much else.
3 I am so worried about my physical problems that I cannot think of anything else.

21.

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I have almost no interest in sex.
3 I have lost interest in sex completely.

INTERPRETING THE BECK DEPRESSION INVENTORY

Now that you have completed the questionnaire, add up the score for each of the twenty-one questions by counting the number to the right of each question you marked. The highest possible total for the whole test would be sixty-three. This would mean you circled number three on all twenty-one questions. Since the lowest possible score for each question is zero, the lowest possible score for the test would be zero. This would mean you circles zero on each question. You can evaluate your depression according to the Table below.

Total Score	Levels of Depression
1-10	These ups and downs are considered normal
11-16	Mild mood disturbance
17-20	Borderline clinical depression
21-30	Moderate depression
31-40	Severe depression
over 40	Extreme depression

Appendix B - Hamilton Anxiety Scale

Reference: Hamilton M. (1959) The assessment of anxiety states by rating. Br J Med Psychol 1959; 32:50–55.

Hamilton Anxiety Rating Scale (HAM-A)

Below is a list of phrases that describe certain feeling that people have. Rate the patients by finding the answer which best describes the extent to which he/she has these conditions. Select one of the five responses for each of the fourteen questions.

0 = Not present, 1 = Mild, 2 = Moderate, 3 = Severe, 4 = Very severe.

1 Anxious mood [0] [1] [2] [3] [4]

Worries, anticipation of the worst, fearful anticipation, irritability.

2 Tension [0] [1] [2] [3] [4]

Feelings of tension, fatigability, startle response, moved to tears easily, trembling, feelings of restlessness, inability to relax.

3 Fears [0] [1] [2] [3] [4]

Of dark, of strangers, of being left alone, of animals, of traffic, of crowds.

4 Insomnia [0] [1] [2] [3] [4]

Difficulty in falling asleep, broken sleep, unsatisfying sleep and fatigue on waking, dreams, nightmares, night terrors.

5 Intellectual [0] [1] [2] [3] [4]

Difficulty in concentration, poor memory.

6 Depressed mood [0] [1] [2] [3] [4]

Loss of interest, lack of pleasure in hobbies, depression, early waking, diurnal swing.

7 Somatic (muscular) [0] [1] [2] [3] [4]

Pains and aches, twitching, stiffness, myoclonic jerks, grinding of teeth, unsteady voice, increased muscular tone.

8 Somatic (sensory) [0] [1] [2] [3] [4]

Tinnitus, blurring of vision, hot and cold flushes, feelings of weakness, pricking sensation.

9 Cardiovascular symptoms [0] [1] [2] [3] [4]

Tachycardia, palpitations, pain in chest, throbbing of vessels, fainting feelings, missing beat.

10 Respiratory symptoms [0] [1] [2] [3] [4]

Pressure or constriction in chest, choking feelings, sighing, dyspnea.

11 Gastrointestinal symptoms [0] [1] [2] [3] [4]

Difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation.

12 Genitourinary symptoms [0] [1] [2] [3] [4]

Frequency of micturition, urgency of micturition, amenorrhea, menorrhagia, development of frigidity, premature ejaculation, loss of libido, impotence.

13 Autonomic symptoms [0] [1] [2] [3] [4]

Dry mouth, flushing, pallor, tendency to sweat, giddiness, tension headache, raising of hair.

14 Behavior at interview [0] [1] [2] [3] [4]

Fidgeting, restlessness or pacing, tremor of hands, furrowed brow, strained face, sighing or rapid respiration, facial pallor, swallowing, etc.

Appendix C – World Health Organisation- Five Well-Being Index

Reference: WHO (1998). Wellbeing Measures in Primary Health Care/The Depcare Project. WHO Regional Office for Europe: Copenhagen.

	Sample Items					
Over the last two weeks	**All of the time**	**Most of the time**	**More than half of the time**	**Less than half of the time**	**Some of the time**	**At no time**
I have felt cheerful and in good spirits	5	4	3	2	1	0
I have felt calm and relaxed	5	4	3	2	1	0
I have felt active and vigorous	5	4	3	2	1	0
I woke up feeling fresh and rested	5	4	3	2	1	0
My daily life has been filled with things that interest me	5	4	3	2	1	0

Appendix D – Nature Relatedness Scale

Reference: Nisbet, E.K. and Zelenski, J.M. (2013). The NR-6: a new brief measure of nature relatedness. *Frontiers in Psychology* [online], 4. Available from: http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00813/abstract

nature relatedness scale – short form (nr-6)

name: *date:*

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

		disagree strongly	*disagree a little*	*neither agree nor disagree*	*agree a little*	*agree strongly*
1.	*My ideal vacation spot would be a remote, wilderness area*	*1*	*2*	*3*	*4*	*5*
2.	*I always think about how my actions affect the environment*	*1*	*2*	*3*	*4*	*5*
3.	*My connection to nature and the environment is a part of my spirituality*	*1*	*2*	*3*	*4*	*5*
4.	*I take notice of wildlife wherever I am*	*1*	*2*	*3*	*4*	*5*
5.	*My relationship to nature is an important part of who I am*	*1*	*2*	*3*	*4*	*5*
6.	*I feel very connected to all living things and the earth*	*1*	*2*	*3*	*4*	*5*

NR-6 score is calculated by averaging all 6 items (total score divided by 6) =

In 7 surveys involving about 1,000 people, average scores ranged from ~3.0 to 3.5, with 70% scoring between ~2.2 to 4.3.

Appendix E – Participant Information Leaflet

Participant Information Leaflet

The role of Bogs in maintaining and improving mental health in a group of people attending the mental health services in the Louth and Meath areas.

Researcher Name: Clare Carvill

Email address: clare.carvill@dkit.ie

Phone number: 0892708717

Research Supervisor Names: Dr Aine McHugh, Madeline Colwell and Dr Kevin McKenna

You are invited to take part in a research study being carried out at Ardee Bog, County Louth.

Please read all the information provided in this leaflet before deciding whether to take part in the study. It may be helpful to discuss it with your family, friends or community mental health team. Ask as many questions as you like and please don't feel under any pressure to take part. If you are interested in taking part in the programme, please return your consent form to your service within one week of receiving this leaflet.

The benefits and potential risks of taking part in the study are clearly explained in this information leaflet. It is important that you understand these before deciding whether to take part. This understanding and acceptance of the benefits and risks of the programme is known as 'Informed Consent'.

Participation in the study is voluntary and you can stop participating in the study at any time, even after it has started. You do not have to explain your reasons for leaving the study and this will not have any effect on any future

mental health supports that you receive. You can also decide to continue taking part in the programme, but not have your input used in the research findings.

Why is this study being done?

This study is being done to explore the impact of spending time in nature and on bogs on mental health and wellbeing. The study will consist of an 8 week nature group in which there will be weekly visits to a local bog in your area. The aim of the nature group is to support your mental health and evaluate the potential impact these activities may have on maintaining and improving your mental health and wellbeing. The nature group is aimed at supporting you in your recovery, and providing social support which may reduce feelings of loneliness. The goal of the group is also to have some fun and have an enjoyable time together at the bog. A bog is a type of wetland. It is covered in mosses and plants, and below the surface is all made of peat. There are many animals, unique plants and species that live on the bog. There are paths for walking on the bog.

Who is organising and funding this study?

The study is being organised by Clare Carvill, who is a qualified mental health nurse. She is being assisted by Dr Aine McHugh, Madeline Colwell and Dr Kevin McKenna, who are lecturers in Dundalk Institute of Technology.

The research study is co-funded by the Higher Education Authority's Technological University Transformation Fund and Dundalk Institute of Technology.

Clare is receiving a grant in order to conduct the study, and is doing the study as part of her Masters of Science in Research.

Why am I being asked to take part?

You are being asked to take part in this nature group as the study is aimed at exploring the nature interventions impact on mental health. As you attend the mental health services for support for your mental health, you are a suitable candidate to take part in the study. The study aims to explore how taking part in the study can benefit your mental wellbeing and support your recovery.

How will the group be carried out?

The nature group will last for a duration of 8 weeks, one day a week, starting on **(insert date, time and location).**

You will be required to travel to and from the bogs every week. You can choose to drive to the bog in question if you have a car. You may choose to carpool (share lifts) with other participants as this promotes the pro- environmental ethos of the study. If you do not have a car you may organise a lift with a family member.

Insert transportation information and directions

Please ring or text Clare if you will be late or if you cannot attend on a particular week.

What will happen to me if I agree to take part?

If you decide to take part in the study, you will be asked to complete a consent form, giving your permission to take part in the study.

If you agree to take part, you will attend the bog once a week. Each week you will participate in different activities aimed at supporting and improving your mental health. These activities might include walking on the bog, artwork, photography, learning about the plants and animals, and meditation.

These are just examples of activities as you will be asked to assist in the planning of the study and will have the opportunity to suggest and choose different activities you would like to take part in during the group. This is known as co- production. Co-production is a collaborative approach that ensures equality and empowerment and supports a recovery approach. It values your experiences and desires to ensure that your wishes and goals are respected. The aim of the group is to work as part of a team and ensure respect and collaboration.

You will be asked to complete four questionnaires at the beginning of the study, and to repeat these again at the end of the study. Completing the questionnaires will allow the researcher to evaluate any benefits the study will have on your mental wellbeing. You will complete these questionnaires on the first and final weeks of the group.

The first scale is known as the Nature Relatedness Scale. This scale aims to evaluate your relationship with nature.

The second scale is the Beck Depression Scale. This scale aims to measure the symptoms of depression that you may experience.

The third scale is the Hamilton Anxiety Rating Scale. This scale aims to measure the symptoms of anxiety that you may experience.

The fourth scale is the Measuring Well Being Scale, aimed at measuring your well-being.

You will also be provided with a journal to complete if you wish, in which you can record your experiences through writing, drawing or collecting materials on the bog.

Following the study, you will be invited by the researcher to answer questions about your experience to find out if the programme was beneficial to you for your mental health. This is known as a focus group. This is voluntary and you do not have to attend if you don't want to.

You will be invited to share your work and experiences if you wish, at an exhibition at Dundalk Institute of Technology.

Each week, Clare who is a mental health nurse and is conducting the research will be present. Her supervisors Aine and Madeline who are qualified nurses may be

present on some weeks. Nurses and student nurses may also be present on some weeks. Other people who will help with the different activities may also be present on some weeks.

There are no toilet facilities at the bog but a small portable toilet and privacy tent will be available if needed.

What other treatments are available to me?

You will continue to receive your usual mental health treatment from your local mental health team. If you become distressed or worried at any time during the nature group, your mental health team can support you. If you choose not to take part in the group at any time, your mental health treatment and supports will not be affected in any way.

What are the benefits?

There are many benefits associated with being in nature and taking part in nature-based activities.

Being outdoors and taking part in nature based activities has shown to reduce feelings of depression and anxiety, due to stress reduction and relaxation.

Taking part in different activities and learning about the bog, its plants and animals, will allow you to develop new interests and skills. I hope that you will find enjoyment in these activities.

You will be invited to co-produce the programme with Clare. This means you will be involved in the planning of the activities and how time is spent on the bog. The aim of this is to work as a team and to support your recovery by sharing decisions and promoting empowerment.

Participating in the group will allow you to spend time with other people and make social connections and may help to reduce feelings of loneliness and isolation.

What are the risks?

There are some risks associated with this nature group, but every effort will be made to minimise these.

Falling: Due to the nature of the bog, some areas may be slippery and wet. Please wear appropriate waterproof footwear. I will remind you of this while at the bog and will do the best to guide you on dry routes to prevent a risk of falling.

COVID 19: We will ensure to follow all COVID 19 guidelines to reduce the risk of spreading COVID 19. As the group is mostly carried out in the outdoors, the risk of contracting COVID 19 is significantly reduced.

Weather: If there is very bad weather, the group may be cancelled that week. This will be decided on a weekly basis and you and the researcher will regularly check the weather forecast before the group.

What if something goes wrong when I'm taking part in this study?

If you feel upset or distressed at any time during the nature group, Clare will be there to provide you with support and reassurance. You can let her know at any time if you are feeling overwhelmed. There may also be other nurses and student nurses present to support you.

Clare can also contact your community mental health team for you to let them know that you are feeling distressed. This will ensure that you will receive follow up care and support when the nature group is finished each week.

Will it cost me anything to take part?

There is no direct cost for taking part in the programme.

You may have to pay for your transportation or petrol for your car to get to the bog.

You are asked to bring your own snacks and refreshments with you every week.

It is important to wear comfortable and waterproof shoes. You may choose to purchase clothing such as waterproof trousers (not necessary) or welly boots for taking part in the programme. Ensure you wear clothing that you feel comfortable in.

Is the study confidential?

We will not be looking at your medical records for you to take part in the nature group.

We may keep in contact with your local mental health team if we or they have any concerns regarding your safety or mental well-being.

All of the records and information about you will be kept strictly private and confidential. Your information will be kept in a password locked computer in password protected files.

Only the researcher and two of their supervisors will have access to any information about you and this will be deleted once the programme has finished and the researcher has analysed all the data for the results of the study. This information will be kept for no longer than 5 years.

Video or audio recordings will also be kept strictly private on a password locked computer in password protected files. These recordings will be permanently deleted once the researcher has typed them.

Your name or any information that may identify you will not be published in the study as all the findings will be anonymous.

Photographs may be taken by the researcher or other participants during the programme. These photographs may include pictures of the flora, fauna and landscape of the bog. The photographs may be used at a later time in reports. The researcher will be careful to maintain privacy and you will not be identifiable from these photographs.

Results

The results from this study will be published in a research paper.

This paper may be included in medical journals or discussed at medical conferences.

You will be able to access this paper online or you can ask your mental health team for a copy of the paper once it is published.

No information that may identify you will be published in the paper or in any presentations regarding the study.

Future research studies

Some of the information collected may be kept for use in future research studies. All of this data will remain confidential.

Where can I get further information?

If you would like more information or have questions at present or in the future you can send an email or make a phone call to Clare Carvill.

Email: clare.carvill@dkit.ie

Phone number: 0892708717

Appendix F – Table of activities from one of the programmes

Week	Activity
1	Completion of pre-intervention questionnaires, introductions, CP, brainstorming and planning of activities.
2	Getting to know the bog and each other, walking around, looking at the different plants, animals and landscape of the bog.
3	Artwork, facilitated by local artist. Painting on canvases inspired by bog plants and colours.
4	Walking on the bog, foraging for berries and medicinal plants, learning about the trees.
5	Building bird boxes, everyone took them home to encourage birds in their own gardens.
6	Walking on the bog, reading poetry and singing songs together chosen prior to the group.
7	Barbeque by the bog to celebrate our final week on the bog together, and a short walk.
8	Completion of post-intervention questionnaires, goodbyes, planning of focus groups.

Appendix G – Focus group questions

Introduction

Hello and thank you all so much for coming today. It is great to see you all again. My name is Clare and I am completing my masters of science in research. I am doing a masters in Dundalk Institute of Technology. We have now come to the end of our 8 week programme on the bog and it was great to get to know you all during that time. Today we are going to have a focus group to discuss your experiences in taking part in the bog programme. A focus group consists of a discussion and answering a few questions to allow me to understand how the bog programme impacted on your mental health and over all wellbeing. It is important that we do the focus group as this will evaluate the effectiveness of the programme and allow us all to gain a better understanding of the impacts the study has had on all of those who took part. In the focus group, we will discuss the use of CP, the different activities we did, mental health, nature connectedness and social connections.

I want you all to know that there are no right and wrong answers, it is purely based on your own opinions and experiences. Please be honest with your answers and there will be no judgment from me or from anyone else taking part in the group about your answers. If you feel comfortable, please get involved in the conversation as I would like everyone to have an equal opportunity and role in sharing their experiences and opinions. Hearing each person's experience will allow me to understand how different elements of the programme impacted people in different ways. I am also open to any suggestions or changes you would have liked to make to the programme.

I want to remind you all that taking part in this focus group today is voluntary and you can leave at any time. If you do not feel comfortable answering certain questions you don't have to, and if anyone needs to take a break that's okay too.

During our conversation, I will record what we are saying on a tape recorder. Following this, I will use the recording to type out all of your answers on the computer. These ***answers will be pseudonymous*** and I will not use any of your names when I am writing out the answers. The recordings will be kept on a password locked computer in a password protected file, and only I and my two supervisors will have access to them. The files will be deleted once I have transcribed all of the recordings. I will also

write down certain points or ideas that you have. Does everyone give me their permission to record our conversation? (Make sure everyone gives their consent).

After I ask each question, we will go around each person to hear their views and opinions. As I mentioned, if you don't want to answer certain questions that is okay. I would appreciate if everyone is mindful to give everyone time to answer their question and express themselves. Please also respect everyone's opinions even if they are different to yours. The focus group should take about 30 to 40 minutes to complete. Does anyone have any more questions?

Now that I have explained everything we can begin,

If its okay, would everyone mind telling us their name and which bog they attended for the study?

Introduction Questions

Mental health, nature connection, social connection

1. What has it been like for you to take part in this bog nature programme?

2. What effect, if any, has the programme had on your mental wellbeing?

3. What have been the main benefits to you in taking part/ what did you enjoy the most? (discuss benefits)

4. What challenges, if any, did you experience when taking part? (discuss challenges)

5. How has the bog programme impacted on your connection to nature? (explore)

6. How has taking part in the group impacted on your social connection with other people and feelings of loneliness? (explore)

7. What was your favourite aspect of the programme? What was most meaningful for you?

Main Questions

Next, I would like to ask you about the CP element of the programme.

CP definition: CP is about the inclusion of people with lived experience of mental illness, as well as their partners, family and friends (who are all “Experts by Experience”) in the commissioning, planning and delivery of services as equal partners with service providers and professionals.

1. What were your experiences of using CP during the group? (explore) How did you choose the activities to do each week? What process was used?

2. What were the benefits to your mental health or recovery by using CP to plan and to carry out the programme?

3. Now that you have been involved in planning this programme, how will you get more involved in planning your own mental health care?

Closing Questions

We are almost finished the questions now, I just have three more questions:

1. In the future, how will you use nature to support you in your mental health journey and your recovery?

2. If the mental health services developed another programme like this in the future, would you take part and why?

3. What advice would you give to other people if they were offered an opportunity to take part in a programme like this?

Thank you all so much for taking the time to share your views and experiences. I really appreciate it and really hope to work with you all again in the future.

Appendix H – DKIT ethical approval letter

DKIT
An Scoil Slainte & Eolaiocha
School of Health and Science

Ms. Clare Carvill,
Department of Nursing, Midwifery & Early Years,
School of Health and Science,
Dundalk Institute of Technology,
Dundalk,
Co. Louth

17th January 2023

Re: The role of Wetlands (Bogs) in maintaining and improving mental health in a cohort of service users in the Cavan, Monaghan, Louth and Meath areas

Dear Clare,

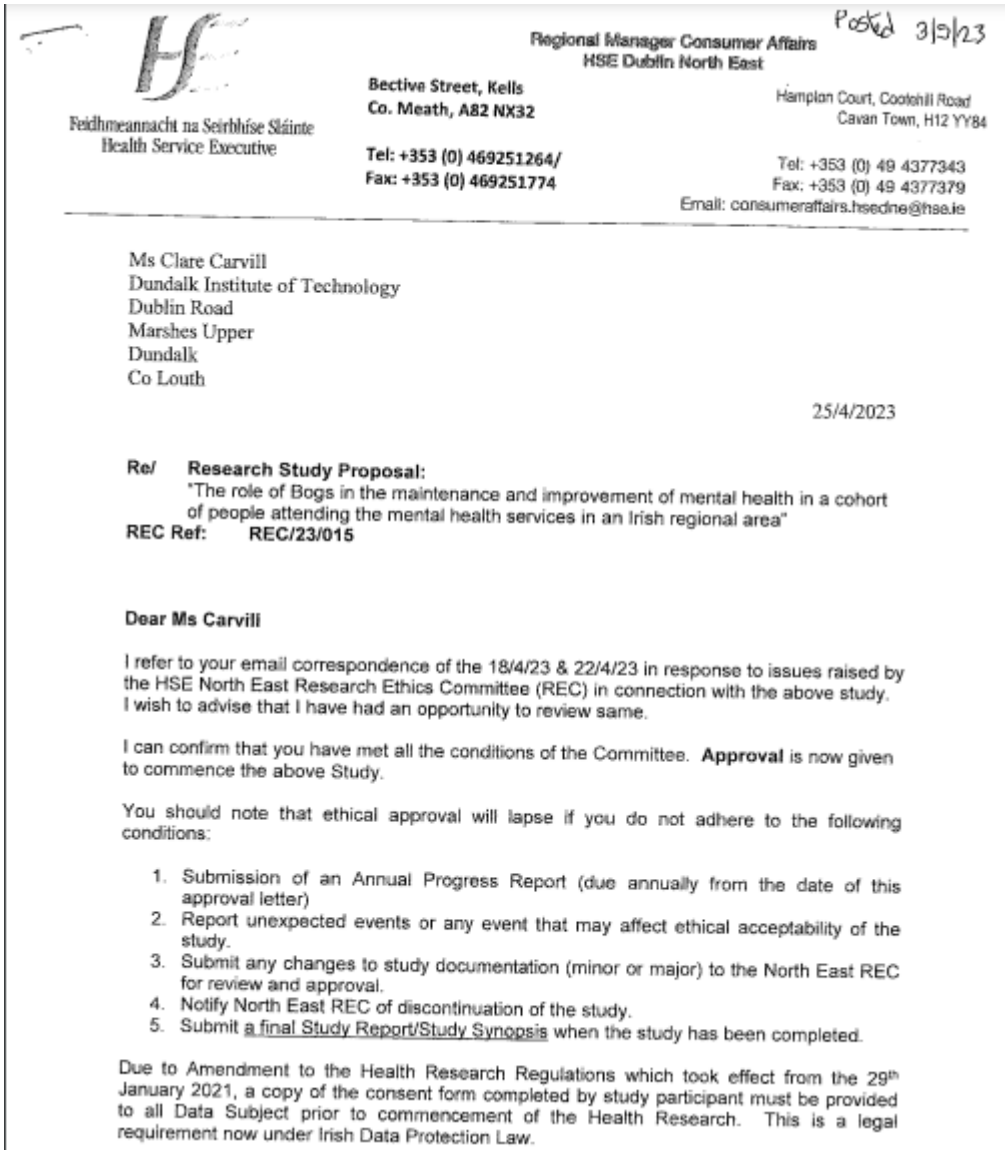
The above study was discussed at the Ethics Committee on the 13th December 2022. I acknowledge receipt of your amendments dated the 11th and 17th January 2023. This study is now granted ethical approval. Please can you send me a copy of the HSE ethics approval upon receipt. Wishing you the best of luck with your research.

Yours sincerely,

Edel Healy

Dr.Edel Healy
Chair of School of Health & Science Ethics Committee

Appendix I – HSE ethical approval from HSE



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Regional Manager Consumer Affairs
HSE Dublin North East

Posted 3/5/23

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Ms Clare Carvill
Dundalk Institute of Technology
Dublin Road
Marshes Upper
Dundalk
Co Louth

25/4/2023

Re/ Research Study Proposal:
"The role of Bogs in the maintenance and improvement of mental health in a cohort of people attending the mental health services in an Irish regional area"
REC Ref: REC/23/015

Dear Ms Carvill

I refer to your email correspondence of the 18/4/23 & 22/4/23 in response to issues raised by the HSE North East Research Ethics Committee (REC) in connection with the above study. I wish to advise that I have had an opportunity to review same.

I can confirm that you have met all the conditions of the Committee. **Approval** is now given to commence the above Study.

You should note that ethical approval will lapse if you do not adhere to the following conditions:

1. Submission of an Annual Progress Report (due annually from the date of this approval letter)
2. Report unexpected events or any event that may affect ethical acceptability of the study.
3. Submit any changes to study documentation (minor or major) to the North East REC for review and approval.
4. Notify North East REC of discontinuation of the study.
5. Submit a final Study Report/Study Synopsis when the study has been completed.

Due to Amendment to the Health Research Regulations which took effect from the 29th January 2021, a copy of the consent form completed by study participant must be provided to all Data Subject prior to commencement of the Health Research. This is a legal requirement now under Irish Data Protection Law.

Appendix J – Thematic analysis codebook

Identified themes

Mental wellbeing on the bog

Slower pace of life

Going back in time

Traditional mental health supports

Empowerment through co-production

Self confidence

A sense of freedom

Social connections

Peer support

Empowerment

Reduction of loneliness

Learning from others

Working together

Nature connection

Biodiversity

Learning about nature

Spirituality

Barrier – transportation

Girley bog 2023

Speaker 2

Speaker 3

Speaker 4

Peer support and social connection	It was an experience I loved it, I thought it was great. it was something to look forward to every week. It was with your peer group it was, there was no pressure. Everybody knew everybody after a while. Nobody had any, there was no I am the man type thing and any characters there. Everybody was nice and friendly and relaxed and nice and slow. The walk was nice and slow as well because I've have emphysema so it would have affected me if we walked too fast, and I thought it was a great experience I really loved it.
Enjoying time on the bog	It gave me a better understanding of things and I looked at things differently when I was in the bog. It helped kept me calm and helped me understand things better. I enjoyed every bit of it, music, talking, listening, making plans. That was my experience of the bog and I enjoyed every bit of it.
Slower pace of life	It was a lovely kind of a slower pace to be living and everything is quite speedy and fast pace regularly. So it's lovely to just take nice deep breaths out in the fresh air of the country and to I think visually maybe it awakens all your senses like a little bit more
Self confidence	You're comfortable in your own skin. Everybody was comfortable in their own skin. Everyone walked along at their own pace and everything is grand.
Peer support and social connection Self confidence	It has made me more outgoing, more likely to come out of my room. And it has taught me the value of peers. And everything is, everything is better with your own peer group I think
Nature connection	You can relate to it now, you know, relate to the bog and nature a bit more than I ever could before. That's important to me.
Calming down	My mental health, I think it's probably improved. I'm in probably a crisis situation and I think it's probably made me slow down and calm myself a little bit more. And perhaps not be so hectic and frantic.
Slower pace of life	So probably a little bit more accepting of slowing the pace down and living for today and enjoying today.
Slower pace of life	Its good the way it makes you think you don't have to be rushing and tearing and trying to do everything and that theres a slower way of doing things
A sense of freedom	I think, letting even as much as guilt go, even if all them things were slowing down a little notch from the walks in the bog. It's very good to even feel that little bit free-er from them things that have been like the shackles around you. And you're, you're being held back.
Letting go of guilt, valuing oneself	I really enjoy talking to you and you bring a lot to me even, so of course you bring stuff to your home life and people are interested in what you have to say because you're a very valued person. Then you start saying, well, if I'm saying that to that person and I genuinely mean it, I must have something of value in the world as well. I need to let go of the guilt
Learning from others	you can learn so much from doing things with other people. Simple things with other people.

Simplicity of the group	That was the beauty of it, the simplicity. That was what was great about it.
Self-acceptance	I'm not actually like this freak of mind myself that's struggling all the time because there is people who are genuinely good people and solid people and they struggle too. Its okay to struggle
Calming down, social connection	So the calmness in the bog programme was excellent because there was nobody to bring you down. Everybody was at the same level. Everybody was peaceful. Everybody enjoyed everything that was going on.
Traditional mental health care	Alot of nurses are very authoritative. They stamp their authority and you don't learn anything from that.
Traditional mental health care	And everything has to be done by the book and that's really off putting.
Peer support and social connection	peer support as you said, is everything, it is actually to be around people, you don't feel you're alone anymore
Peer support and social connection	But when your in a peer supportive group we're all just doing that, supporting each other and realising and looking around and realising I'm not alone. And that's actually very empowering.
Appreciating the little things	I just realised it doesn't have to be big gestures to make you happy. There's joy and happiness just doing things together. That was a really big thing for me.
Peer support and social connection	I think it was just the fact that we were with peers in a group, it made it better than just me going for a walk with my husband in the bog. It was like a little bit more craic involved with watching everybody.
Barrier- transport	I didn't thoroughly enjoy the transportation going and coming from the bog. If I'm 100% honest, I would wake up and I think oh jesus the thought of going over here now in this jeep because it was like a squash mobiel.
Connection to nature	I think I was always well connected to nature, but I felt alienated from it in some sort of way like it was out there and I was in here and I was different. The programme sort of reinforced that we're all one and everything's connected. It was very good like that.
Connection to nature	I realised that taking time to take in natural beauty like somewhere like the bog is by far better than the stresses and worries of everyday life
Connection to nature	I felt probably like there are no borders between cities and countries, like going to the country life is as easy as step away from your high speed city life and just go and just go for your nature walks out there and it's accessible very, very easily to see.
Connection to nature, reconnecting	I did grow up in the country, climbed trees and whatnot but it's like when I turned kind of 18 I wasn't in them environments anymore. It just was like, I was kind of happier not being in them environments but now I realised that I missed them.
Peer support and social connection	Like I said earlier for me it was the value of the peers that there are people who you can go to and there are, you don't

	have to just sit in your room. Even if you don't want to go out and say, for want of a better word mental place, 'normal people' there are always other people like you, and they're just as confused and as easy going in the long run. It was very easy going and very easy to go to and people were looking forward to it all the time I was looking forward to it all the time, so I think it was very good.
Slower pace of life, feeling calmer	you don't have to be rushing around as I said before, take things in and it's made me be calmer with people because once you go into the calmness of something like the bog or somewhere like that it does it calms your mind because I think you don't even think about mental health or anything like that. Everything seems to disappear. So yeah, it makes you calmer, I think ive been a bit calmer since ive been to the bog not that I be mentally talking or shouting or anything like that but it has made me calmer and calmer with people and that stuff like that. So yeah. So that's a good experience for me just to be calmer and talk to people, I find it easier when I'm talking to people.
Social connection, seeing benefits of group in others	seeing them people leave the environment of even where we are and go to the countryside. I'm seeing all these little quirks in people's personalities. It was amazing to watch and sometimes it made you feel a little bit fonder towards some people and their softness and their laughs and I saw a different side to a lot of the members. A little bit more, I think peaceful, a lot of people seem to have a lot more peace about them and it seemed to be a little bit more in control of themselves, while in the bog,
Peer support	good cooperation with everyone and everyone was respectful of each other and everybody, nobody had a row or anything. There was no disagreements.
Co-production, working together	I found the co-production I found the first week very good, because as M said, everybody had an opinion on it. There was no argument or nothing like that. It was all very nice and people picked out their own suggestion and what had to be done and what didn't have to be done. Everybody had respect for each other.
Co-production, running smoothly	co-production is the key to anything running smoothly and without that, you could have just the same people speaking out and taking over.
Working together	That's what I found in the bog, everybody worked together, you know, you could see people helping each other along or pointing something out.
Peer support, confidence building	It's great and it's even great for building people's confidence. Yes, some people that don't like talking, when they are out in the group and they start talking the confidence, you can see the confidence building and that's fantastic to see. You know, somebody whos so quiet, maybe even in here, would hardly talk to you but out on the bog you just see the confidence growing and happiness growing.
Peer support and equality	there was no overark, no person saying we'll do this or we'll do that, we'll do the other, there was none of that. So it did

	benefit my mental health anyway because I thought everybody was equal and everybody was laid back,
Mental health support	I think it helped my mental health as I said before, I got a calmer outlook on life just by doing simple things and taking things in that I would never take in before. So it's like a challenge to me and then seeing people better, makes me happy if I see people in a group happy, that really makes me happy encourages me and I love to see people that maybe don't talk so much and giving them that confidence to be able to talk and laugh and have a good time.
Co-production, reassurance and planning	I would say that, without co-production, I get very triggered and I'm anxious, so knowing that co-production is taking place, means that I know that brainstorming has happened. And I know that everybody in the group is happy, I would be concerned about people's mental well being and my own mental well being if I thought that I was second guessing if that's really helping other people or if they are happy from it, so knowing that co-production has taken place, definitely helps my mental health because I know that there's a plan and planning is the key to me having better mental health.
Slower pace of life	I do a lot of planning, and im just a planner in my head, im always thinking ahead or thinking what I can do for the group and all that now. But since I done the bog part of it, I'm starting to think not the other way but starting to think slow down, it slowed me down a bit and I do a lot of stuff. I think lately I'm probably doing too much stuff. So yeah, just try and make a calmer way of life now.
Peer support and social connection	I found the bog walk to be brilliant because I felt comfortable with all the people, especially Clare because with other nurses or things like that, your inclined to be judgmental about yourself when you tell them things. Theres some nurses that I wouldn't say something too, I felt with this group like you said, I got more fond of the people as the weeks went by. They were very, very easygoing.
Traditional mental health services	When you're suffering with mental health the last thing you want is someone being authoritative or putting you under pressure. The good thing about here is if you don't like it you don't have to do it.There's never any pressure.

Nature connection and mental health	Probably think about it more, you know, as I say, I never really thought about the bog or nature helping with my mental health, but it has so ill probably use it more and go out and take in things thats important to me, you know, like, even looking at birdss and stuff like that. My ways of thinking are different and I think it's really good for slowing down your mind. You know, nature like that. So yeah, I would use it again. Because it did help me anyway, helped me to calm yourself and think differently. So yeah, would definitely use.
Nature connection and mental health	So it's like a treat for your senses, I think so I'm gonna look at nature in them ways. Just be in the moment and enjoy. I just think all the everything, every part of it from the smell of the country air or whatever the different things are and the feel of the earth and you know, just maybe just to enjoy it a bit slow down a little bit. And

	begin to open your heart to them things as well could be very good for me.

Ardee bog 2023

Speaker 5

Speaker 6

Speaker 7

Slower pace of life	well I found I slowed right down in my pace of life. Because the alpaca walk was really slow and long. It was as though cars didn't exist, in a way because you didn't really see many on the road. And yeah, there's a slower pace. And then when we were out on the bog doing activities, there was nothing around except nature, so you didn't feel like you were hurried in any way. It helped me think about that. When I when I left and I was back at work. I was able to think about that. Yeah the slowed down pace I was able to remember.
Slower pace of life and new experiences in life	Yeah, it was great kind of removed you from the normal everyday humdrum and like my life would have been fairly empty up until then you know. So I just head into town and do a bit of shopping and then maybe watch a lot of television and not really have any hobbies in that and the bog showed me how nature can help you and even kind of as regards eating kind of things like bilberries and different plants that came from the bog and it just opened up a new window for me into nature which I wouldn't previously have even thought about so that was, that's about it
Slower pace of life and new experiences, going back in time	It was a different experience very unusual and i sense I don't know was it a spiritual experience or something but it was like because it's so pure out there and so primitive it was like nearly going back in time to Ireland like 2000 years ago. And how it was give me a sense of how Ireland was you know before as C says all the cars and the roads and the busy busy business that has taken over yeah, there's nothing there there's nothing to distract you from nature you know? No cars no houses no people
Mental health and sensory stimulation	Takes your senses, it takes you out of yourself you know. I think we get so wrapped up in our feelings and our body and how we feel, you know? Yeah. So like, again, it kind of gets your focus off yourself.
Mental health, calmer	I think has helped me be calmer

Mental health, new lease of life, meeting new people, hope for the future	just give me more of a new lease of life like G said you know I just became locked up in the humdrum of life you know, just doing things I kind of would normally do like just going into town and shopping and you know, I wasn't meeting people and but it gave me impetus to break out of that bad cycle of you know of just just the humdrum of everyday life and that you know, so it gave me hope for the future
Mental health, desire do more things, connection to nature	**Yeah so, I think it's giving me that desire to you know, to do more things outdoors with people you know, it's it's coming into the winter but yeah, I suppose I appreciate nature, appreciate maybe nature a bit more, you know, the park, walking to take my focus off myself, you know, focus on the trees and as just a new new, just just having a new new a new kind of another perspective, that's gonna get out of my body.**
Back in time	You know, the whole thing was very, like, good. Like you said, it wasn't 2023 at all. Maybe be back to the time of our grandparents and the lifestyle they would have had.
Back in time, slower pace	It brought me back to when things were more simple in life. Because in this modern world, it gets so fast paced and complicated and you don't really see nature you know? Yeah. And like I don't really notice the nature at all you know, so it brought that perspective on me that nature can provide different nourishing things and eating them and enjoying them
Mental health, art, creativity	I like the art and art pieces and therapies. Yeah. It really surprised me that I could do that, you know, Im a very left brained, you know, logical person and to do something, you know, without thinking almost, you know, subconscious stuff. Like that was really, really good for me. It was new. Yeah, I could do that, you know.
Barrier, transportation	it's sometimes put me off having to drive to the bog, because it was a very bumpy road. I'd like to do it again if there was transport provided.
Barrier, transportation	Yeah I found that that transport for me with headaches and nausea and travelling on that bus like he was flying one day because he was late. I felt so nauseous.
Taking more notice of nature	I think I've taken more notice of nature because I grew up in the countryside. So if I'm home for the weekend, I'm looking at more of the trees and sitting in the garden more and went for a couple of walks and yeah, I think and I'm looking at the mountains out of my apartment, balcony. Possibly more just thinking.
Nature connection	I feel more connected with nature now you know, and I know where to go now to experience nature
Nature connection, more aware of nature	Id say I'm more conscious of nature and as I say the park and the trees, theres beautiful trees in it and especially in the Autumn their changing colours

Connection to the past	Well, for some reason, I've started painting old photographs of family. So I sort of must have felt more connected to the past and just connections
Art and connection	I think the bog has helped me get back get back to art and art makes me feel connected.
Social connection	Like the bog was a bit of release from loneliness, you know, but then when it stopped when the bog visits stopped I kind of went back to my old habits.
Co-production, working together	Well we were listened to because a lot of the activities came, the alpacas came as a result of a suggestion and the co-production. I liked the joint nature of it coming together.
Co-production	I enjoyed like the co-production in that we brainstormed ideas, and everybody could contribute to it. And like two heads are better than one, you know, to kind of come up with different ideas. And like, it's, it's amazing what can come out of that, you know. It filled the up and we were able to do different things on each consecutive week. So we had plenty to do.
Mental health and co-production, planning	Well the fact that there was many resources there you know to use, it improved my mental health in that we had more options to do and we could look forward to every subsequent week and be able to plan ahead. It was good for my mental health in that it filled my brain with positive thoughts, not all the negative things that I normally engage in.
Co-production, opinions valued	I suppose it's just good to be involved in the planning, you know, you know, that, that our opinions were taken into account.
Mental health, hope for the future	It just fills me with more hope for the future and I can write down physically write down know what I want to do, and read it and try to achieve it then, you know, so it's just planning ahead now
Transport	I would take part and transport would have to be provided if it was going out into the sticks.
Mental health and nature	Yeah, I thought it was a great initiative you know very unusual you know, because normally mental health takes place in a sterile environment and there's no nature or anything like that in the in an office, you know, environment you know, so I definitely would do it again because it kind of put a new perspective on mental health and recovery.
Mental health and nature, creativity	Yeah I would surely because it's different and it expands your horizons. It frees you up, I think it's so important for our brain, for the right brain isnt it the creative side that we never use. We don't tap into it at all. We're so locked in thinking, well I am anyway, what I think and what I

	feel and what people think about me. We need to just get out of all that and look at something else, you know, see the bigger picture.

Ardee bog 2024

Speaker 8

Speaker 9

Nature connection Learning about nature	**It opened my eyes more to nature and to the wildlife and to trees and the plants**
Mental wellbeing on the bog	**it helped me relax more**
Mental wellbeing on the bog	**Being out in nature seemed to give an uplifting feeling that would draw you out of thoughts, and this uplifting feeling would last throughout the day. Nature seemed to give it it's own momentum in a way. It was always very worth getting out, with no exceptions**
Nature connection Learning about nature	**It made me look deeper into the nature and just pay more attention to the plants and other things**
Nature connection	**It helped me feel connected to everything and that I am a part of something bigger and not alone**
Empowerment through co-production	**I found the co-production helpful as we all had a say in what we did and it felt like our opinions were valued and mattered**
Slower pace of life, going back in time	**definitely go just 100%. Take your time. Enjoy it and step out of the nine to five and the concrete jungle, yes. Yes, yeah. Its a couple of hours, where you're not worried about your car, you're shopping your house, the whole lot. You're just zoned out of what's happening in day to day, and your brain is focused on the nature and where you are.**
Continued use of nature as support	Yes I love nature, I've always loved the mountains. I do plan to get out there more in nature with people especially if possible.

Girley group 2024

Speaker 10

Speaker 11

Speaker 12

Speaker 13

Spiritual connection Nature connection	**it has been getting me in touch with me inner spirit and my soul. spiritually listening to nature brought me closer to God**
Spiritual connection Nature connection	**Nature and god goes together the beauty and the colors and that air and everything is just lovely.**
Mental wellbeing on the bog	**it also helped my stress management and it helped with my stress as well because I felt so much at home in nature to tell you the truth.**
Social connections	**I'm going to try now and find a walking group to get to know people because im on my own.**
Mental wellbeing on the bog Connection to nature Biodiversity	**I've really enjoyed it. I have found it very relaxing, and peaceful and I love being surrounded with green. It's very comforting I find, I love trees. I love the wildness on the bog. Things just grow as they want to,**
Biodiversity	**I love the butter cups. Tiny little delicate pink and purple flowers. Oh, the birds. We actually sold a holly tree with soft leaves, which was very unusual. Someone in the group, saw a tiny lizard. And we heard the cuckoo, which was wonderful because people talk about him being nearly extinct. And there's only certain places in the country where he's still sings so we had that honor of hearing him. And we saw a dragonfly never before saw one.**
Mental wellbeing on the bog	**I would recommend to anybody as a place to go to relax and chill and just be surrounded with nature.**
Mental wellbeing on the bog	**And I just want to say freedom. I felt free in nature free of spirit and free**
	we did painting painting landscaping I never done that before and the walks
Nature connection	**I enjoyed walking and just each side of us just green and wide, no buildings just fresh air beautiful.**
Biodiversity	**the lizard the lizard I forgot about that**
Biodiversity	**I never saw a blue fly, the Dragon Fly I couldn't believe it was blue**

Social connections Nature connection	**It was nature it was the fresh air it was no buildings. Away from people, we had a lovely group and it was lovely but there wasn't too many people you could just go off and walk. Everyone was fantastic.**
Social connections and peer support	**I thought meeting other people was great and we all got on okay and come from different parts and different situations. And it built my confidence up a little too**
Social connections	**Nobody knew anybody on the first day and look at us now like, chat chat chat, we wouldn't have had very much to say at the start.**
Co-production	**It was good that first day when we were all you know, everyone got a chance to say their ideas and what we might like to do. Yeah.**
Co-production	**It was nice. We were all free to make suggestions. It was easy going**
Social connections	**Well I hope to join a group of people and go out and walk around the railway track out that direction, you walk a couple of miles you can't do it on your own as a woman but joining a group would be nice.**
Mental wellbeing on the bog	**I really enjoyed it. Well, I've always known that being out in nature made me feel good. You know, and I love looking into people's gardens, admiring their flowers and looking at the colors.**
Mental wellbeing on the bog	**Yeah, I find it uplifting. Being outside in the fresh air, you feel good.**