A life course approach investigating the mechanisms underlying the relationship between loneliness and health and wellbeing in retired older adults, using mixed methods

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"Umuntu Ngumuntu Ngabantu…"

…A person is only a person because of people…

Zulu proverb

Abstract

Loneliness, or the negatively perceived discrepancy between desired and realised social relationships, has long been considered detrimental to health. This research sought to discover what is it that allows loneliness to be detrimental to the health of some, but not all, retired older adults. A state-of-the-art review identified the Meikirch model of health, and several theories and models relating to the association between detrimental loneliness and health. In conjunction with the life course approach, these models were drawn together to inform the development of a novel theoretical framework to underpin the study design, conduct, and analyses reported herein. An explanatory sequential mixed methods approach was deployed, involving both quantitative and qualitative techniques. In addition to investigating the correlates of loneliness and health, the study aimed to identify which factors may mitigate or aggravate the impact of detrimental loneliness on health. Individual perceptions of loneliness and old age were also explored. A total of 266 participants were recruited and completed a quantitative survey. Forty-one of the initial participant group were followed up with an unstructured narrative interview. The prevalence of loneliness was found to be greatest among the male participants, however, no significant differences were noted between the health scores of the male and female participants. Correlational analyses identified the presence of a negative association between individual scores of loneliness, and personal wellbeing. Thematic analyses of the qualitative data highlighted the importance of adverse childhood experiences on individual ability to cope with loneliness in later life, as well as underlining the importance of personally acquired potentials to mitigate the negative effects of loneliness on individual health and wellbeing. This study has generated evidence to support the proposition that the failure to develop adequate personally acquired potentials during the life course, will leave the older individual vulnerable to the detrimental influence of loneliness on their health and wellbeing.

Dedicated to the loving memory of my dearest, beautiful Mamacat

What can I say? I wish you were here to celebrate this achievement with me. Without you I'd never have found the strength or courage to pursue a doctorate, and certainly wouldn't have survived the numerous episodes of depression you loved me through. You've always been my biggest fan and most loyal supporter. I know you'll always be with me, and sincerely hope this makes you proud. I love you Mamacat…this one's for you!

Death is nothing at all,
I have only slipped into the next room
I am I and you are you
Whatever we were to each other, that we are still.
Call me by my old familiar name,

Speak to me in the easy way which you always used
Put no difference in your tone,
Wear no forced air of solemnity or sorrow
Laugh as we always laughed at the little jokes we enjoyed together.
Play, smile, think of me, pray for me.

Let my name be ever the household word that it always was,
Let it be spoken without effect, without the trace of shadow on it.
Life means all that it ever meant.
It is the same as it ever was, there is unbroken continuity.
Why should I be out of mind because I am out of sight?

I am waiting for you, for an interval, somewhere very near,
Just around the corner.
All is well.

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A huge thank you to all the participants and stakeholders, who made this project possible…your generosity and encouragement really set the pace for this!

Dad…bestest dad ever!!! You gave me the drive and determination to stick with this. Covid? Pah!! we've survived academia!! Love you big fella!

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Chapter 1. Introducing the research

1.1 Introduction

This doctoral study will focus on the relationship between loneliness and health in retired older adults, more specifically the detrimental influence loneliness has upon individual health outcomes. This chapter provides the context and rationale for this study, along with a summary of the aims and objectives. This is followed by an overview of the structure and content of the remaining six chapters.

1.2 Context and rationale for this research

Loneliness, or the negatively perceived discrepancy between desired and realised social interactions (Peplau & Perlman, 1982), has long been considered detrimental to health (Luchetti, Terracciano, et al., 2020; Tan et al., 2020; Wang et al., 2019). The long-term ramifications of isolation and loneliness inflicted as a form of torture upon prisoners of war have often been reported, both in terms of physical and psychological breakdown and, in extreme cases, death (Beutel et al., 2017; Henriksen, Larsen, Mattisson, & Andersson, 2019; Leigh-Hunt et al., 2017). It is also notable that there are some who consider loneliness to lie at the heart of any life experience (De Jong Gierveld, Van Tilburg, & Dykstra, 2006; Ozawa-de Silva & Parsons, 2020; Rokach, 1988). This is an important point to consider, not only when reviewing approaches to intervening and reducing loneliness, but also when deciding whether to prioritise it as a problematic issue in the first instance. If loneliness truly lies at the heart of any life experience, the potential detriments that eradicating this loneliness may precipitate should be considered, rather than simply focusing on its negative impacts. Furthermore, there are some who consider loneliness to represent a stable and enduring trait, which forms a permanent and familiar way of life for many individuals (Beutel et al., 2017; Burholt & Scharf, 2014;

Dixon, 2020; Hawkley & Cacioppo, 2010; Moustakas, 1961; Pikhartova, Bowling, & Victor, 2016; Rokach, 1988; Rolheiser, 1979).

The academic and clinical interest in loneliness has also been fuelled by Duncan Selbie, Chief Executive of Public Health England, who was quoted, stating that:

> *Being isolated and living alone shortens life and increases disability. It is equivalent to 15 cigarettes a day. (Boseley, 2013)*

This assertion, based on the work of Holt-Lunstad and her colleagues (Holt-Lunstad, Smith, & Layton, 2010), has since been at the heart of campaigns by both Age UK (Age UK, 2017) and the Campaign to End Loneliness (Campaign to End Loneliness, 2016). As a health risk, loneliness has been compared to obesity, smoking and sedentary behaviours in terms of severity (Berg-Weger & Morley, 2020; Henriksen et al., 2019; Tan et al., 2020). Loneliness has also been implicated in greater healthcare utilisation (Holt-Lunstad et al., 2010; Leigh-Hunt et al., 2017; Taube, Kristensson, Sandberg, Midlov, & Jakobsson, 2015), as well as many mental and emotional issues (Blazer, 2020; Hawkley, Thisted, Masi, & Cacioppo, 2010; Losada et al., 2012).

It has been suggested that the relationship between loneliness and health is bidirectional (Ellwardt, Tan Tilburg, Aartsen, Wittek, & Steverink, 2015; Jaremka et al., 2014; McHugh & Lawlor, 2016). One thing that is known about loneliness, however, is that the prevalence of loneliness tends to decline with advancing age (Cacioppo, Hawkley, & Thisted, 2010; Dixon, 2020; Penning, Liu, & Chou, 2014). Indeed, recent research, conducted by the British Broadcasting Corporation, in collaboration with the Wellcome Collection, and Universities of Manchester, Brunel, and Exeter identified adolescents (aged 16 to 24) to be the demographic group most vulnerable to loneliness, serving to reinforce previous work on the topic (Beutel et al., 2017; British Broadcasting Corporation, 2018; Stickley et al., 2016).

Furthermore, in at least half of the older adults who do consider themselves to be lonely, loneliness represents a stable and enduring trait, which has been present throughout their lives, without resulting in negative health outcomes (Victor et al., 2002; Victor, Scambler, Bowling, & Bond, 2005; Victor & Yang, 2012). This raises the question: why focus on retired older adults?

1.2.1 Focus on older adults

Within the context of an ageing population, loneliness may, potentially, prove to be particularly problematic (Blazer, 2020; Courtin & Knapp, 2017; Gerino, Rolle, Sechi, & Brustia, 2017). People are currently living longer than ever before, with the number of those aged 65 years and older expected to rise by nearly half over the next 20 years (Age UK, 2019). The number of those aged 85 years and older is expected to grow more rapidly, with it almost doubling over the same period (Age UK, 2019). As the population continues to age, both from above, through increasing life expectancy, and below through dwindling fertility rates (Dorling & Gietel-Basten, 2018), the demands of health and social care, and the associated expenditure will increase, as they have consistently over recent years (Gerst-Emerson & Jayawardhana, 2015; Liley, 2019; Taube et al., 2015). As the current patterns of ageing continue, the UK's age dependency ratio[1], which currently stands at 56.4 (GlobalEconomy.com, 2018), will increase. As a result, the relative number of working age people to cover the cost of adult health and social care, which in 2021/2022 was £22 billion (Liley, 2022), will decline. This will result in sparser resources to contend with issues, including loneliness, among the older population. Research, however, has suggested that the degree of loneliness apparent in the older population has been significantly exaggerated (Dixon, 2020; Victor et al., 2002; Wenger, Davies, Shahtahmasebi, & Scott, 1996). A national study of adults in England, aged 90 years and older, (Bury & Holme, 1990) found that over 60 per cent of the participants claimed to never be lonely. This suggests that loneliness may not

[1] The proportion of children under 16 and people above retirement age, per 100 working age people.

be as widespread as many assume. However, as an individual ages, the likelihood of their experiencing poor health increases. If, as has been asserted, the experience of loneliness alone may lead to significant ill-health, this will likely compound any pre-existing illness within the older population (Baars, 2017; Henriksen et al., 2019; Wang et al., 2019). This highlights the need for further investigation of the mechanisms underlying the association between loneliness and poor health outcomes. This research, therefore, seeks to understand the nature of the factors underlying the association between loneliness and poor health outcomes among retired older adults.

1.3 Dissertation structure

This doctoral dissertation is comprised of seven chapters, and a series of ten appendices.

Chapter two provides the background and context for the remainder of this work, through the definition and consideration of the key concepts health and loneliness. This begins with a discussion and critique of the nature of health within the context of an ageing population. Various models are presented, including the Meikirch Model which, in tandem with the life course approach, has been adopted to underpin this study. The chapter also includes an examination of the definition and prevalence of loneliness, along with a consideration of the related concepts of solitude and social isolation. The relationship between the two key concepts of loneliness and health, and its changing nature over the life course, are reviewed through the lens of the Meikirch model of health and wellbeing. The key messages from this chapter, and how they inform this research, serve to bring this chapter to a close.

Chapter three presents a state-of-the review of the academic literature, which aims to develop an understanding of the mechanisms underlying the association

reported between loneliness and health over the life course. Focus is placed upon factors which may, either positively or negatively, influence this relationship. An initial structured search highlighted six theories or models which have been presented to explain the association between loneliness and health over the life course. These models are discussed and critiqued within the context of both the life course approach and the Meikirch model of health. Subsequent to this consideration is the presentation of a proposed theoretical framework which draws the six theories together and drives the methodological and analytical aspects of this research. The chapter concludes with an examination of the proposed theoretical framework within the context of the Meikirch model, to reinforce the relevance of this framework to the present research.

Chapter four begins with an introduction the research questions:

What is it that allows loneliness to be detrimental to the health of some, but not all retired older adults?

1. How do personally acquired potentials influence the individual responses of retired older adults to loneliness?
2. What factors hinder the development of personally acquired potentials over the life course?
3. How do individual responses to loneliness drive the development of poor health as a consequence of loneliness?

and aims which arose from consideration of the literature within the preceding two chapters:

1. To clarify the nature of the relationship between loneliness and health within the study population,
2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population,
3. To explore how older people conceptualise loneliness,
4. To identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health,

5. To identify common factors which may protect older adults from the detrimental effects of loneliness on health,
6. To identify factors which influence the development of personally acquired potentials over the life course.

This is followed by a reflection of the influence of various factors, including philosophical paradigms, research aims, and the proposed theoretical framework upon the choice of methods and tools employed within the present study. Justification of a mixed methods approach and the design of the research are also presented, along with a discussion of the integration and diffraction of data sets. The quantitative and qualitative data collection and analytical processes employed to address the aims of this research are introduced. The actual trajectory of the research, and how it compares with traditional mixed-methods research designs is also presented. The last section of this chapter examines the ethical issues relevant to the research process.

Chapter five reports the findings from the first quantitative phase of this survey. Using a 21-item survey, this phase sought to address the first two aims of this research and examines the relationship between loneliness and health among the study sample population. The survey was completed by 266 self-selecting participants. It highlighted a greater prevalence among the male participants, when compared to their female counterparts. The analyses presented within this chapter also established a statistically inverse correlation between loneliness and personal wellbeing. This suggests that loneliness may, indeed, prove detrimental to individual health outcomes. Regression modelling confirmed the predictive nature of this relationship. Initial correlational analyses were used to inform the assignment of participants to one of three subgroups: health (not lonely), lonely (not healthy), and outliers. This data was further employed to inform the sampling of participants to the second qualitative phase of this research.

Chapter six presents the findings arising from the second qualitative phase of this study. Intended to address the remaining four aims of this study, this chapter presents the thematic analyses of 41 unstructured, narrative-type interviews. Individual participant narratives are used to facilitate the identification of common themes across the 41 transcripts, and to highlight factors specific to each of the three participant subgroups. Evidence relating to the models presented in chapter three are discussed, as are the factors considered to influence the impact of loneliness on individual health and wellbeing. Significant difference between lonely and health participants are presented, with factors such as stress buffering, socioemotional selectivity, and a positive family dynamic notably more prevalent among the healthy participants. In contrast, lonely participants are shown to display signs of both the loneliness model and social breakdown syndrome. Examination of data arising from the outlier participant subgroup highlighted the importance, for some, of perception over their ability to cope with loneliness and their resulting health outcomes.

Chapter seven summarises the key findings emerging from this study, and considers the methodological issues arising from this study, including the combined roles of the theoretical framework, the Meikirch model, and the Life course approach. The methodological and theoretical contributions arising from this research are discussed, as are the strengths and limitations of the study. Prior to the conclusion of this chapter, personal reflections are discussed, and the implications this research has for policy, practice, and future research are examined.

Following the conclusion of this work, an addendum has been added, which reflects on the impacts of the recent COVID-19 pandemic.

Chapter 2. Health and loneliness within an ageing population

2.1 Introduction

The purpose of this chapter is to provide the background and context for the remainder of this work, which seeks to explore the mechanisms underlying the relationship between loneliness and health in retired older adults. This study also considers the changing nature of this relationship over the life course. An understanding of the concepts and definitions of health and loneliness will be established and critiqued. Comprising three sections, this chapter begins with a discussion and critique of the nature and definition of health, particularly within the context of an ever-changing, and ageing society. This consideration includes the Meikirch model of health and wellbeing (Bircher, 2020; Bircher & Hahn, 2017a; Bircher & Kuruvilla, 2014), as well as the biomedical (Ahn, Tewari, Poon, & Phillips, 2006a; Gillick, 1985; Lawrence, 2021) and biopsychosocial (Engel, 1977; Jenkins, 1985; World Health Organisation, 1948) models, and the wider determinants of health (Dahlgren & Whitehead, 1991; Marmot, 2010; Marmot & Wilkinson, 2006). This is followed by the exposition and evaluation of the life course approach (Elder & Shanahan, 2006; Giele & Elder, 1998; Heikkinen, 2010), and how this may fit within the model of health adopted by this study. The chapter continues with the examination of the concept of loneliness, its definition and prevalence, along with a consideration of its precursors and health consequences. The chapter concludes with a succinct overview of the key messages from this chapter, and how they inform the current study.

2.2 Health and the Meikirch Model

For centuries the issue of health, its definition, and how to maintain it, has occupied the minds of scientists and philosophers alike (Guthrie, 1945), and many definitions, theories and models have been proposed. These have included the, now abandoned miasma and humoural theories, salutogenesis (Antonovsky, 1979, 1987a, 1987b, 1993, 1996) and sociological approaches (Blaxter, 1990; Herzlich, 1973), and the widely known biomedical (Ahn, Tewari, Poon, & Phillips, 2006b; Gillick, 1985; Lawrence, 2021) and biopsychosocial (Engel, 1977; Jenkins, 1985; World Health Organisation, 1948) approaches. These, and other approaches, are outlined in table 2.1, and will be given consideration in the forthcoming sections, as will the evolution of these approaches in response to the changing nature of society, and its broader understanding of health and wellbeing. These considerations will be undertaken within the context of the overarching Meikirch model which is adopted by, and underpins, the present study.

As a forerunner to the Meikirch model, Bircher (2005) initially summarised health as:

> *…a dynamic state of wellbeing characterised by a physical, mental and social potential, which satisfies the demands of life commensurate with age, culture, and personal responsibility. (p336)*

Health was further summarised in 2011 by Huber and her colleagues as:

> *…the ability to adapt and self-manage. (p2)*

Table 2-1: Models and Theories of Health

Approach	Description
Miasma theory	Diseases are caused by miasmas, a noxious form of *bad air.*
Humoural theory	Health is dependent on the correct balance, strength, and quality of the four humours, blood, phlegm, yellow bile and black bile.
Salutogenic model	It is the balance between the stress an individual experiences, and the resources they have at their disposal, which determines an individual's overall levels of health and wellbeing (Antonovsky, 1979).
Sociological approaches	Health is based on the combination of the absence of disease, a reserve of health, and a positive state of wellbeing (Blaxter, 1990; Herzlich, 1973).
Biomedical model	Health is the absence of pain, disease, or defect (Ahn et al., 2006; Gillick, 1985; Lawrence, 2021).
Biopsychosocial model	Health is a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity (Engel, 1977; Jenkins, 1985; World Health Organisation, 1948).
Interactive biopsychosocial model	Health is dependent on the interaction between human, biophysical, psychocognitive, and social capitals (Lindau et al., 2003).
Wider determinants of health	The determinants of health are those factors which interact to influence the health and wellbeing of individuals and communities. These factors include the social and economic environment, the physical environment, and the person's individual characteristics and behaviours (Dahlgren & Whitehead, 1991; Marmot, 2010; Marmot & Wilkinson, 2003).
Social model	Health results from a dynamic interplay of social structures and embodied human agency (Yuill et al., 2010).
Humanistic model	Health is a process, which is driven by a need to achieve self-actualisation (Mahrer, 1978; Maslow, 1962).
Meikirch model of health	Health occurs when individuals use their biologically given and personally acquired potentials to manage the demands of life in a way that promotes wellbeing. This process continues throughout life and is embedded within related social and environmental determinants of health. (Bircher & Kuruvilla, 2014, p.111).

The final Meikirch model, published in 2014 proposed that:

> *Health is a state of wellbeing emergent from conducive interactions between individuals' potentials, life's demands, and social and environmental determinants. (Bircher & Kuruvilla, 2014, p.111)*

The overall model is represented in Figure 2-1, and encompasses several constituent parts. These include the demands of life; the individual biologically given, and personally acquired potentials; and social and environmental determinants of health (Bircher, 2020; Bircher & Hahn, 2017a; Card, 2017). These elements, while distinct, continuously interact with each other (as denoted by the arrows in Figure 2-1) to determine an individual's levels of health over their life course. As will be seen shortly, the Meikirch model offers a useful foundation for this study, through its emphasis on the changing nature of health and wellbeing over the life course. This model also provides the driving force for the structure of this chapter.

2.2.1 Demands of life

Every individual is subject to, and must fulfil, the demands placed on them by life. The demands of life will vary throughout the life course, and present challenges to individual health and wellbeing. They may be biological, psychosocial, or environmental in nature (Bircher & Wehkamp, 2011; Huber et al., 2011; Meier-Abt, 2014). The biological demands include such factors as sustainable access to water and suitable nutrition, as well as appropriate hygiene and protection from extremes of weather (Bircher & Wehkamp, 2011; Huber et al., 2011; Meier-Abt, 2014). Psychosocial demands may include family, schools, and workplace, and refer to factors which influence an individual's relationship with their social settings (*ibid*). The environmental demands encompass this, such as air pollution, environmental

poisons, and natural catastrophes (Bircher & Wehkamp, 2011; Huber et al., 2011; Meier-Abt, 2014).

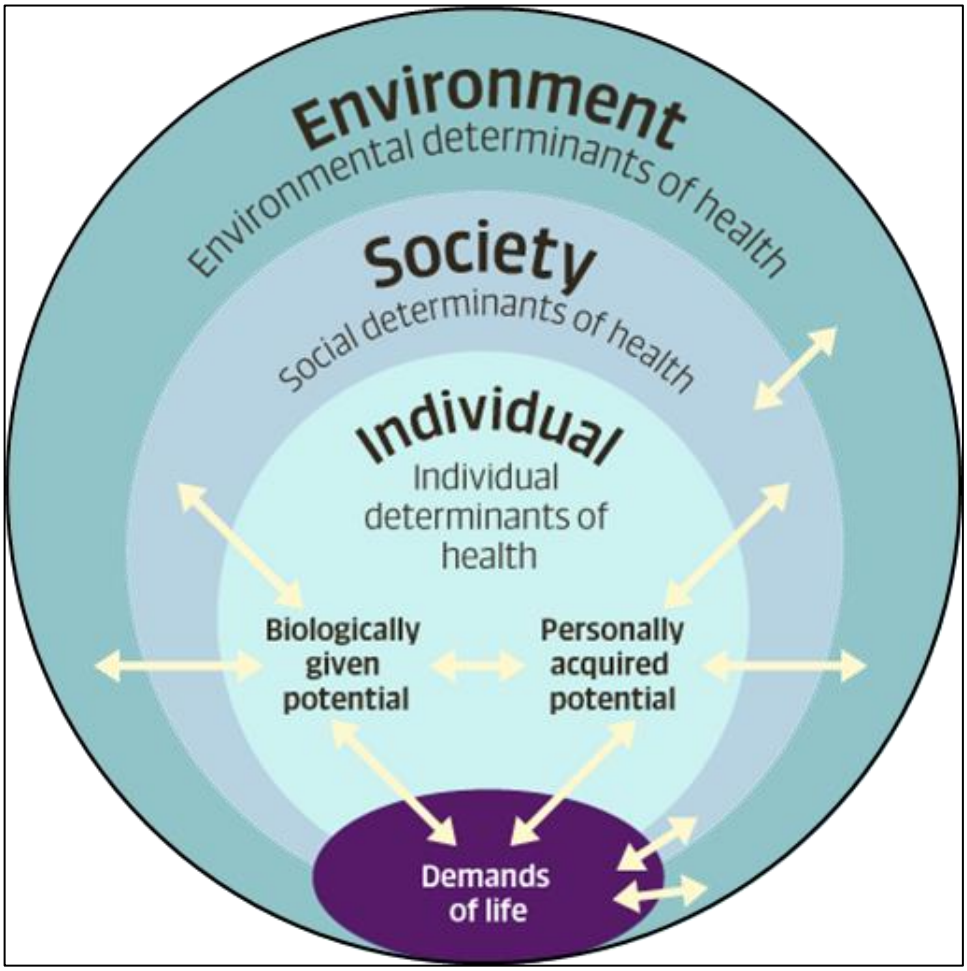


Figure 2-1: Meikirch Model of Health (Bircher & Kuruvilla, 2014)

The demands of life interact with, and are influenced by, both cultural factors and age (Bircher & Kuruvilla, 2014). For example, according to Bircher and Wehkamp, those who are particularly young or old may expect to be cared for by their social surroundings and/or networks (Bircher & Wehkamp, 2011; Phillipson, 2015). However, in the intervening or *productive years*, when they themselves are working, individuals are generally expected to contribute to society (*ibid*). Bircher &

Wehkamp (2011) assert that, inherent within the idea of changing demands throughout life is the individual expectation that the responsibility for health lies firmly within oneself, so long as they have the capacity to manage it (Bircher, 2005; Bircher & Wehkamp, 2011). This contrasts with the patriarchal view of the biomedical model, where all control over clinical decision-making lies within the medical profession (Breathnach, 2013; Deacon, 2013; Murgic, Hébert, Sovic, & Pavlekovic, 2015; Will, 2011).

Developed in the early stages of the 19th century, and still dominating much of health and medicine in the western world, the biomedical model takes a purely biological approach to health (Ahn, Tewari, Poon, & Phillips, 2006b; Gillick, 1985; Lawrence, 2021). The biomedical model defines health as *the absence of pain, disease, or defect*. As such, although typically referred to as a model of health, it may be more accurately described as a disease or illness model, as it defines health negatively, in terms of only an absence of disease or illness (Bircher & Wehkamp, 2011; Tamm, 1993; Yuill et al., 2010). This model is also based on the assumptions, first, that science, and consequently medicine, can only investigate that which can be seen and measured (Yuill et al., 2010), and second, that all phenomena, including health and illness, may be understood through the deconstruction of complex conditions and processes into their biological and physiological constituents (Barry & Yuill, 2008; Beresford, 2010; Nettleton, 1995). Consequently, this approach characterises individuals in purely mechanical terms, with disease considered to be little more than a technical fault (Tamm, 1993). Furthermore, its reductionist nature may be self-limiting, both in terms of definition (Tamm, 1993), and through its disregard of factors lying beyond the bounds of systems comprising the human body (Ahn, Tewari, Poon, & Phillips, 2006b; Fang & Casadevall, 2011; Glynn & Scully, 2010). This approach also tends to oversimplify matters pertaining to health, and result in confusion regarding causes and effects of illness (Bentham, 1996; Beresford, 2010; Lawrence, 2021). Furthermore, the reliance on a purely biological

approach, disregards the need to address the influence an individual may, themselves, have upon their own health, as well as the impact of broader social, and environmental factors. Moreover, the biomedical model affords no consideration to the mental or emotional health of the individual. Within the context of the Meikirch model, the biomedical approach represents only one of the key aspects of the overall picture of health, more specifically the biologically given potentials, which are described in section 2.2.2).

The assumption within the Meikirch model that an individual is responsible for their own health also contrasts with the over-medicalisation of social issues highlighted in the biopsychosocial approach. The Biopsychosocial Model represents a conscious shift towards more holistic approaches to health (Ahn et al., 2006a, 2006b; Engel, 1977; Lawrence, 2021). In apparent contrast to reductionism, arguable seen within the biomedical model, holism takes a more subjective view, embracing the notion that the individual is not simply a passive bystander in the world, but plays an active and reciprocal role within it (Ahn et al., 2006a, 2006b; Lawrence, 2021). In taking a holistic approach to health, one assumes that neither health nor illness may simply be reduced into their basic biological elements. Consideration must also be given to external factors, as well as the interactions between them (Bircher & Hahn, 2016a; Engel, 1977; Lawrence, 2021).

Although not explicitly referred to as a biopsychosocial approach until 1977, the World Health Organisation favours the biopsychosocial model of health. This defines health as:

> *A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity (World Health Organisation, 1948)*

In apparent synergy with the Meikirch model, and contrasting with the biomedical approach, the biopsychosocial model assumes that health is dependent on a dynamic interaction between biological, psychological, and social factors (Engel, 1977; Jenkins, 1985; Lawrence, 2021).

Despite encompassing the biological, psychological, and social aspects of health, this approach fails to include the wider determinants of health, which include a broad range of social, economic, and environmental factors (Beresford, 2010; Glynn & Scully, 2010; Lawrence, 2021). Furthermore, the biopsychosocial model, to some degree, serves to perpetuate the reductionist view of health within western medicine. This occurs through the assertion that health is dependent on a state of complete physical, emotional, and social wellbeing (Bircher & Kuruvilla, 2014; Card, 2017; Engel, 1977, 1978; Huber et al., 2011). Moreover, it has been suggested that this absolute need for unimpaired wellbeing renders this approach invalid, as it tends to classify most of the population as unhealthy, most of the time (Card, 2017; Huber et al., 2011; Smith & Christakis, 2008). This may reflect the fact that, since its initiation nearly 75 years ago, the WHO definition has never been revised or updated. As such, this approach fails to account for increases in life expectancy, and the changing nature of illness, specifically the significantly increasing prevalence of long-term conditions throughout the life course (Huber et al., 2011).

This issue of complete health demanded by the biopsychosocial definition of health, is particularly pertinent within the context of an ageing population, such as that in the United Kingdom, and the ever-increasing prevalence of chronic health conditions throughout the population (Card, 2017; Huber et al., 2011). Hinkle suggests that a more realistic approach is to consider that, rather than being completely free of disease, individuals may experience varying degrees of disease, while still being considered, and considering themselves to be healthy, a notion which garners support throughout the literature defining health (Blaxter, 1990; Hinkel, 1961; Lowry, Vallejo, & Studenski, 2012), with members of the older

population often referred to as *fit for [their] age* (Cartwright, Hockey, & Anderson, 1973). The biopsychosocial model also tends to view social issues, such as loneliness and isolation in clinical terms, as genetically determined or linked to personality, rather than addressing their behavioural and environmental determinants (Callahan, 1973; Card, 2017; Ozawa-de Silva & Parsons, 2020). With these ideas in mind, Huber and her colleagues (2011) have criticised the biopsychosocial definition as being counterproductive to the study and understanding of health.

The failure of both Biomedical and Biopsychosocial Models to consider the wider determinants of health, and levels and types of human need, leaves us still searching for a holistic approach to the understanding and definition of health. An approach, which Freeman suggests requires:

> *…the ability to use a Biopsychosocial Model taking into account cultural and existential dimensions – that everything affects health. (Freeman, 2005, p155)*

In many ways, as is demonstrated in the following sections, the Meikirch model serves to fulfil this demand, with equal attention paid to both external factors such as the environmental and social determinants, and internal factors, such as the biologically give, and personally acquired potentials.

2.2.2 The determinants of health

Central to the Meikirch model, and interacting with the demands of life to generate an individual's overall state of health, are the individual, social, and environmental determinants of health. These very much reflect the categories of wider determinants highlighted by Dahlgren & Whitehead (1991) in their model of health (Figure 2-2). According to the World Health Organisation, the determinants of health are those factors which interact to influence the health and wellbeing of

individuals and communities (World Health Organisation, 2016). These factors may be divided broadly into three categories. These are:

1. The social and economic environment,
2. The physical environment, and
3. The person's individual characteristics and behaviours.

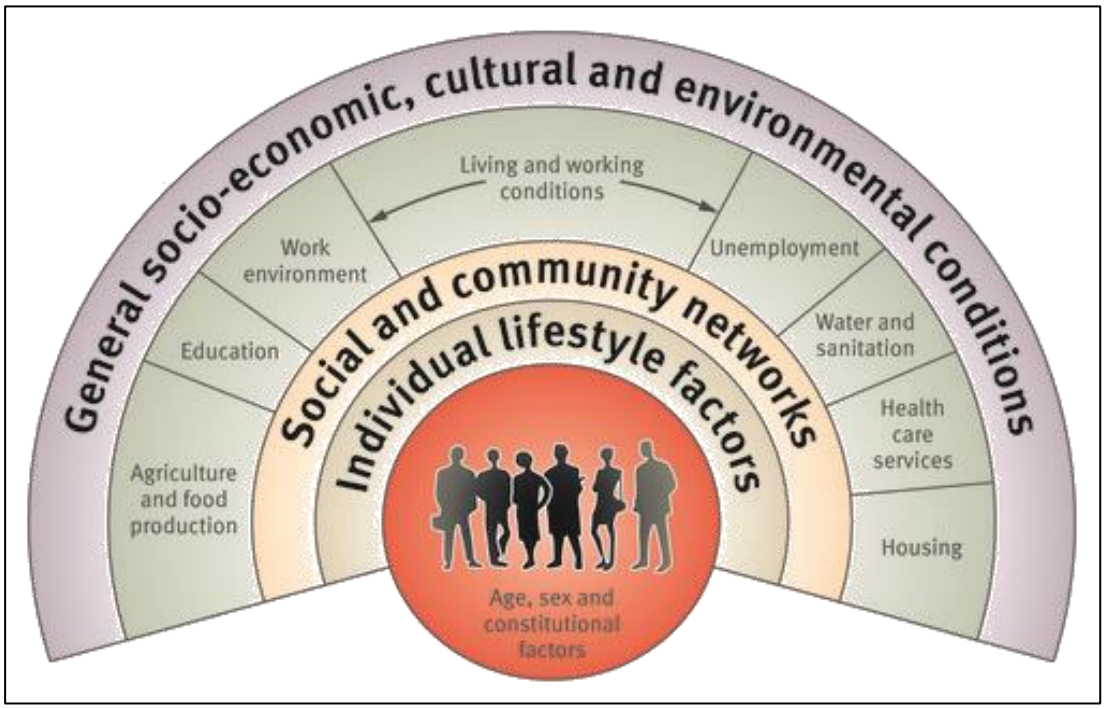


Figure 2-2: The wider determinants of health (Dahlgren & Whitehead, 1991)

These include factors such as socioeconomic status, social networks, gender, and various genetic and hereditary factors, as outlined in Figure 2-2 (Dahlgren & Whitehead, 1991; World Health Organisation, 2016). However, it should be borne in mind that this list is by no means exhaustive. In terms of overall health, some of the wider social determinants of health, in particular isolation and community involvement, are considered by some to be as detrimental to health as smoking, inactivity, and/or obesity (Holt-Lunstad et al., 2015). Furthermore, links have been

drawn between the social determinants of health and mental and emotional decline (Bircher, 2005; Bircher & Kuruvilla, 2014; Blane, 2013; Dahlgren & Whitehead, 1991; Levin, 2003; Marmot, 2010; Marmot & Wilkinson, 2003; Murphy, 1982; Watt, 2002; World Health Organisation, 2016). These links may explain the differing reactions to loneliness in later life and will be discussed further below.

The person's individual characteristics and behaviours, as described by Dahlgren and Whitehead (1991) and the World Health Organisation (2016), can be seen to be mirrored in the language used by the founders of the Meikirch model when they discuss biologically given (§ 2.2.2.1), and personally acquired potentials (§ 2.2.2.2). Similarly, Dahlgren and Whitehead's (1991) social and economic environment can be seen to be reflected through the language of the Meikirch model as the social determinants, which tend to offer a reflection of the size and quality of the individual's social network, and the environmental determinants, which encompass a broad range of factors, including for example air quality, which may operate on both local and national level (Bircher, 2005, 2020; Kawachi, 2001).

2.2.2.1 **Biologically given potentials**

Not only do the demands of life and determinants of health vary throughout the life course, so too do our responses to, and ability to cope with these demands. These responses reflect the individual determinants of health, more specifically our biologically given, and personally acquired potentials (Bircher & Kuruvilla, 2014; Card, 2017; Meier-Abt, 2014), which are defined in this and the following section. The biologically given potentials are defined as the strengths, or potential, we are born with. They are finite and diminish throughout the life course, through injury, illness, or age-related declines (Bircher, 2020; Bircher & Hahn, 2016b; Bircher & Wehkamp, 2011). These potentials are governed by both genetic factors and pre-natal development and have been likened to a "natural lottery for health", whereby those individuals with greater biologically given potential at birth will most likely experience better health than those with less potential (Bircher, 2005; Engelhardt

1984). The biologically given potentials reflect the initial biomedical approach to health, with the entire focus placed upon biological and physiological factors and processes (Beresford, 2010; Tamm, 1993; Yuill et al., 2010). An example of those with reduced biologically given potential may include individuals with a congenital condition. Furthermore, there are specific periods during a person's life that are critical to the development and preservation of these potentials, an assertion that is mirrored throughout the life course approach (§ 2.3). These critical periods are foetal development, early childhood development, adolescence, retirement and, in the case of women, menopause (Aboderin et al., 2001; Bircher, 2005; Bircher & Hahn, 2016b). The level of an individual's biologically given potential is reduced by physical disease, illness and/or injury, and these changes may be either temporary or permanent (Bircher, 2020; Frenk & Gomez-Dantes, 2014; Meier-Abt, 2014). In addition to these factors, biologically given potentials may be influenced, complemented, or enhanced by those which are personally acquired (Bircher & Hahn, 2016b; Card, 2017; Meier-Abt, 2014). A prime example of this is rehabilitative medicine, which demonstrates that the provision of medical, social, and technical support may allow for health to flourish, despite a significant reduction in biologically given potential. It is also well-suited to the notion of health throughout the ageing process, and the presence of good self-rated health despite disability (Bircher, 2005), which would not be possible under the biopsychosocial definition of health, which relies on complete physical, mental, and social wellbeing (World Health Organisation, 1948). Furthermore, Card (2017) proposed, the concept of being "well enough", to explain the changing and flexible nature of health within an ageing and long-lived population. For example, like most individuals who wear glasses, or have long-term health conditions, many older adults consider declining health and mobility issues to simply be a natural part of the ageing process, rather than a form of illness (Card, 2017; Lowry et al., 2012; Smith, 2008).

2.2.2.2 **Personally acquired potentials**

In contrast to the biologically given potentials outlined above, the Meikirch model identifies the personally acquired potentials as those which increase throughout the life course (Bircher, 2020; Card, 2017; Frenk & Gomez-Dantes, 2014), particularly during childhood and the adolescent years (Bircher & Wehkamp, 2011). Personally acquired potentials are far-reaching, and like the biologically given potentials begin to develop in utero (Bircher & Kuruvilla, 2014). They include immunological competence, physical abilities, learning and skills, social capital, psychological and spiritual development, and emotional maturity (Bircher & Kuruvilla, 2014; Frenk & Gomez-Dantes, 2014; Meier-Abt, 2014). Unlike the biologically given potentials, those which are personally acquired offer a clearer reflection of the biopsychosocial approach to health, with equal attention paid to biological, social, and psychological factors, rather than simply considering underlying physiological mechanisms (Ahn et al., 2006a; Bircher & Wehkamp, 2011; Engel, 1977, 1978). The idea of personally acquired potentials also encompasses the salutogenic approach, which suggests that health is driven by individual coping mechanisms in response to stress or distressing or challenging events (Antonovsky, 1987b; Bircher & Kuruvilla, 2014).

The Salutogenic Model seeks to address the relationship(s) between health, stress, and coping (Antonovsky, 1979, 1987a, 1987b, 1993, 1996). Taking a more preventive approach to health, the salutogenic model views health and illness as opposing points along a continuum, and explores how people manage to remain healthy despite stressful events (Antonovsky, 1979, 1987a, 1987b, 1993, 1996). The salutogenic model is underpinned by the finding that, although all individuals are subjected to various types of stress and stressful events, not everyone experiences poor health outcomes as a consequence (Antonovsky, 1979, 1987a, 1987b, 1993, 1996). Antonovsky proposed that it is the balance between the stress an individual experiences, and the resources they have at their disposal, which determines their overall levels of health and wellbeing (Antonovsky, 1979, 1987a, 1987b, 1993,

1996). These resources and stress are formally referred to as generalised resistance resources and generalised resource deficits, respectively (Antonovsky, 1987a, 1987b), and may be considered reflective of the demands of life and personally acquired potentials outlined in the Meikirch model. According to the salutogenic model, these two premises facilitate an individual's ability to make sense of, and manage, stressful events and, subsequently, develop a sense of coherence (Antonovsky, 1979, 1987a, 1987b, 1993, 1996). This sense of coherence offers an interpretation of the purpose of stress in daily functioning, as well as fuelling individual confidence (Antonovsky, 1979, 1987a, 1987b, 1993, 1996). The development of a strong sense of coherence is predicated by comprehensibility, manageability, and meaningfulness. Together these three elements drive the salutogenic model, although it should be borne in mind, that an individual's sense of coherence may equally predict negative or positive health outcomes (Antonovsky, 1987a, 1987b, 1996). Similarly, the combination of an individual's biologically given and personally acquired potential may also result in negative or positive health outcomes (Bircher, 2020; Bircher & Hahn, 2017b; Bircher & Wehkamp, 2011).

As already mentioned, the Meikirch model asserts that the personally acquired potentials can compensate for losses in biologically given potential (Bircher & Kuruvilla, 2014; Peter, Muller, Cieza, & Geyh, 2012), allowing for the presence of positive self-reported health despite chronic disease, pain, or advancing age (Bircher, 2005, 2020; Card, 2017; Meier-Abt, 2014). In addition to this, the model describes how the two types of potentials interact, both with each other, and the various determinants of health to address the demands of life (Bircher, 2020; Bircher & Hahn, 2017b; Bircher & Wehkamp, 2011). So long as the combined "value" of the potentials outweigh the demands of life, an individual will remain healthy (Bircher & Kuruvilla, 2014; Bircher & Wehkamp, 2011; Card, 2017; see Figure 2-3). A good illustration of this concept, and often cited by the creators of the Meikirch model of health and wellbeing, is that of a significant accident,

resulting in limb loss, or paralysis. Although the initial accident causes a significant decline in an individual's biologically given potential, through intensive, specialised rehabilitation, and use of resources such as prosthetics and mobility aids, they may develop enough personally acquired potential to overcome this loss. However, once these potentials are no longer able to counterbalance the demands of life, the individual will cease to be healthy (Bircher, 2020; Bircher & Hahn, 2017b; Meier-Abt, 2014).

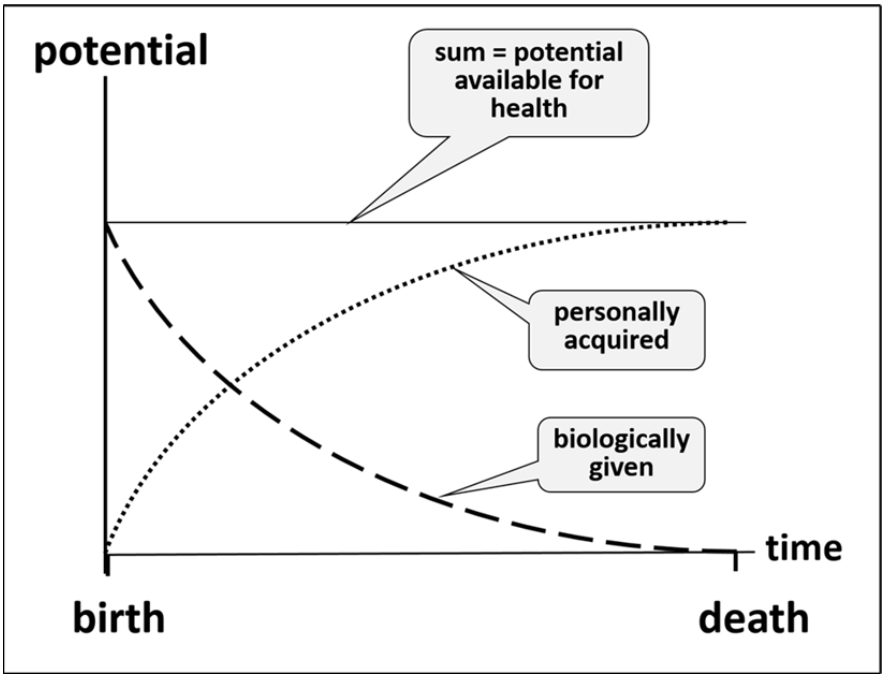


Figure 2-3: Interaction between potentials (Bircher & Hahn, 2017b)

Human and Social Capitals as personally acquired potentials

When considering the relationship between loneliness and health, the Meikirch model, views capital, in particular human and social capitals, as significant personally acquired potentials. This notion forms the basis of the Interactive Biopsychosocial model, which defines health as the result of the interaction

between human, biophysical, psychocognitive, and social capitals (Lindau et al., 2003). Human capital refers to an individual's collection of skills, knowledge, social, and personality traits, and is thought to be comprised of intellectual, social, and emotional capitals (Coleman, 1988; Goldin, 2016; Lavalle, Omosebi, & Desmarteau, 2015). Using the language of the Meikirch model, human capital represents a personally acquired potential, which develops in response to the interaction of individual and social determinants of health. It is heavily dependent on parental levels of human capital, from which the individual learns, and is created through changes within the individual, such as the acquisition of new skills and characteristics (Coleman, 1988; Goldin, 2016; Lavalle et al., 2015; O'Rand, 2006). It is being considered alongside social capital here owing to Coleman's (1988) assertion that these two capitals form equal component parts of the family background, along with financial capital. More importantly, it has been suggested that, in terms of individual development, it is essential that parental human capital is complemented by social capital, in the form of their physical presence and attention, if it is to flourish in their offspring (Coleman, 1988; Goldin, 2016; Hauberer, 2010). This proposition is here argued to be pertinent when attempting to understand the nature of the relationship between loneliness and health, particularly within the context of the Meikirch model of health and wellbeing. Accepting the assertion that human capital is a form of personally acquired potential, the model suggests that the failure to acquire sufficient human capital may render the individual vulnerable to the detrimental health effects of loneliness in later life.

Unlike human capital, the term "social capital" is notoriously ill-defined and ambiguous (Lavalle et al., 2015). As Bruce and Yearley point out, the term has been used to describe a "confusingly wide range of phenomena" (Bruce & Yearley, 2006,

p280), and is viewed by some as little more than a hybrid, or quasi-concept[2] (Lavalle et al., 2015). However, the concept of social capital continues to be a popular topic within health research, particularly when considering the influence of social factors on health outcomes (Carpiano & Moore, 2020). This research follows the work of Putnam, who referred to social capital as:

> *Connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. (Putnam, 2000, pp19)*

Aside from representing a well-established and broadly accepted approach to the study of social capital, Putnam's definition (Putnam, 1993a, 1993b, 2000) has been adopted in this work due to its strong focus on family and the social network throughout his work. Furthermore, although not specifically cited by the architect of the Meikirch model, Putnam's definition and approach highlight the relevance of both social and individual factors in the maintenance of health and wellbeing. Within the Meikirch model, both of these social and individual factors represent key determinants of health, and may influence how an individual may cope with the demands of their life (Bircher, 2005, 2020).

From a health perspective, social capital has been directly linked to measures of cognitive function and psychological health (Béland, Zunzunegui, Alvarado, Otero, & del Ser, 2005; Chappell & Funk, 2010; Yen, Yang, Shih, & Lung, 2004), as well as self-rated health (Andrew, 2005; Lee, Jang, Lee, Cho, & Park, 2008; Poortinga, 2006). Within the context of the Meikirch model of health and wellbeing, it is argued here that, like human capital, social capital also represents a key personally acquired potential, which serves to protect an individual from detrimental loneliness. This assertion would seem to fit with the work of Glaeser described above, and the

[2] A quasi concept represents that which may not have formal backing due to the lack of scientific understanding

positive association of social capital with better mobility, increasing age, and social status (Glaeser, Laibson, & Sacerdote, 2002).

2.2.2.3 **Social and environmental determinants of health**

The various determinants of health outlined by the Meikirch model of health and wellbeing, which include social and environmental factors, would seem to largely reflect those proposed by Dahlgren and Whitehead and highlighted by Marmot (Dahlgren & Whitehead, 1991; Marmot, 2010; Marmot & Wilkinson, 2006). Although the individual determinants of health, including gender, personality, and genetic predisposition, in most cases, remain relatively stable over time, the social and environmental determinants of health tend to be more malleable, for example, an individual may move from an urban to a rural area, or may experience a change in their socioeconomic status (Bircher & Hahn, 2016a; Card, 2017; Huber et al., 2011). The social determinants of health may be both supportive and/or challenging and influenced by an individual's engagement or participation in society. These determinants tend to reflect the size and quality of the individual's social network and highlight inequalities throughout society (Bircher, 2005, 2020; Kawachi, 2001). For example, individuals may be influenced considerably by their ethnicity, cultural background, and socioeconomic status (Marmot, 2010; Marmot, Allen, Bell, Bloomer, & Goldblatt, 2012; Marmot & Wilkinson, 2006). This is a key point to consider given the links perceived between inequality and poor health (Bircher, 2020; Marmot, 2010; Marmot & Wilkinson, 2006). One key factor linking inequality to variable health outcomes stems from access to resources, with those from more deprived areas and backgrounds having less access to resources and, as a consequence, less control over their lives and choices available to them, regarding factors such as diet and lifestyle (Marmot, 2010; Marmot et al., 2012; Marmot & Wilkinson, 2003). This lack of choice may lead to the development of unhealthy behaviours and poor coping mechanisms which, in turn, may increase individual

vulnerability to poor mental and physical health (Hofrichter, 2003; Marmot & Wilkinson, 2003; Marmot & Wilkinson, 2006)

The environmental determinants of health as outlined in this model encompass a broad range of factors, which may operate on both local and national levels (Bircher & Hahn, 2017b; Bircher & Kuruvilla, 2014; Haines, Alleyne, Kickbusch, & Dora, 2012). These include concepts such as climate change and population growth, but also where we live and our access to resources (Bircher, 2005, 2020; Bircher & Hahn, 2016b). Some of these factors have the potential to be manipulated, both by individuals and wider society. The idea that some environmental factors may be open to manipulation by both the individual and society rests within the remit of positive psychology, which looks to explore the factors which influence the ability of a community to thrive, and is based on the assumption that people want to lead meaningful and fulfilling lives, and to maximise their own potentials, both on a social and personal level (Bircher, 2020; Bircher & Hahn, 2016b; Seligman, 2011). The ability to manipulate one's own environment is a pertinent factor to consider within the context of the Meikirch model, which views individuals as agentic beings, who are directly responsible for their own health. One could argue that this agency simply represents a form of personally acquired potential, which may be developed by learning how to lead a healthy life.

2.2.3 Evaluating the Meikirch Model

Although it represents a relatively new theorisation of health and, as such, lacks the extensive evidence base associated with many of its predecessors (Bircher & Kuruvilla, 2014), the Meikirch model of health is reported to offer a significantly more holistic approach to the consideration of health. However, rather than simply replacing its forerunners, it could be argued that the Meikirch model appears to integrate many of the concepts developed through previous approaches. This perceived integration is outlined in Figure 2-4, which serves to illustrate the breadth

and complexity of health, as a concept. It also demonstrates that, despite their many pitfalls, when viewed in combination, previous models of health may represent distinct, yet complementary, aspects of a more complex model of health.

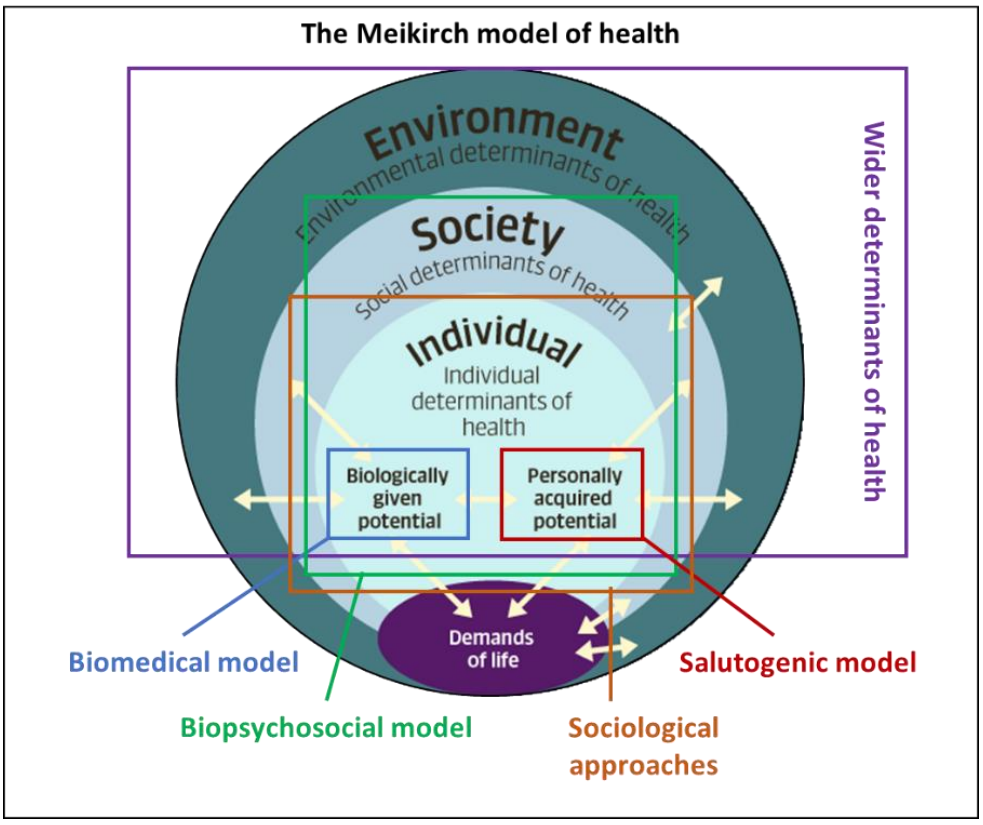


Figure 2-4: The Meikirch Model and its predecessors

Beginning with the biomedical approach, its purely biological approach has been criticised due to its reductionist nature, and negative definition of health as the absence of disease (Tamm, 1993; Yuill et al., 2010). As discussed above, the biomedical approach is also considered to represent an oversimplification of health (Bentham, 1996; Beresford, 2010; Lawrence, 2021). Furthermore, the reduction of all health issues to purely biological or medical causes, very much renders the individual a passive onlooker in the management of their own health and wellbeing (Breathnach, 2013; Deacon, 2013; Murgic, Hébert, Sovic, & Pavlekovic, 2015).

While this apparent passivity conflicts with the Meikirch model's assumption that each individual holds responsibility for the maintenance and preservation of their own health, the biomedical model does present a fair representation of the biologically given potentials and their role in an individual's health, as defined by the Meikirch model. As noted above, the biologically given potentials are considered to be greatest at birth, and diminish over the life course. The speed of the decline of these potentials may be influenced by illness, accidents, and behaviours (Bircher & Kuruvilla, 2014). It could be argued, therefore, that health, as defined by the biomedical model, may be considered equivalent to a state where an individual's biologically given potentials are at their highest. On this basis, it may further be argued that, in biomedical terms, health is a state only fleetingly available at the beginning of life, and certainly not accessible to those in their latter years.

In an attempt to counter the pitfalls of the biomedical model, and offer a more holistic approach, the biopsychosocial view was advanced. In addition to the biomedical components, the biopsychosocial model stretches the bounds of health to encompass psychological and social aspects of health (Engel, 1977; Jenkins, 1985; Lawrence, 2021). The biopsychosocial approach has the advantage that it recognises the influence an individual may have over their own health; and may be considered to reflect the individual and social determinants of health portrayed by Dahlgren & Whitehead (1991), and also as outlined in the Meikirch model (Bircher & Kuruvilla, 2014). However, despite its inclusion of biomedical, psychological, and social components, the biopsychosocial model, much akin to its predecessor, does offer a reductionist view of health. Perhaps of greater concern with the biopsychosocial approach, is its actual definition of health, which demands a state of complete physical, mental, and social wellbeing (World Health Organisation, 1948). Like the biomedical approach, this demand for complete health seems to imply the very transient and fleeting nature of health, and its inaccessibility to

significant sections of society, including disabled individuals and, as will be demonstrated below, older adults.

Since the inception of the biopsychosocial view, the demographic profile of the United Kingdom has changed significantly. Most notable of these changes has been the increases in life expectancy, and resultant increase in the size of the older population. As the population continues to age, the prevalence of many chronic health conditions, including cancers, increases, as does the prevalence of disability (Baars, 2017; Henriksen et al., 2019; Wang et al., 2019). Notwithstanding the above, the continued medical advancement and improvements in treatment approaches means that individuals with disabilities, or chronic health conditions, are able to live relatively normal, healthy lives (Card, 2017; Hinkel, 1961; Strawbridge, Wallhagen, & Cohen, 2002). Based on the biopsychosocial definition, the majority of the older population, as well as those with long-term conditions or disabilities would be classified as unhealthy, due to their lack of complete wellbeing (Card, 2017; Smith & Christakis, 2008). This suggests that the biopsychosocial view of health is incongruous with an ageing population, as it fails to allow for fluctuations in wellbeing. It also fails to allow for the coexistence of good health with disability. In contrast, the Meikirch model, which represents health as a dynamic experiential state, rather than a simple binary concept, allows for the notion that an individual may consider themselves to be *well enough*, or *fit for their age*, and that this can represent a stable state of health (Blaxter & Paterson, 1982; Card, 2017; Cartwright et al., 1973; Lowry et al., 2012).

In addition to providing this study with a holistic and person-centred approach to health, the Meikirch model further integrates other important approaches to the definition of health, including the wider determinants, which recognises the influence of social and environmental factors on health (Dahlgren & Whitehead, 1991). However, unlike the Meikirch model, the wider determinant approach does not consider the two interacting and complementary biologically give, and

personally acquired potentials, which are characteristic of the newer, Meikirch view. The Meikirch model also incorporates the salutogenic approach, which focusses on the relationship between stress and wellbeing (Antonovsky, 1979, 1987a, 1987b). Using the language of the Meikirch model, it is asserted that salutogenesis reflects the relationship between the demands of life and an individual's personally acquired potential. The biologically given and personally acquired potentials, and the way they interact in response to the demands of life also appear to show a great deal of synergy with the sociological approaches, specifically those which base health on a combination of the absence of disease (as with the biomedical approach), a reserve of health (the Meikirch model refers to this reserve as the combined biologically give and personally acquired potentials), and a positive state of wellbeing[3] (Blaxter, 1990; Herzlich, 1973). As such, when compared to its predecessors, the Meikirch model of health and wellbeing much better represents the changing nature of health and wellbeing throughout the life course, and allows for the existence of health within the context of chronic health conditions, old age, and the ageing process itself (Card, 2017; Lowry et al., 2012; Smith & Christakis, 2008). It also allows for the idea that patients and clinicians often hold differing views and perceptions of disease and illness, and that these may represent separate entities (Card, 2017; Evans, 2003). As Farre and Rapley (2017) highlighted, the term disease is strongly linked to, and defined within the realms of physiology. However, illness is conceptualised more firmly within the context of personal life experience, and includes both objective and subjective features.

This section has offered an in-depth view of the Meikirch model of health and wellbeing, both as a standalone approach to health, and within the context of its forerunners. This review has offered a view of the historic development and evolution of our understanding of health. Moreover, it has allowed for the

[3] The combination of feeling good and functioning well.

consideration of how earlier approaches have both informed, and been incorporated into the Meikirch model. Furthermore, this section has provided the framework from which to develop this exploration of the mechanisms underlying the detrimental association between loneliness and health, how this may be influenced, and how it may vary over the life course. In addition to fostering a life course approach, this framework guides the process of this research, through its emphasis on individual agency and the biologically given and personally acquired potentials, which may influence individual responses to loneliness. The following section will consider the life course approach to research, particularly within the context of the Meikirch model, and the study of loneliness and health.

2.3 The Life course approach

This chapter now moves on to critique and review the life course approach. This is important to consider because, like the Meikirch model, it reflects the changing nature of health throughout the life course, as well as our changing capacity and approaches to addressing the demands of life. This is apposite to the present study, which investigates the mechanisms underlying the relationship between loneliness and health, which may themselves change over the life course. The life course approach explores the sequence, timing, and duration of individual social pathways[4] (Elder & Shanahan, 2006; Giele & Elder, 1998; Heikkinen, 2010; McDonald & Mair, 2010), and is based, broadly, on the idea that, the course of a person's life, is defined and shaped by earlier life experiences (Jacob, 2017; Kuh et al., 2003; Nurius et al., 2015). This being the case, one should, based on previous events and experiences, be able to predict the likelihood of ill-health and premature mortality in later life (Heikkinen, 2010; Jacob, 2017; Nurius et al., 2012). It is with this in mind that much public health work is aimed at the early prevention of illness, and it is certainly an approach endorsed by the World Health Organisation (Jacob, 2017). Alone, this offers strong justification for the adoption of a life course approach to

[4] The sequences of social positions in and between organisations and institutions.

the investigation of health responses to loneliness, the nature of which may change over the life course. However, it also sits well with research, such as that described below, which focusses on an older population. As Elder & Shanahan (2006) point out, ageing, by definition, takes a life time, and its course is dependent on an accumulation of events and choices (Baltes et al., 2006; Blane, 2009; O'Rand, 2006). Furthermore, and in contrast with the suggestion that the life course is determined earlier in life, Baltes et al. (2006) stated that age is an agentic process, meaning that the individuals are capable of altering their life trajectory during adulthood (Baltes et al., 2006; Ebaugh, 1988; Elder & Shanahan, 2006; McDonald & Mair, 2010). This lends further weight to the rationale for taking a life course approach within this research, because it allows for the exploration of both the influence of early life events on the ageing process, as well as individual agency in later life, both of which may influence the way an individual responds to and copes with loneliness.

The main driver behind life course research, as the name suggests, is the life course. This has been defined as a sequence of socially defined, age-graded events and roles that define the contours of biography (Giele & Elder, 1998)

On this basis, life course research may be viewed as

> *A theoretical orientation that provides a framework for studying phenomena at the nexus of social change, social pathways, and development trajectories (Elder & Shanahan, 2006, p692)*

It offers a multidisciplinary perspective (Elder & Shanahan, 2006), encompassing fields such as sociology (Elder, 1975, 1985, 1999; Riley et al., 1972a), psychology (Baltes & Baltes, 1990; Bronfenbrenner, 1979; Bronfenbrenner et al., 1995), epidemiology and demography (Jacob, 2017; Ryder, 1965), history (Hareven, 2013; Modell, 1991), and anthropology (Kertzer & Keith, 1984). Common to the approaches offered by each of these specialities is the focus on how certain risk

factors affect individuals, and the time at which these risk factors are most influential to health (Heikkinen, 2010; Jacob, 2017). It is relevant to note here that, even as each discipline incorporates their own discourse of the life course, no single, universal theory exists to underpin the life course approach across the various disciplines cited above (Elder & Shanahan, 2006). However, the Meikirch model may offer a step to bridge this gap, as it allows for individual differences in the preservation of biologically given, and development of personally acquired potential. When combined these potentials are responsible for how we address the demands of life and it is proposed that it is this that shapes the individual life course.

From an epidemiological standpoint, life course focuses on three key areas: critical periods, accumulation of risk, and pathways, or chains, of risk (Burton-Jeangros et al., 2015; Heikkinen, 2010; Jacob, 2017; Schöllgen et al., 2010). These epidemiological models include the critical period/biological programming model, which suggests that exposure to certain risk factors at specific times, or critical periods, during the life course, can have lasting, life-long effects (Barker, 1994; Ben-Shlomo & Kuh, 2002; Blane et al., 2007; Gillman, 2004; Heikkinen, 2010; Hertzman & Power, 2003; Jacob, 2017). The accumulation of risk/cumulative model, which states that the individual life course is informed, and driven, by the cumulative effect of events and risk factors. The effects of risk(s) may be accumulated through exposure to multiple factors simultaneously (Blane, 2009; Blane et al., 2007; Heikkinen, 2010; Jacob, 2017; Kuh & Ben-Shlomo, 2004; Kuh et al., 2003). The pathway/chain of risk model, which proposes that the combination of multiple factors, and the sequence through which they are experienced, and how the experiences are integrated, determines health in later life (Burton-Jeangros et al., 2015; Heikkinen, 2010; Jacob, 2017; Kuh & Ben-Shlomo, 2004; Lynch & Smith, 2005; Nybo et al., 2003; Schöllgen et al., 2010; Wadsworth, 1997).

The focus of critical periods, or biological programming, along with the emphasis placed on pathways and cumulative risk, displays great synergy with the Meikirch model, outlined above. For example, the critical period approach looks to the influence of development in the womb, and other, genetically predetermined, factors on later life outcomes (Barker, 1994; Ben-Shlomo & Kuh, 2002; Gillman, 2004; Hertzman & Power, 2003). It may be argued that this mirrors the notion of the biologically given potentials outlined in the Meikirch model (Bircher & Hahn, 2017a, 2017b; Bircher et al., 2017). Furthermore, the suggestion of cumulative risks, or mitigating factors, is synergistic with the notion of fluctuating levels of biologically given and personally acquired potentials, also outlined in the Meikirch model (Bircher, 2005; Bircher & Kuruvilla, 2014; Bircher & Wehkamp, 2011). This research asserts that, as the risks accumulate, they diminish an individual's level of biologically given potential. In response to this, a healthy individual can counterbalance the loss of their biologically given potential, through the development of their personally acquired potential.

Within the context of the Meikirch model, as well as the wider landscape of health and wellbeing, sociological approaches to the life course are also deemed highly relevant through their consideration of wider determinants of health. Rather than emphasising the role of biological factors, the sociological approaches seek to establish the importance of societal factors to personal growth and development, more specifically, different patterns of behaviour observed in different individuals during adulthood (Glaser & Strauss, 2011; Neugarten & Datan, 1973; Riley et al., 1972b). The sociological approaches aim to broaden the understanding of the various social meanings of age, and their construction through both the individual and society, as well as focusing on key transition points throughout the life course (Gottlieb et al., 2006; Neugarten, 1996; Ryder, 1965). There have been several proponents of sociological approaches to the life course, including Elder (1999), Giele (1988), and Baltes (1993).

In 1974, Elder (Elder, 1999) proposed a series of paradigmatic principles of life course research. These were further developed, both by Elder himself and, latterly with Giele (Giele, 1988; Giele & Elder, 1998). Giele and Elder's (1998) work resulted in the proposition of four paradigmatic principles of life course research. These principles are, first, individual goal orientation, whereby individuals are driven by goals and construct their own life course through choices and actions taken based on their historical and social situations. Second, strategic adaptation, which asserts that the timing of events, patterns of behaviour and transitions in the life course will influence their precursors and consequences. Third, social integration, which states that individuals' lives are interdependent, relying on influences from other individuals shared experiences. Fourth, cultural background, where individuals' lives form an integral part of, and are shaped by the distinctive historical times and events they are born into and live through (Giele & Elder, 1998).

In concordance with the paradigmatic principles outlined above, Baltes (1993) has identified various factors and types of development, which are influential throughout the life course. He highlighted two forms of development to consider. These are life-span development, which explores how individuals learn, mature and adapt over the life course; and ontogenetic development, which focuses on the influence of environmental factors within on individual development. Life-span development, which may be either continuous and cumulative, or discontinuous and innovative, entails choices based on the maximisation of cultural gains, such as the social network and acquisition of education and life skills, and minimisation of biological losses, such as health and mobility. This type of development is clearly in keeping with the Meikirch model, which asserts that good health is dependent on the maximisation of personally acquired potential, and the minimisation of losses to the biologically given potentials (Bircher, 2005; Bircher & Kuruvilla, 2014; Bircher & Wehkamp, 2011). Also cogent with the Meikirch model is ontogenetic development, which is more specific to time and location, and subject to the

influence of age-related factors (Baltes, 1993). These age-related factors hold the greatest influence during, what Baltes referred to, as the dependency years, which include childhood, adolescence, and old age (Baltes, 1993). One might reasonably assume that these correspond to the critical periods outlined in section 2.2.2.1 (Lynch & Smith, 2005; Nybo et al., 2003; Schöllgen et al., 2010). Baltes (1993) also advised that any change throughout the life course, and to its trajectory, may occur in response to losses or gains. For example, the loss of mobility may restrict, or alter, professional aspirations. Conversely, gaining a social network through, for example, support groups may serve to provide new opportunities for individual development. Furthermore, and in accordance with the Meikirch model, Baltes (1993) proposed that the biological resources that an individual is endowed with at birth decline over time, but their cultural counterparts, including concepts such as wisdom, increase over a lifetime.

From a psychological perspective, the aim of life course research is to explore the impact of adverse childhood experiences on psychological health and wellbeing during adulthood (Green et al., 2010; Larkin & Park, 2012; Rose et al., 2014). Adverse childhood experiences may include maltreatment, neglect, experience of, or witness to abuse or violence, and household dysfunction (Kilpatrick et al., 2003; Nurius et al., 2015; Widom, 1998). It is worth noting that these experiences often co-exist (Finkelhor et al., 2007; Nurius et al., 2015). However, it is not clear if these harmful experiences are equally detrimental or if, when combined, their effects are amplified (Arata et al., 2007; Dube et al., 2003; Nurius et al., 2015). As well as increasing vulnerability to poor mental health in adulthood, it has been proposed that adverse childhood experiences may also raise the likelihood of stressful events occurring later in life (Nurius et al., 2015; Turner & Butler, 2003; Turner & Schieman, 2008).

2.3.1 The life course and retirement

Ageing may be thought of as one of the few processes common to every individual's life course. The process of ageing is believed to occur continuously from birth, and many processes and stereotypes exist regarding its progress (Jacob, 2017; Kuh et al., 2003; Nurius et al., 2015). One key transition point and critical developmental period experienced by the majority of older adults, and particularly those participating within this study, is retirement (Aboderin et al., 2001; Bircher, 2005; Bircher & Hahn, 2016b). This section considers the importance of retirement to the ageing process, along with its relevance to the present study.

Retirement, in its current form, is a relatively contemporary phenomenon within the United Kingdom, initially formalised in the post-World War two era (Phillipson, 1982, 1998; Vickerstaff & Cox, 2005), as a universally required event (Maule, Cliff & Taylor, 1996; Vickerstaff & Cox, 2005). The mandated nature of retirement arose from a dependency narrative, which suggested that older people lacked agency (Phillipson, 1998), or the competence to work after a certain age (Ng & Fellman, 2012; Posthuma & Campion, 2009; Weiss et al, 2022), and would then be dependent on the state (Estes, 1979; Simmonds, 2021). These beliefs are reflective of Cumming & Henry's Disengagement Theory of Ageing (1961). The disengagement theory offers a functionalist approach (Cumming & Henry, 1961; Lipman & Smith, 1968; Simmonds, 2021), which views ageing as the unavoidable withdrawal of the individual from society, and into retirement, for the perceived benefit of both the ageing individual and the wider society (Bengston, 2016; Simmonds, 2021; Turner, 1987). Although it is no longer a favoured approach to the consideration of ageing, the disengagement theory is worthy of consideration within this study. This is because it reflects the self-perception incompetence of older adults which characterises the theory of Social Breakdown (§ 3.5.3). As will be seen in the following chapter, it is proposed that social breakdown syndrome represents a social determinant of health. Within the context of this study, it is

further argued that social breakdown, as a social determinant, represents one of the key factors which may exacerbate the negative influence of loneliness over individual health outcomes.

Neither the dependency narrative, nor the disengagement theory allow for the notion that not all older individuals want, or are financially able, to withdraw (Moen, 2001; Sargent et al., 2013; Turner, 1987), nor do they allow for the continued productivity of older people within society, through continued employment, caring responsibilities (Lain, 2016), or through the sharing of their knowledge and experiences (Calasanti, 2020). Furthermore, it has been noted that:

Retirement is a decidedly malleable concept (Blaikie, 1997, p11)

which is heavily dependent on the current state of the labour force and market (*ibid*). Indeed, within the context of a recessive economy, early retirement seems to be actively discouraged (Taylor & Earl, 2016) and, rather than being forced into retirement, individuals are being encouraged to work for longer in order to avoid becoming a burden to society (*ibid*). This situation has been *exacerbated* by improvements in individual health and life expectancies, which has resulted in the majority of older adults possessing a significantly longer period of time following retirement before their health begins to fail (Sargent et al, 2013). This is a key concept to consider within the context of individual loneliness and health outcomes, first due to the potential for further development of personally acquired potentials following retirement, and second due to the extended period between the loss of a significant network of work colleagues and the end of life.

While there is little dispute that retirement continues to represent a distinct stage in the life course (Atchley, 1982; Sargent et al., 2013), which many may view as a just reward for their years spent working (Sargent et al., 2013), it has been suggested that the transition processes associated with retirement have changed

significantly since the initial introduction of the post-World War two era notion of retirement (Bordia et al., 2020). What was, at one time, viewed as an unequivocal shift from working life to retirement (Bordia et al, 2020), now evolves over a considerably longer period of time, and may involve phases of leisure and volunteering, as well as training and further periods of employment (Beehr, 2014; Johnson, 2009; Kulik et al., 2014). Through the lens of the Meikirch model, it could be argued that this extended retirement process may promote the evolution and development of greater personally acquired potential. Conversely, it could be proposed that this extended period following withdrawal from full time work may leave an individual more vulnerable to loneliness and tis associated negative health outcomes.

The changing demography observed within the UK population, as well as the differing expectations and perceptions of retirement have also heralded change in the way the ageing process itself is viewed. Initially developed in response to the Disengagement Theory, the Activity Theory suggests that the negative effects of ageing may be mitigated by the maintenance of high levels of activity (Burbank, 1986; Charles et al., 2003; Havighurst et al., 1963). However, this approach shows little regard for the impact of significant life transitions, such as retirement and bereavement, on the ageing process (Burbank, 1986; Havighurst, 1968). More in keeping with the life course approach is the Continuity Theory, which assumes that the majority of older adults will continue to engage in the same behaviours, activities, and relationships that they had during their middle-age and younger years (Atchley, 1971; Chen, 2003; Havighurst, 1968).

The Continuity Theory assumes that, throughout the ageing process, individual personality remains constant, and that the individual's personality will influence both their life satisfaction, and their role activity (Neugarten, 1968; Burbank 1986). It is thought that these assumptions may account for the individual differences observed throughout the ageing process (Atchley, 1987; Burbank, 1986; Chen,

2003). It could further be asserted that these individual differences in the ageing process may reflect differing levels of biologically given and personally acquired potentials, as described by the Meikirch model (Bircher & Kuruvilla, 2014). Furthermore, these individual differences in quality and quantity of both biologically given and personally acquired potentials likely impact on the individual choices made regarding the transition from work to retirement. Moreover, it is proposed that the choices an individual makes both regarding, and following, their transition from work to retirement will likely influence the coping mechanisms adopted in response to loneliness and its associated health detriments.

Also taking a life course approach is the theory of Selective Optimisation with Compensation (Baltes & Baltes, 1990; Charles & Carstensen, 2010; Marsiske et al, 1995). 'Selective optimisation with compensation' proposes that, throughout their adult years, individuals become increasingly aware of the gains and losses related to the ageing process (*ibid*). As such, in response to declining social, cognitive, and financial resources, older people choose more carefully how to allocate their resources, and select goals (Baltes & Baltes, 1990; Charles & Carstensen, 2010). It is proposed that the increasing awareness of gains and losses, along with their approach to resource allocation, represent the development of personally acquired potential throughout the ageing process. It is further argued that this development of personally acquired potential may serve to assist the individual in coping with the demands of life.

While selective optimisation with compensation both identifies and accepts that continued activity and engagement represents a key aspect of the ageing process, it also notes that losses related to the ageing process can make it impossible for the ageing individual to maintain the same lifestyle they experience during their mid-life (Baltes & Baltes, 1990). However, older adults are frequently able to maintain their levels of functioning, despite these age-based changes (*ibid*). Baltes and Baltes (1990) theorise that, in response to the losses associated with ageing, older adults

tailor their goals to fit in with the resources available to them. It could further be theorised that these age-driven changes in both resources and functionality, may directly drive individual choices regarding early, or late, retirement, as well as the transition between working life and retirement. It could further be argued that these age-driven changes in both resources and functionality, may also serve to reflect the shifting balance of biologically given, and personally acquired potentials over the life course, as highlighted in the Meikirch model of health (Bircher & Kuruvilla, 2014).

2.3.1.1 **The life course, retirement, and gender dissonance**

Most notable during the first and second world wars, and latterly during the gender revolution of the 1960s, was the influx of women into the labour market. This ushered in significant change to, and individualisation of, the life course model (Sargent et al., 2013). Most notable of these changes have been the shifting of family patterns and marital ideologies, and the creation of dual-income families (*ibid*). In addition to promoting greater heterogeneity throughout the workforce, the varying family circumstances associated with the introduction of women to the workforce has also generated increasing heterogeneity to the individual retirement transition process (Moen, 2001). In contrast to their male counterparts, women are more likely to experience part-time work and career breaks during their working life, with many choosing, or having, to embark on second or third careers beyond the age of 55 (Johnson, 2009). This has resulted in gender differences in the retirement process (Sargent et al, 2013). While men have tended to view retirement as a well-earned reward following several decades of working, many women tend to be looking forward to freedom from their gender-based role as carer (Loretto & Vickerstaff, 2013). That being said, a significant number of retirees undertake responsibility for caring for their grandchildren and/or older parents (Sargent et al., 2013). It should be noted, however, that for some women, retirement may be irrelevant (Bixby & Irelan, 1969; Calasanti et al., 2021), as they

have not entered the labour market, choosing instead to be full time wives and mothers (Di Matteo et al., 2022; Saraceno, 2010; Schmid et al., 2012). Caring roles are frequently considered to be the remit of women (DiMatteo et al., 2022), and this is reflected in the finding that while men view retirement as an opportunity to spend more time with their families, women who do work are more likely to view retirement as moral duty, to free up time for caring responsibilities (*ibid*). In contrast to the notion that full time wives and mothers cannot truly experience retirement, Heyman (1970) has suggested that they do experience a form of retirement from domestic responsibilities when their children leave the family home.

That retirement is just one of a series of key transition points in the life course seems to be widely accepted as a given. In order to understand the series of transitions throughout life, Laslett (1987, 1996) proposed that life be divided into a series of three ages. The first represents childhood, and a phase of dependence on others; the second, a more mature person, taking on increasing responsibilities, and showing greater independence; and the third age, or older adulthood, as characterised by increasing freedom from the responsibilities of both work and family (Laslett, 1987, 1996). This theory reflects increases in life expectancy, and subsequent increases in the amount of time an individual may spend in retirement since the initial inception and implementation of retirement (Laslett, 1996). It also highlights an increasing uncertainty over the divide between “middle” and “old” age as each cohort of older people are seen to live longer (Featherstone & Hepworth, 1991). Latterly, and in recognition of the increasing prevalence of health problems, and physical decline observed among the very old, Laslett (1996) proposed the concept of the fourth age. This stage of life is typified by increasing dependence, frailty, and extreme vulnerability (Gilleard & Higgs, 2005; Laslett, 1996). It is perceived to be a relatively short phase and period of time at the very end of life,

representing a terminal drop in levels of health and wellbeing, ultimately leading to death (*ibid*).

Viewed through the lens of the Meikirch model, it could be argued that the third and fourth ages reflect the fluctuating levels of biologically given, and personally acquired potentials outlined above, which typify the ageing process. The third age is characterised by a continuing increase in personally acquired potentials, such that the declines in biologically given potential are mitigated, and the individual remains healthy and engaged with society. Continued social participation facilitates the promotion and maintenance of personally acquired potential. It could be argued that this period of continued activity and engagement reflects the now prolonged retirement transition, whereby older adults may take on caring responsibilities, or engage in new leisure activities. Indeed, in recent times, retirement has been characterised as a "normative third age of the life course" (Robinson et al., 2011, p239). It could be argued that, using the Meikirch model as a lens, the fourth age begins when the two combined potentials are no longer sufficient to sustain health. Through declining health, the individual engages less and less with their social network, which allows for the individual's personally acquired potentials to dwindle. It is proposed that that this, fourth age, is more representative of the Disengagement approach to ageing, whereby the individual withdraws from society as their health begins to decline (Cummings & Henry, 1961). The fourth age could therefore be characterised by significant declines in both biologically given and personally acquired potentials to such an extent that the individual is no longer able to maintain their health wellbeing (Bircher & Kuruvilla, 2014).

Regardless of individual perceptions and expectations, there is little doubt that retirement represents a significant period of transition in the life course, marking a dramatic shift from what is now perceived to be the second to third age of the life course (Laslett, 1987, 1996; Robinson et al., 2011). In many cases, retirement also precipitates the loss of a significant, work-based social network, and associated

identity (Froidevaux et al., 2018). It could be asserted that these losses, combined with the differing retirement transition pathways, and fluctuations in biologically given and personally acquired potentials may very well influence individual responses to loneliness in later life, along with the associated health outcomes, which are outlined below.

This section has considered the influence of retirement both in general, and as a gendered concept, on the individual processes of ageing. It is proposed that the differing perceptions and expectations of the transition from work into retirement may represent an influential factor over the relationship between loneliness and health in retired older adults. Within the context of this research, these differences may also impact individual health outcomes associated with loneliness. The remainder of this chapter will discuss and critique the concept of loneliness, and its association with poorer health outcomes.

2.4 Loneliness

The initial intention of this research project had been to consider the influence of social isolation on individuals' health. However, research has indicated that it is loneliness, rather than isolation which is responsible for poor health outcomes (Cacioppo, Fowler, & Christakis, 2009; National Institute for Health Research, 2020; Sugisawa, Liang, & Liu, 1994). Isolation is frequently confused with loneliness, even though much research has established that social isolation and loneliness represent two, very distinct concepts. The following section will review and critique the concept of social isolation, and explore the relationship between isolation and loneliness, to better understand how the two states may be associated. For the same reason, solitude will also be briefly discussed and critiqued, before presenting a detailed review of the concept of loneliness.

2.4.1 Definition and importance

2.4.1.1 **Social isolation**

Social isolation is a poorly defined term (Nicholson, 2009), first used by Berkman and Syme in 1979. Since its first appearance, many attempts have been made to clarify its definition. These definitions include concepts such as lack of social contact (Coyle & Dugan, 2012; Havens, Hall, Sylvestre, & Jivan, 2004; Steptoe, Shankar, Demakakos, & Wardle, 2013), minimal interaction with a social network (Berkman & Syme, 1979; Fleury, Keller, & Murdaugh, 2000; Windle, Francis, & Coomber, 2011), and lack of social involvement (Barry, 1998; Howat, Iredell, Grenade, Nedwetzky, & Collins, 2004; Peplau & Perlman, 1982). One factor all the definitions have in common, is their objective nature, suggesting that isolation is simply a state, which one may choose to enter[5] (Coyle & Dugan, 2012; Peplau & Perlman, 1982; Wenger, Davies, Shahtahmasebi, & Scott, 1996). This element of choice allows for the possibility that some may prefer isolation over social contact. Furthermore, if one considers the impact of isolation on health as discussed above, it could be argued that, if an individual prefers to be isolated, then this state may actually confer benefits to their health (Diener, Pressman, Hunter, & Delgadillo-Chase, 2017; Howell, Kern, & Lyubomirsky, 2007; Steptoe, Deaton, & Stone, 2015). For the purpose of this work, social isolation is defined as non-participation in society (Barry, 1998). This definition has been selected because it provides no judgement in terms of whether social isolation is a positive or negative phenomenon with regards to health. It also allows for the notion that some individuals may choose to be isolated.

2.4.1.2 **Solitude**

One further concept requiring consideration before exploring loneliness is solitude. Like social isolation, this term is frequently confused with, but is distinct from

[5] While an individual may experience enforced, or involuntary, social isolation, it could be argued that it is the perception of, and response to social isolation, rather than the objective state itself which is responsible for any associated health consequences.

loneliness, although it may be considered to describe a different aspect of the same phenomenon. Solitude has been referred to as a chosen state of being alone (Tillich, 1963), and is often considered to be a positive state. The relationship between loneliness and solitude may be represented as follows:

> *Loneliness expresses the pain of being alone. Solitude expresses the glory of being alone. (Tillich, 1963, p5)*

2.4.1.3 **Loneliness**

Of the three domains, loneliness has been nominated as the main variable of investigation within this research due to its clear concern to the public health community (Berg-Weger & Morley, 2020; Martin-Maria et al., 2021; Victor, 2020). This concern with loneliness was highlighted in 2018 by the then Prime Minister, Theresa May, as she launched the first cross-Government strategy to tackle it (Department for Digital Culture Media and Sport, 2018). Furthermore, many have suggested that loneliness is a much clearer predictor of ill health than social isolation (Cacioppo et al., 2009; National Institute for Health Research, 2020; Sugisawa et al., 1994), and have referred to it as a silent killer (Hawkley & Cacioppo, 2003; Leigh-Hunt et al., 2017; Wang et al., 2019). In terms of primary care use, it has been reported that every GP will see one to five lonely people every day, and that a tenth of all patients attend the GP mainly because they are lonely (Campaign to End Loneliness, 2013; While, 2017).

The definition of loneliness adopted throughout this study is that loneliness is *the perceived discrepancy between desired and realised social interactions* (Peplau & Perlman, 1982). This definition has been selected, as it is routinely used by organisations, such as Age UK, and the Campaign to End Loneliness. It is also the definition adopted within the government strategy. However, several definitions have been suggested. Alternative definitions include notions such as the lack of close relationships (Hsu, 2020; Kitzmuller, Clancy, Vaismoradi, Wegener, & Bondas,

2018; Weiss, 1973), a feeling of not being needed (Ozawa-de Silva & Parsons, 2020), and the feeling of being "trapped in an empty waiting room" (Kitzmuller et al., 2018, pp.213). While this list is by no means exhaustive, one factor in common with many definitions is perception (De Jong Gierveld, Van Tilburg, & Dykstra, 2018; Ozawa-de Silva, 2020; Peplau & Perlman, 1982). Indeed, it is this element of subjectivity that sets loneliness apart from the similar, yet distinct, concept of social isolation (Freak-Poli, Hu, Phyo, & Barker, 2021; Stokes & Barooah, 2021; Yanguas, Pinazo-Henandis, & Tarazona-Santabalbina, 2018) which, as noted above, represents an objective state (Barry, 1998; LaVeist, Sellers, Brown, & Nickerson, 1997; Swader, 2019).

This section has provided clarity regarding the definition of loneliness which, along with health, represents a fundamental concept within this study of the mechanisms underlying the relationship between loneliness and health. The chosen definitions have also been employed to determine the selection of both the quantitative and qualitative tools employed within this study (see Chapter 4). Consideration has also been given to the distinct states of social isolation and solitude, which are often confused with loneliness.

2.4.2 Subtypes of loneliness

It has been suggested that there are several distinct types of loneliness (DiTommaso & Spinner, 1997; Tragantzopoulou & Giannouli, 2021; Weiss, 1973, 1974). While several attempts have been made to identify and distinguish between the different types of loneliness, common consensus identifies two distinct forms of loneliness: emotional and social (Burholt et al., 2017; Macdonald, Nixon, & Deacon, 2018; Yanguas et al., 2018). The former is believed to result from the lack of a close attachment relationship (Coleman, 1994; Kitzmuller et al., 2018; Russell, Cutrona, Rose, & Yurko, 1984), and may relate to romantic or familial attachments (DiTommaso & Spinner, 1997). The latter results from the lack of an engaging social

network (Cohen, 2002; Holt-Lunstad, 2017; Tragantzopoulou & Giannouli, 2021). This is a key distinction to make, as it is thought that different types of relationship tend to serve different functions for individual health and wellbeing (Dahlberg & McKee, 2014; Dykstra & Fokkema, 2007). Furthermore, Weiss stated that, although no single relationship can reliably satisfy all an individual's needs, an intimate relationship may be able to satisfy multiple requirements (Weiss, 1973, 1974), suggesting that the two forms of loneliness operate in different ways, and serve distinct functions.

The distinction between social and emotional loneliness has been supported by quantitative work, which demonstrated that the two forms of loneliness only share around 20% of their variance in terms of consequences and causal factors (Dahlberg & McKee, 2014). This indicates that, while related, the two subtypes of loneliness are distinct from each other. It also supports the notion that, far from being a simple unidimensional concept, loneliness is complex and multifaceted (Parsons, 2020; Rasmussen, 2020; Wang, Leng, Zhao, Fleming, & Brayne, 2020). Beyond the health consequences, which are discussed below, emotional loneliness has been associated with feelings of aloneness, anxiety, and hypervigilance (DiTommaso & Spinner, 1997). In contrast, social loneliness has been linked to boredom, aimlessness, and meaninglessness (DiTommaso & Spinner, 1997). The variation in the consequences of emotional and social loneliness is also apparent in their risk factors (see below), and likely accounts for the variation found between age groups and across cultures in terms of loneliness prevalence (Dykstra, 2009; Ozawa-de Silva & Parsons, 2020; Rokach, 2011). As will be seen below, these two different subtypes of loneliness, both of which are explored within this study, may also provide an explanation for the gender differences which have been reported in prevalence rates for loneliness (§ 2.4.5).

2.4.3 Risk factors for loneliness

It has been argued that, rather than representing a substantial threat to public health, loneliness is simply an inevitable, and culture-specific, aspect of human life (Kitzmuller et al., 2018; Mijuskovic, 1977; Rokach, 2011). Indeed, to quote Ozawa-de Silva & Parsons (2020):

> *Loneliness is a culturally shaped experience that is problematised and medicalised across countries, but it may also be fundamental to the human condition. (p613)*

Much work has been conducted into identifying and understanding the myriad of risk factors thought to be associated both with the overall development of loneliness, and the two subtypes identified above. Factors commonly associated with the development of loneliness include living alone (Grenade & Boldy, 2008; Novak et al., 2020), being unmarried (Hawkley et al., 2005; Holt-Lunstad, 2017), widowhood, or loss of a partner (Dahlberg & McKee, 2014; Parmar et al., 2021), attachment style (Spence, Jacobs, & Bifulco, 2020; Wilkialis et al., 2021), low income (Dahlberg & McKee, 2014; Novak et al., 2020), poor health (Tan et al., 2020; Victor, Scambler, et al., 2005), depression (Novak et al., 2020; Solmi et al., 2020), and early childhood trauma (Gawęda et al., 2020; Struckmeyer, Caldwell, Bishop, & Scheuerman, 2020).

In addition to the risk factors outlined above, Hatfield, Cacioppo, and Rapson (1993) have suggested that the risk of loneliness may be exacerbated by what they referred to as emotional contagion. Put simply, individual loneliness has the potential to both cause and contribute to the loneliness of others (Cacioppo et al., 2009; Hatfield et al., 1993). Additionally, several sources of these risk factors have also been identified. These include peer friendships (Bigelow, 1977; Burholt et al., 2017; Steinberg & Morris, 2001), and romantic relationships (Burholt et al., 2017; Collins, Welsh, & Furman, 2009; Diener, Gohm, Suh, & Oishi, 2000). Other,

sociological factors include the commitment to individualism, and the desire to be liked by others (Kitzmuller et al., 2018; Peplau & Perlman, 1982). Although the individual perceptions of loneliness may change over the life course, most risk factors may influence its development at any age. One notable exception is retirement, which is specific to older adults, and represents a significant transition point within the life course (Morgan, 2018).

What is not evident from the risk factor literature highlighted above, but will become apparent in the next chapter, is that the vast majority of the relationships between loneliness and its precursors are bidirectional, with many of the risk factors also thought to be outcomes of loneliness (Christiansen, Larsen, & Lasgaard, 2016; Cohen-Mansfield, Shmotkin, & Goldberg, 2009; Holwerda et al., 2012). However, the mechanisms through which these relationships operate may vary across the life course (Christiansen et al., 2016; Hawkley & Cacioppo, 2007). One of the most cited reciprocal relationships is that between loneliness and depression (Domenech-Abella et al., 2021; Parmar et al., 2021; Van Zutphen et al., 2021), however, similar relationships have been noted between loneliness and anxiety (Anderson & Harvey, 1988; Solmi et al., 2020), pain (Loeffler & Steptoe, 2021; Yu, Steptoe, Chen, & Jia, 2021), and hostility (Loeffler & Steptoe, 2021; Segel-Karpas & Ayalon, 2020; Yu et al., 2021). Furthermore, it has been suggested that, through some of these reciprocal interactions, loneliness may be a self-perpetuating state (Cacioppo, Grippo, London, Goossens, & Cacioppo, 2015; Duck, Pond, & Leatham, 1994; Shankar, McMunn, Demakakos, Hamer, & Steptoe, 2017), with both loneliness and its risk factors serving to exacerbate each other's impact.

One risk factor which, perhaps by its nature, serves only as a risk factor, and not a consequence of loneliness, is attachment style (Feeney, 2000; Spence et al., 2020; Wilkialis et al., 2021). Attachment rests on the notion that, to enable healthy emotional and social development, all children need to form some kind of relationship with their primary caregiver (Bowlby, 1973, 1998). Good, or healthy,

attachment depends on the maintenance of a balance between closeness to their attachment figure, or proximity seeking, and independence, or exploratory behaviours (Bowlby, 1969, 1973, 1998; Feeney, 2000). As already noted with loneliness, there is a consensus that, once formed, attachment styles are relatively stable over the life course (Bowlby, 1973; Kirkpatrick & Hazan, 1994; Scharfe & Bartholomew, 1994). However, some have suggested that, as they age, individuals tend to move towards a more avoidant, or dismissive, attachment style (Diehl, Elnick, Bourbeau, & Labouvie-Vief, 1998; Spence et al., 2020; Zhang & Labouvie-Vief, 2004). These types of attachment style are typified by the denial, or suppression of distress, excess vigilance, and the tendency to perceive events negatively (Spence et al., 2020; Watson & Pennebaker, 1989; Zhang & Labouvie-Vief, 2004). This shift occurs in response to the loss of attachment figures and declining abilities, and reflects the emphasis the individual chooses to place on independence and self-reliance, in favour of interdependence (Coyle & Dugan, 2012; Spence et al., 2020; Zhang & Labouvie-Vief, 2004). This may be problematic since those displaying avoidant attachment behaviours have been found to be more vulnerable to becoming lonely (Spence et al., 2020; Zhang & Labouvie-Vief, 2004). The avoidant attachment style has also been linked to an increased risk of developing mental health problems (Spence et al., 2020; Zhang & Labouvie-Vief, 2004). Furthermore, avoidant individuals are more likely to reject social support, despite their increasing need, thereby exacerbating their health problems (Cacioppo et al., 2010; Coyle & Dugan, 2012)

In addition to being a risk factor for loneliness, attachment style has also been linked directly to poorer health outcomes. For example, those who display an avoidant attachment style are less likely to visit a doctor or health professional in the event of illness, because they have learned not to seek help or support (Feeney, 2000). Attachment style has also been associated with levels of peer support (Spence et al., 2020), and social network styles in later life (Gillath, Karantzas, & Lee,

2019; Wilkialis et al., 2021). This is evidenced through the finding that negative events and trauma during childhood can be linked to negative outcomes in later life (Gawęda et al., 2020; Struckmeyer et al., 2020; Wilkialis et al., 2021), and that early childhood connections may hold a significant influence over later life responses to loss (Wilkialis et al., 2021; Young, Simpson, Griskevicius, Huelsnitz, & Fleck, 2019). Moreover, the consideration of attachment style also reinforces the decision to adopt a life course approach within this study, as attachment style may likely influence individual responses to loneliness in later life.

This section has debated the various risk factors which have been associated with loneliness, and how they may influence the relationship between loneliness and poor health outcomes. Of these factors, childhood attachment, along with the experience of adversity have been influential in the decision to adopt a life course approach within this research, and the employment of an unstructured, narrative-style interview within the qualitative phase (§ 4.7).

2.4.4 Loneliness over the life course

Loneliness has (stereo)typically been viewed as a social issue most abundant among the older population (Burholt et al., 2017; Qualter et al., 2015; Victor et al., 2022), and there has been research to support this (Ayalon & Shiovitz-Ezea, 2011; Yu et al., 2020), particularly in those aged 80 years and over (Brandts et al., 2021; Dykstra et al., 2005; Pinquart & Sorensen, 2001), or entering into their fourth age (Laslett, 1987, 1996). However, there is a growing body of research which indicates that loneliness may be experienced at any stage of the life course (Dixon, 2020; Surkalim et al., 2022; Victor et al., 2022). Furthermore, research has demonstrated that, with the exception of people over 80 years, the prevalence of loneliness declines with advancing age (Baretto et al., 2021; Pyle & Evans, 2018), due to a reduction in desired levels of social contact, and the increased quality of remaining social contacts (Carstensen, 2006; Parmar et al., 2021; Victor et al., 2022). Recent

research has also highlighted a bimodal distribution of loneliness prevalence, with the highest levels noted in individuals aged 16 to 24 years, as well as those aged 65 years and older (Hawkley et al., 2020; Surkalim et al, 2022; Victor et al., 2022).

This U-shaped distribution was highlighted within the UK, using data gathered in 2018 as part of the "Loneliness Experiment". The Loneliness Experiment was a collaborative project between the British Broadcasting Corporation, The Wellcome Collection, and the Universities of Exeter, Manchester, and Brunel, which surveyed almost 55,000 self-selecting volunteers aged 16 years and over (Parmar et al., 2021; Qualter et al., 2018). Of the sample population, 31% of individuals claimed to be often, or very often, lonely. However, 42% claimed to be rarely, or never, lonely (Qualter et al., 2018). When the data were analysed by age cohort, the results supported the above assertion that loneliness decreases with advancing age and is most common among those aged 16 to 24 years (40%). Loneliness was reported by 29% of 65- to 74-year-olds, and was least prevalent among those aged 75 years and older (27%; Qualter et al., 2018). This finding was reinforced through the consideration of data generated by a subgroup of older participants. Of the 55,000 participants in the Loneliness Experiment, a subgroup of 6,970 individuals aged 65 years and older were asked to state at which stage of their lives they had felt most lonely – childhood (5 – 14 years); young adulthood (15 – 24 years); adulthood (25 – 44 years); mid-life (45 – 65 years); older adulthood (Over 65 years) – with young adulthood clearly noted as the most lonely stage (Victor et al., 2022). It is not clear if these figures represent the true state of affairs, or reflect the stigma associated by those from older age groups, with the admission of loneliness (Alberti, 2019; Novak et al., 2020; Shiovitz-Ezra & Ayalon, 2012). These findings may also reflect the self-selecting nature of the sample group, and the greater willingness of younger cohorts to discuss matters pertaining their emotional health and wellbeing (Alberti, 2019; Novak et al., 2020; Shiovitz-Ezra & Ayalon, 2012).

The bimodal distribution of loneliness prevalence over the life course has also been reported by Surkalim and his colleagues in their systematic review and meta-analysis of data from 113 countries (Surkalim et al., 2022). They reported that, although loneliness prevalence was not homogenous across the 113 countries they reviewed data from, there was a clear and consistent pattern observed within European countries. Across all four of the life stages, the prevalence of loneliness was found to be highest in Eastern Europe, and lowest in Northern Europe, but in all cases, loneliness was most rife among those classified as adolescents (12 – 17 years; 9.2 – 14.4% and dropped during adulthood (18 – 29 years; 1.8 – 5.4%), and middle age (30 – 59 years; 2.4 – 3.0%). Among the pooled cohort of older adults (60 years and older), the prevalence of loneliness was observed to begin increasing again (4.2 – 6.5%). The variation in loneliness prevalence was theorised to result from differing levels of overall health and health outcomes, educational attainment, and the provision of state welfare and health care services (Fokkema et al., 2012; Pinquart & Sorensen, 2001; Surkalim et al., 2022).

Research, based on data gathered as part of the English Longitudinal Study of Ageing, has indicated that, regardless of life stage and prevalence, severe loneliness may represent a stable and enduring trait over the life course (Grenade & Boldy, 2008; Steed, Boldy, Grenade, & Iredell, 2007; Victor, Scambler, et al., 2005). This suggestion shows synergy with the prior assertions that loneliness is an inevitable human condition, which lies at the heart of any life experience (De Jong Gierveld & Van Tilburg, 2006; Moustakas, 1961; Rokach, 2011). However, what makes the prevalence of loneliness of significant relevance to health care provision, and in broader societal terms, is that the cost of loneliness, to health and social care, over a 15-year period, has been estimated to be around £12,000 for each lonely individual (Mihalopoulos et al., 2019; Parmar et al., 2021). Perhaps unsurprisingly, this has driven a move to consider preventive, rather than interventional approaches, with more researchers taking a life course approach to loneliness

research, in a drive to identify early life predictive factors for loneliness in later life (Kamiya et al., 2014; Nicolaisen & Thorsen, 2014; Victor et al., 2022). The aim of these preventive approaches is to reduce the costs required to address the poor health outcomes associated with loneliness.

Through their analysis of data taken from the first wave of the Irish Longitudinal Study of ageing (TILDA), Kamiya and her colleagues sought to identify specific factors from childhood, which may directly influence the likelihood of loneliness in later life (Kamiya et al., 2014). Their analysis highlighted that individuals who had experienced poor socioeconomic status during childhood were more likely to experience loneliness in later life. They also observed that male participants who had experienced parental substance abuse were also more likely to become lonely in later life (*ibid*). Further research has also suggested that the likelihood of becoming lonely in old age is positively correlated with the number of previous experiences of loneliness, suggesting that there may be a dose-response relationship between experience of loneliness and adversity, and prevalence of loneliness in old age (Victor, 2022).

These findings from life course studies of loneliness support the notion that events occurring in childhood may influence both social mobility and social capital during later life (Deary et al., 2005; Kamiya et al., 2014; Victor et al., 2022). It was suggested that this may be due to adverse events and circumstances during the critical periods (§ 2.3) stunting the development of skills necessary for the formation and maintenance of relationships (Deary et al., 2005; Kamiya et al., 2014). Using the language of the Meikirch model, one could assert that the experience of adversity during childhood may inhibit the successful development of an individual's personally acquired potential. Furthermore, depending on the nature of the adverse circumstances, it could be argued adversity may hasten the demise of an individual's biologically given potential. Taken together, the diminished potential available to the individual may leave them unable to form

meaningful relationships, or to cope with loneliness in later life. However, it should be noted that, by its nature, much life course research relies on the retrospective accounts of childhood, and that recall may be compromised through both ill health and advancing years (Looker, 1989).

The prevalence of loneliness over the life course has been reviewed within this section, with the greatest levels reported in adolescents and younger adults. Evidence has also been presented to support the relevance of childhood adversity and the importance of adopting a life course approach within this study.

2.4.5 Loneliness and gender

In addition to fluctuating patterns of loneliness throughout the life course, and as a consequence of childhood adversity, differences in the prevalence of loneliness may also be subject to the influence of gender or ethnicity. There is currently no clear consensus regarding any gender differences in the incidence, prevalence, or consequences of loneliness (Holt-Lunstad et al., 2010; Losada et al., 2012; Umberson & Montez, 2010). However, it is worth considering that, because of the gender-specific socialisation of men and women (Chodorow, 1979; De Jong Gierveld et al., 2006), the two genders may experience loneliness differently. This may be due to the differing values men and women give to different types of relationship (Chodorow, 1979; De Jong Gierveld et al., 2006). To illustrate, according to this reasoning, while women have more complex affective and relational needs, men tend to be more emotionally dependent and, consequently, are drawn to less demanding relationships, choosing to rely on partners for social contact and support (Chodorow, 1979; De Jong Gierveld et al., 2006). Pinquart and Sörensen lend support to this notion, with their finding that women tend to report significantly higher levels of loneliness than men (De Jong Gierveld et al., 2006; Pinquart & Sörensen, 2001). These differences may be a consequence of the gender differences in life expectancy, which result in a greater likelihood of women

living alone in later life (Surikalim et al., 2022). However, this finding is likely confounded by the assertion that women are generally more willing to recognise and admit to their loneliness than men (Borys & Perlman, 1985; Pagan, 2020). Furthermore, men show greater reluctance to report loneliness (De Jong Gierveld et al., 2006), possibly due to the stigma attached to such an admission (De Jong Gierveld et al., 2006; Lau & Gruenan). In contrast, there has also been research indicating higher prevalence rates of loneliness in men (Maes et al., 2015; Nicolaisen & Thorsen, 2014; Pagan, 2020). One proposed explanation for this is that women tend to have more close friends and social contacts (Berstad, 2004; Losenthall & Haven, 1968), and that women often live in a more protected family environment that their male counterparts (Maes et al., 2019; Musetti et al., 2012).

In terms of patterns of loneliness over the life course, these tend to follow the same trend for both men and women, with the largest gender differences noted in young adults (Maes et al., 2019). However, these trends in loneliness prevalence are subject to change when degree of disability or sexuality are considered (Lam & Campbell, 2023a, 2023b; Pagan, 2020). Whereas the trend of declining loneliness prevails in disabled men, disabled women are more likely to experience an increase in levels of loneliness as they age (Pagan, 2020). This may be due to women having greater care requirements than men in later life (*ibid*). Also, their longer life expectancy will likely increase their likelihood of experiencing chronic illness, disability, and functional limitations (Pinquart & Sorensen, 2001). Increasing prevalence of loneliness throughout the ageing process is also more likely to occur in bisexual, than homosexual or heterosexual men and women (Lam & Campbell, 2023a, 2023b). The influence of mediating factors such as disability and sexuality may be a likely cause of the inconsistency of findings from gender-based research on loneliness prevalence.

This section has considered gender differences in the prevalence of loneliness, along with the impact of both disability and sexuality on these gendered patterns of

loneliness prevalence. While sexuality and disability have not been considered within this study, the ambiguous findings regarding gender differences have driven the sampling processes adopted for the qualitative phase of this work (§ 4.7.1).

2.4.6 Loneliness and ethnicity

Levels of loneliness may also be influenced by cultural and ethnic differences, likely due to culturally differing relationship expectations. Living in a foreign country, or within a different culture, may impact upon the individual's relationship expectations, and leave them more vulnerable to loneliness than those living in their native country and culture (Lykes & Kemmelmaer, 2014; Van Staden & Coetzoe, 2010). In their study of 1206 participants, aged 40 years and older, from six minority ethnic groups (Black Caribbean, Black African, Indian, Pakistani, Bangladeshi, Chinese), Victor and her colleagues (2012) found the lowest levels of loneliness in the Indian participants, and these were comparable to those found within Britain (5%). However, Chinese participants were found to be the loneliest of all the ethnic minority groups (15%). Further research, employing data from the BBC Loneliness Experiment (§ 2.4.4), explored the differences between a sample of 2164 migrant and non-migrant individuals aged 55 years and older (Pan et al., 2023). This analysis included data from 1084 non-migrants, 2039 migrants from a different culture, and 84 migrants from a similar culture. Among all three groups they found statistically similar mean (UCLA) loneliness scores (2.6 – 2.7), and no significant differences were observed regarding gender or self-perceived health (Pan et al., 2023).

This section presents a brief consideration of the impact of ethnicity on the prevalence of loneliness, however; it should be noted that, with the exception of one, all of the participants within this study were of white ethnic origin. This will be further discussed within Chapter 7.

2.4.7 Health consequences of loneliness

From a health and social care perspective, one key indicator of the significance of any factor on individual, and public health, is the level of health service utilisation linked to that factor. It is estimated that, on an annual basis, around 20% of all UK public spending goes towards the health and welfare of the population[6]. As a contributing factor, loneliness has been tied to increases in overall use of healthcare services (Freak-Poli et al., 2021; Martin-Maria et al., 2021; Parmar et al., 2021), increased incidence of hospital admissions and more frequent readmissions (Bu, Philip, & Fancourt, 2020; Freak-Poli et al., 2021; Heidari, Borujeni, Rezaei, Abyaneh, & Heidari, 2020; Parmar et al., 2021), and longer overall hospital stays (Freak-Poli et al., 2021; Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016). These factors serve to justify the concern of public health specialists with loneliness as a determinant of health, and emphasise the need to understand which factors exacerbate the effects of loneliness on health, and which serve to protect the individual from these effects.

Within the specific context of an ageing population, although the prevalence of loneliness decreases throughout life in all except those aged over 80, as a determinant of health, loneliness has been significantly linked to several predominantly geriatric conditions (Yu et al., 2020), or as Bernard Isaacs classed them, the *geriatric giants* (Gine-Garriga et al., 2021; Isaacs, 1965; Morley, 2017). Perhaps most pertinent of these in terms of health service use, are falls (Zeytinoglu et al., 2021), frailty (Jarach, Tettamanti, Nobili, & D'Avanzo, 2021), cognitive decline (Wilson et al., 2007), and pain (Gine-Garriga et al., 2021; Morley, 2017). Other health conditions also found to be significantly more prevalent among lonely older adults include cardiovascular disease (Freak-Poli et al., 2021; Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Valtorta, Kanaan, Gilbody, & Hanratty, 2018), functional limitations (Luo et al., 2012; Warner & Kelley-Moore, 2012), depression (De la Torre-Luque et al., 2021; Parmar et al., 2021), poor sleep (Cacioppo et al.,

[6] https://obr.uk/forecasts-in-depth/brief-guides-and-explainers/public-finances/

2002; McLay et al., 2021), and premature mortality (Holt-Lunstad et al., 2010; Luo et al., 2012; Patterson & Veenstra, 2010; Tragantzopoulou & Giannouli, 2021). The increase in rates of premature mortality is key to consider for all healthcare providers, as end of life care is estimated to cost the National Health Service an additional £7,450 per patient, including planned and unplanned care, outpatient, primary, and social care (Jayatunga et al., 2019). When it comes to end-of-life care, lonely patients are more likely to die within a care facility, are less able to engage in advanced care planning, and more likely to die at a younger age (Abedini, Choi, Wei, Langa, & Chopra, 2020). In addition to further reinforcing the public health interest in loneliness, these factors also lend credence to the specific attention paid to the older population when considering loneliness as a health outcome. These factors also serve to reinforce the decision to focus on retired older adults within this study. This is particularly due to the impact of loneliness on the *geriatric giants* (see above), and the soaring costs associated with health and social care at the end of life.

2.5 Chapter summary

This chapter has considered the key concepts which lie at the heart of this research: health and loneliness. The first section focused on health and wellbeing, with particular attention paid to the changing nature of health over the life course. This was discussed within the context of the Meikirch model of health and wellbeing, which allows for the consideration of sociological, as well as biological, influences on overall health, and has the potential to provide a theoretical framework to underpin this study. The second section addressed the nature and definition of loneliness and its related concepts, with distinction drawn between loneliness and solitude and social isolation and the relationship between them discussed. Risk factors for the development of loneliness were also debated, as was the bidirectional, and self-perpetuating, nature of their association. Both sections served to highlight that neither health, nor loneliness are simple, unchanging

concepts. This suggested that, in addition to exploring the mechanisms underlying the relationship between loneliness and health, the actual relationship itself warrants investigation, with particular attention paid to its changing nature over the life course.

Having explored the key concepts at the heart of this research, the next chapter seeks to understand the processes through which loneliness may impact on individual health and wellbeing, and what factors may serve to aggravate, or mitigate against, the detrimental effects of loneliness.

Chapter 3. Understanding the mechanisms linking loneliness and health

3.1 Introduction

This chapter aims to develop an understanding of the mechanisms underlying the relationship between loneliness and health over the life course, with specific focus placed upon which factors may exacerbate or mitigate the detrimental influence of loneliness on health outcomes in retired older adults. While substantial research has, as outlined in the preceding chapter, been conducted to investigate, and understand the various risk factors and health implications associated with loneliness in retired older adults, the discourse pertaining to the mechanisms underlying the association between loneliness and health and wellbeing is considerably less extensive. Identification and critique of the available literature within this field is essential to both identifying and addressing the overarching questions. This chapter presents a structured search of the academic literature, combined with a *state-of-the-art* review of the identified literature to determine the potential mechanisms underlying the association between loneliness and health. This chapter presents a framework which drives the methods and analytical aspects of this research, as well as offering an understanding of how the impact of loneliness on health and wellbeing may change over the life course. This framework, and associated mechanisms, are then considered within the context of the Meikirch model of health and wellbeing, to further illustrate the relevance of this framework that underpins this study.

3.2 State-of-the-art review

Rather than representing a single process, this approach combines a literature search, with a state-of-the-art review of the literature identified through the search (Grant & Booth, 2009; Sutton, Clowes, Preston, & Booth, 2019). Belonging to the

traditional review family (Sutton et al., 2019), this review type is similar to the typical literature, or narrative review (Grant & Booth, 2009; Sutton et al., 2019). In contrast to a standard literature review, the state-of-the-art reviews:

> *Tend to address more current matters in contrast to other combined retrospective and current approaches. [and] may offer new perspectives on [the] issue or point out area for further research (Grant & Booth, 2009, p95)*

The state-of-the-art review also allows for the inclusion of previous reviews. This type of review is advantageous in identifying gaps in current research and allows the reader to maximise both their time, and coverage of the topic of interest, in this case loneliness and health (Grant & Booth, 2009). However, this approach is not without its drawbacks. The cross-sectional approach adopted within the state-of-the-art review offer more of a snapshot of the research, rather than a consideration of its evolution and development. This type of review also requires no in-depth consideration of the methodological issues and risk of bias apparent within each included study. Furthermore, papers and reviews written by topic experts, may bias the overall picture gleaned through a state-of-the art-review, where they are written from an individual point of view (*ibid*).

It was considered that the combination of a structured search with a state-of-the-art review maximises the likelihood of identifying all literature relevant to the topic under investigation and allows for the inclusion of all study types. This type of review also emphasises the specific contribution of each study to support a critical evaluation of the conceptualisation or, in this case, the mechanisms that could be argued to potentially link loneliness to poor health outcomes. However, although the critical aspect of the review allows for the evaluation of which previous information may, or may not, be relevant or useful, it tends not to display the systematicity typically associated with other approaches, such as the traditional

systematic review typified by those of the Cochrane Collaboration (Grant & Booth, 2009; Sutton et al., 2019). Despite these differences, this approach still has value, in its flexibility and pragmatism regarding the choice of papers to include, with no restriction placed on the type of papers and studies included.

3.3 Search strategy

Initial searches were conducted in November 2015 and updated in April 2021. With the support of a specialist health library information scientist, a search strategy was developed, and multiple databases were explored in a systematic way. Embase, Medline, and PubMed were used to access biomedical and scientific papers, CINAHL to identify papers within the fields of nursing and allied health professionals, and Scopus to search through papers relating to the social, physical, health, and life sciences. The database of resources at the Social Care Institute for Excellence was also utilised. Citation chaining, which involved searching backwards and forwards for papers that are cited by, and cite papers already identified. Online alerts and recommendation were also used. As is typical with a state-of-the-art review, the search has been kept relatively broad, to ensure all relevant papers are identified. The full search strategy, along with the list of databases utilised, and an outline of the inclusion and exclusion criteria are delineated in table 3-1.

3.4 Inclusion/exclusion criteria - rationale

All empirical studies, theoretical papers and reviews investigating the specific mechanisms underlying the relationship between loneliness and health and wellbeing were included, and all methodologies were considered. Studies considering interventions aimed at treating or alleviating loneliness were excluded, as these were considered to lie beyond the remit of this work, which seeks to understand why loneliness may prove detrimental to some, but not all, retired older adults. The age selected to define the sample population was 65 years and above.

This age was chosen because, although state retirement age within the UK has been rising over recent years, 65 is the age at which all members of the study cohort will have become eligible to retire and claim their state pension. Retirement has been identified as a key transition point in the life course, representing the beginning of significant changes, both in individual, and social terms (Banks, Breeze, Lessof, & Nazroo, 2006; Gine-Garriga et al., 2021; Palmore, Fillenbaum, & George, 1984). However, retirement, or its derivatives, was not employed as a search term in order to ensure broad coverage of all papers considering loneliness in older adults. Also, papers considering other adult age groups were included where relevant, as befits a life course approach (§ 2.3.1), which seeks to explore the influence of events occurring early in the life course, over outcomes in later life (Elder & Shanahan, 2006; Jacob, 2017; Nurius et al., 2015). Inclusion was restricted to papers published in the English language, due to lack of resources for translation of papers from other languages. No date restrictions were placed on either the initial, or the updated search.

While the initial intention had been to focus solely on community-dwelling adults and, as such, exclude papers considering institutionalised individuals, the initial search highlighted a paper describing social breakdown syndrome, and how it offers a potential explanation for the association between loneliness and health. Further papers, identified through citation chaining, revealed that social breakdown syndrome was initially studied among populations of young adults residing within mental health facilities. Taking a pragmatic approach, these papers were included to assist in understanding and clarifying the nature of this syndrome.

Papers were excluded if they considered loneliness within the context of any specific long-term, life-limiting, or potentially life-threatening illness. This was because it was considered that the presence of such a condition would serve as a confounding factor in the loneliness-health discourse (Burholt & Scharf, 2014; Tan et al., 2020; Victor, Scambler, et al., 2005), and this was certainly the case within the

context of the coronavirus pandemic, as will be seen within the discussion. Papers investigating loneliness during the coronavirus pandemic were also excluded, first on the basis that the fieldwork phase of this research was conducted, and concluded, prior to the first reports of the global pandemic, and second, because it was thought that the loneliness experienced by individuals either with, or isolated by, the coronavirus was distinct from that under investigation at the initiation of this study. One such distinction was highlighted by (Ozawa-de Silva & Parsons, 2020) in their reference to loneliness as a "culturally shaped experience" (pp613).

In total, 16,228 papers were identified, 15,479 through database searches, the remaining through citation chaining and recommendation. Of these papers, 7,394 were duplicates, 7,021 were irrelevant, and 1,697 were excluded based on the criteria outlined above and in table 3-1. This left 116 papers for consideration, of which 45 identified and/or discussed the mechanisms, or processes, through which loneliness may cause poor health outcomes in retired older adults. These 45 papers are included within this review. Eight of the included papers considered more than one of the mechanisms. Despite the varying study types and sample populations, all the included papers defined loneliness in a similar fashion to that adopted in this study (§ 2.4.1.3). Full reference flow is outlined in figure 3-1, and a summary of all the included papers, including a summary of methods, the mechanisms discussed, and the country in which studies were conducted, may be found in appendix 1.

Table 3-1: Search details

Search date – 21st April 2021	
Strategy:	**Sources:**
1. social isolation/ or loneliness.mp. or loneliness/	CINAHL
2. social* isolat* perce*.mp. [7]	Embase
3. "social exclusion".mp. or social exclusion/	Medline
4. 1 or 2 or 3	PubMed
5. health.mp. or mental health/ or health/	SCIE
6. wellbeing/ or wellbeing.mp.	Scopus
7. well being.mp.	Recommendations
8. 5 or 6 or 7	Citation chaining
9. 4 and 8	
10. old*.mp.	
11. senior.mp.	
12. elder*.mp.	
13. 10 or 11 or 12	
14. 9 and 13	
Inclusion criteria:	**Exclusion criteria:**
All studies investigating the relationship between loneliness and health All methodologies considered Participants have mental capacity to consent Studies in English Studies based in westernised countries	Interventional studies Participants lacking capacity to consent Studies focusing on specific health conditions, including Covid-19 Studies not in English Studies conducted in non-westernised countries

[7] Although it has been established that loneliness and social isolation are distinct, albeit related concepts, permutations of the term "perceived social isolation" were included, as this phrase is frequently used as an alternative definition for loneliness (McKenna-Plumley, Groarke, Turner, & Yang, 2020).

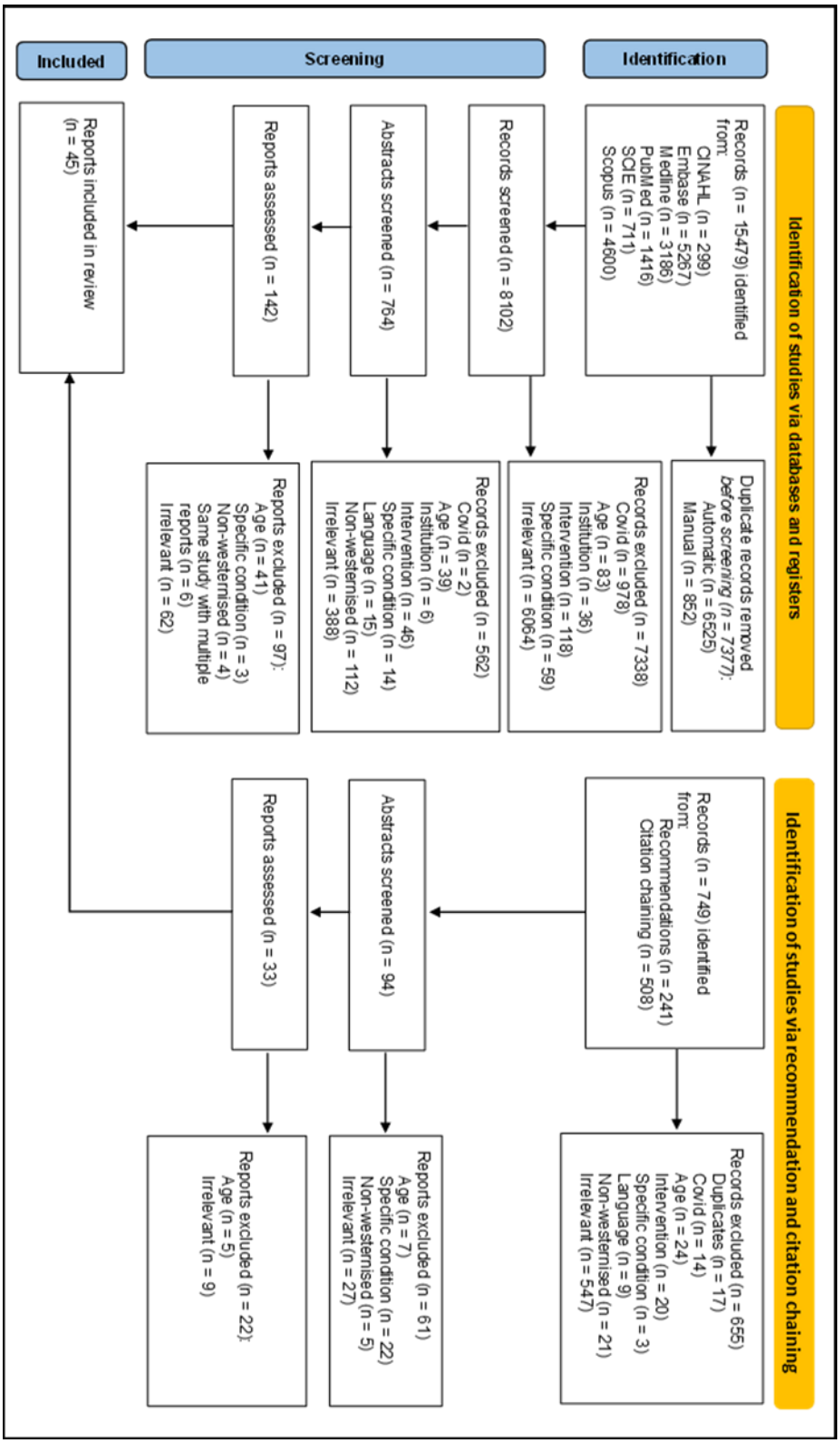


Figure 3-1: PRISMA statement outlining reference flow

3.5 Mechanisms underlying the loneliness-health paradigm

Papers identified in the review highlighted six possible approaches to understanding the relationship between loneliness and health and wellbeing and, more specifically, its underlying mechanisms, or processes through which this relationship operates, and poor health outcomes develop. These are health behaviours, repair and maintenance, the loneliness model, social breakdown syndrome, stress buffering, and socioemotional selectivity. These theories are briefly summarised in table 3-2 but will be covered in depth in sections 3.5.1 to 3.5.5. Due to the overlap within papers of studies considering them, the health behaviours, and repair and maintenance approaches are discussed in the same section. The consideration of these six approaches is followed by a proposal and examination of a novel, overarching framework, which offers a conceptualisation of how these approaches may interact over the life course to either instigate, exacerbate, or mitigate the detrimental effects of loneliness on individual health and wellbeing.

Table 3-2: Models of health and loneliness

Model	Overview	References
Health Behaviours	Health behaviours hold sway over health. Those who are socially engaged, or connected, are exposed to strong normative pressures from, and control by, friends and family to engage in healthy behaviours, and access healthcare when required. Conversely, those who are lonely are exposed to weaker pressures and control from friends and loved ones to engage in healthy behaviours. Consequently, these lonely individuals become more vulnerable to deteriorations in their health	(Berkman, Glass, Brissette, & Seeman, 2000; Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Christiansen et al., 2016; Hawkley & Cacioppo, 2003, 2010; Heinrich & Gullone, 2006; Lauder et al., 2006; Leigh-Hunt et al., 2017; Litalien, Atari, & Obasi, 2021; Luchetti, Terracciano, et al., 2020; Ong, Uchino, & Wethington, 2016; Segrin & Passalacqua, 2010; Shankar, McMunn, Banks, & Steptoe, 2011; Solmi et al., 2020; Umberson & Montez, 2010; Wootton et al., 2021)
Repair and Maintenance	Loneliness may weaken the biological processes, which serve to maintain physiological functioning, and hasten recovery from stressful events and ill-health. This effect is likely compounded by the adoption of poor health behaviours, and accelerates the natural wear and tear processes associated with normal ageing	(Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010)

Loneliness Model	Loneliness causes vulnerability within the individual. This vulnerability may precipitate hypervigilance which, in turn, leads to the development of negative or dysfunctional cognitive biases	(Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Duck et al., 1994; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt, Esposito, Critchley, & Garfinkel, 2020; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021)
Social Breakdown Syndrome	The loss of roles, which typically accompanies the ageing process, leave an individual susceptible to increasing dependence on external labelling, and the negative stereotypical views of themselves as useless, or obsolete. Acceptance of these views results in the assumption of a dependent role, and subsequent skills atrophy	(Brown & Moschis, 2006; Gruenberg, 1967; Gruenberg, Brandon, & Kasius, 1966; Gruenberg et al., 1972; Kuypers & Bengtson, 1973; Radebaugh, Hooper, & Gruenberg, 1987; Segel-Karpas & Ayalon, 2020; Zusman, 1966)
Stress Buffering Hypothesis	The perceived availability of social support helps to shield an individual from the negative impact of stressful events	(Cohen & Wills, 1985; Ferreira-Valente et al., 2019; Litalien et al., 2021; Sherman, Cheng, Fingerman, & Schnyer, 2016; Sluzki, 2010; Stokes & Barooah, 2021; Van Tilburg & Van Groenou, 2002)
Socioemotional Selectivity Theory	As individuals age, they become increasingly selective, choosing to optimise contacts which are most likely to provide them with the greatest level of support	(Adams, Sanders, & Auth, 2004; Carstensen, 1992, 2006; Carstensen, Isaacowitz, & Charles, 1999; Chang, Choi, Bazarova, & Löckenhoff, 2015; Heylen, 2010; Lang, Staudinger, & Carstensen, 1998; Lockenhoff & Carstensen, 2004; Rico-Uribe et al., 2016)

3.5.1 Health behaviours and repair and maintenance

Eighteen papers identified a significant association between detrimental health behaviours and loneliness. These included one review of systematic reviews (Leigh-Hunt et al., 2017), seven literature, and two systematic reviews (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2003, 2010; Heinrich & Gullone, 2006; Litalien et al., 2021; Ong et al., 2016; Solmi et al., 2020; Umberson & Montez, 2010), three cross-sectional studies involving 1,668 participants (Cacioppo, Hawkley, Crawford, et al., 2002; Lauder et al., 2006; Segrin & Passalacqua, 2010),

and five secondary analyses of various national data sets[8], which included a combined total of 542,904 participants (Christiansen et al., 2016; Hawkley, Thisted, & Cacioppo, 2009; Luchetti, Terracciano, et al., 2020; Shankar et al., 2011; Wootton et al., 2021). Of the eighteen papers, one cross-sectional study (Cacioppo, Hawkley, Crawford, et al., 2002) and three literature reviews (Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010) also considered the repair and maintenance approach.

The studies found that health behaviours influence overall, individual health and wellbeing. This has been found to be the case when considering the association between loneliness and both mental, and physical health, as Solmi et al. (2020) discovered in their meta-evidence synthesis of 14 publications, which reported the findings from 795 studies, and concluded that there is significant evidence to support the suggestion that poor health behaviours may drive the association between loneliness and undesirable health outcomes. In the secondary analysis of data from genome-wide association studies of loneliness, smoking, and alcohol dependence (n = 511,280), Wootton and her colleagues proposed that negative health behaviours may account for anywhere from 40% to 70% of all premature mortality throughout the life course (Wootton et al., 2021), reinforcing the assertion that those who are lonely, or do not have a social network, are less likely to engage in positive health behaviours. However, patient data was only gathered at three time points, with participants included if they provided data for at least two of these time points. This may have resulted in a biased view of the participant group, with the least healthy participants excluded due to natural attrition. Furthermore, as the data were all collected from self-reported measures, they may have been subject to recall bias.

[8] Danish Public Health Study; Chicago Health, Ageing and Social Relations Study; Panel Study of Belgian Households; English Longitudinal Study of Ageing; Survey of Health, Ageing and Retirement in Europe.

A cross-sectional study of 1,289 randomly selected participants noted that negative health behaviours and poor lifestyle choices, including physical inactivity and non-compliance with clinical advice were more frequently noted among lonely individuals (Lauder et al., 2006). This association between social relationships and health outcomes was also reported by Umberson & Montez (2010) in their literature review. However, as neither the cross-sectional study, nor the literature review place any age restrictions on the included participants, the generalisability of their findings to the present study are limited. The link between loneliness and health is also supported by the secondary analyses of data from the Danish Public Health Survey, which gathered data regarding health behaviours, selected diseases, stress, and loneliness (Christiansen et al., 2016), and data taken from the Survey of Health, Ageing and Retirement in Europe, which followed participants for a period of 11 years, assessing them for loneliness and cognitive impairment. These analyses sought to both explore the mediating effects of certain health behaviours on the association between loneliness and health, and also to test the mechanisms associated with the loneliness model. Strong associations were found between loneliness and cognitive impairment (Luchetti, Terracciano, et al., 2020). Together, these papers presented the analysis of data generated by a sample of 22,707 participants over 50 years of age.

Ten papers suggested that the potentially detrimental influence of health behaviours may be mitigated by the presence of a close social network. Of these papers, one was an overview of 40 systematic reviews (Leigh-Hunt et al., 2017), one presented a review of 128 papers (Litalien et al., 2021), five further literature reviews were included (Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Ong et al., 2016; Umberson & Montez, 2010), and one reported the findings from a survey of 265 adults aged between 19 and 85 years (Segrin & Passalacqua, 2010). One paper presented the findings from a six-year observational study (Berkman et al., 2000). One further paper presented the

analysis of data taken from the English Longitudinal Study of Ageing, which included 8,688 older adults (Shankar et al., 2011). These ten papers offered the consensus that social networks serve to exert control over individual health-related behaviours, through the creation and maintenance of a series of social norms, and the instillation of a sense of responsibility (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Leigh-Hunt et al., 2017; Litalien et al., 2021; Ong et al., 2016; Segrin & Passalacqua, 2010; Shankar et al., 2011; Umberson & Montez, 2010). These papers suggest that individuals who are lonely will be more likely to engage in detrimental health behaviours and, consequently, experience poorer health outcomes. All ten papers theorised that this is due to lonely individuals experiencing significantly weaker pressures to conform to social norms and to perform or engage in healthy behaviours. However, although the link between levels of loneliness and engagement in healthy behaviours, particularly in response to normative pressures from fellow social network members, appears to be well established, the significance of this link has been questioned, due to mixed findings, both within their own work, but also in other studies (Cacioppo & Hawkley, 2003; Ong et al., 2016). Cacioppo and Hawkley (2003) suggest these mixed findings may stem from an underdeveloped understanding of the mechanisms under investigation. They also noted that individual perceptions of loneliness may also have had an impact on their findings. It is also worth noting that only two of the papers outlined above reported any empirical evidence to support their findings.

While the negative impacts of poor health behaviours have been both directly and indirectly observed in the papers and studies outlined above, they are also known to affect health outcomes through the hindrance of an individual's physiological repair and maintenance processes (Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010). Four of the papers identified through the literature search discussed the

implications of loneliness on the physiological processes of repair and maintenance. Three of these papers were literature reviews, based on prior research, however, the remaining paper (Cacioppo, Hawkley, Crawford, et al., 2002) reported on two small cohort studies, including a total of 114 participants: 89 aged 18-24, and 25 aged 53-78. While this paper presents novel empirical findings, the sample sizes are very small, particularly within the age group investigated within the current study. Furthermore, the analyses of the data reported failed to account for the potential mediating effects of age on individual test results. That being said, all four of the papers discussing repair and maintenance highlighted the negative influence of stress and loneliness on the body's natural restorative processes, as measured through a series of metabolic and physiological tests, and subsequent acceleration of wear and tear among lonely individuals (Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010). The spread and degree of this wear and tear has been found to be directly influenced by health behaviours, as discussed above (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010).

Both the health behaviours, and wear and tear approaches outlined above serve to reinforce the level of concern and interest in loneliness from a public health standpoint through the demonstration of the direct association between loneliness and increasing detriment to individual health and wellbeing. This is particularly notable when focusing on health promotion interventions, which typically rely on changing health outcomes through the modification of various individual health behaviours (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Christiansen et al., 2016; Hawkley & Cacioppo, 2003, 2010; Heinrich & Gullone, 2006; Lauder et al., 2006; Leigh-Hunt et al., 2017; Litalien et al., 2021; Luchetti, Terracciano, et al., 2020; Ong et al., 2016; Segrin & Passalacqua, 2010; Shankar et al., 2011; Solmi et al., 2020; Umberson & Montez, 2010; Wootton

et al., 2021). This concern with the impact of loneliness is further strengthened by the assertion that these effects appear to demonstrate a *dose-response* effect, whereby the effects of adverse events accumulate and increase over time (Umberson & Montez, 2010). This dose-response effect may also explain the greater perceived impact of loneliness on older populations (Ong et al., 2016).

Six papers highlighted significant confounding factors, which may have impacted their findings. Of these, one was a systematic review (Solmi et al., 2020), four were literature reviews (Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2003; Ong et al., 2016; Umberson & Montez, 2010), and one presented the results from two cross-sectional studies. The confounding factors they identified included access to economic resources (Ong et al., 2016; Umberson & Montez, 2010), chronic illness status (Umberson & Montez, 2010), and depression (Solmi et al., 2020). It is also worth considering that, through the repair and maintenance approach, social relationships may also have a negative impact on health outcomes, where they are strained (Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010). This is likely due to the stress resulting from strained relationships causing physiological arousal which, in turn, causes an increase in heart rate and blood pressure (*ibid*). Furthermore, this physiological arousal precipitates the cumulative effects of wear and tear on the body (Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010). Through this approach, loneliness has also been linked to deficits in the immune, endocrine, and autonomic nervous systems, along with overall cardiovascular and metabolic functions (Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley & Cacioppo, 2003; Umberson & Montez, 2010).

3.5.2 Loneliness model

Taking a more psychological approach to the understanding of the relationship between loneliness and health is the loneliness model. Eight studies highlighted aspects of this model, and included four literature reviews (Cacioppo & Cacioppo, 2014; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt et al., 2020), three secondary analyses of national data sets[9], which included a combined total of 18,430 participants (Christiansen et al., 2016; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021), and one comparative study including 64 participants (32 same-sex pairs; Duck et al., 1994). Of these papers, one also considered health behaviours (Christiansen et al., 2016), and one also considered social breakdown syndrome (Segel-Karpas & Ayalon, 2020). These papers are considered both here, and within sections 3.5.1 and 3.5.3.

Based on an extensive review of academic literature pertaining to the influence of loneliness on health, the loneliness model was initially proposed in a literature review by Hawkley & Cacioppo (2010). However, it has been endorsed by five studies since its primary exposition (Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Quadt et al., 2020; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021). These include two literature reviews (Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Quadt et al., 2020), along with both primary and secondary analyses of national health studies based in America (Segel-Karpas & Ayalon, 2020[10]; Zeytinoglu et al., 2021[11]). The loneliness model may be viewed as a self-perpetuating cycle, which begins when loneliness causes an individual to become vulnerable. This, in turn, can precipitate increasing hypervigilance and heightened sensitivity to social threats (Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Duck et al., 1994; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt et al., 2020; Segel-

[9] Danish Public Health Survey; Health and Retirement Study (USA); National Social Life, Health, and Ageing Project (USA).
[10] Health and Retirement Study
[11] National Social Life, Health, and Ageing Project

Karpas & Ayalon, 2020; Zeytinoglu et al., 2021). This hypervigilance is maladaptive and, through both literature reviews and secondary data analyses, has been shown to be associated with increased stress, deficits in physiological repair processes, and health behaviours. This serves to reinforce the importance of wear and tear to the development of poor health in response to loneliness, as highlighted above. Hypervigilance, in turn, drives the development of equally maladaptive cognitive biases, which lead the individual to perceive the world as a threatening place. In their two-part observational study with 32 same-sex pairs, Duck et al. (1994) reported an association between these biases and negative perceptions to the development of inflexible and negative attributional styles[12], and consequent negative interpretations of others' behaviours and low expectations of their own abilities. In a secondary analysis of data derived from two waves of the Health and Retirement Study (USA, n = 7,500), it was identified that this negatively skewed cognition may be exacerbated by the evolution of cynical hostility, or the perception that others are not to be trusted, and are a source of wrongdoing (Segel-Karpas & Ayalon, 2020). Consequently, the individual tends to be less trusting and more hostile towards others. However, it should be noted that these results are based on self-reported survey data, which may be subject to individual perception and interpretation. Furthermore, the tool used to capture levels of loneliness was the UCLA loneliness scale. Aside from focusing entirely on social loneliness, all the items within this scale are negatively worded, which may fall prey to response bias.

The negative view of the world nurtured through the processes of the loneliness model can lead to the development of inappropriate social behaviours, and negative peer relations, which serve to further drive the hypervigilant behaviours and cognitive biases (Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Duck et al., 1994; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt et al., 2020; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021). As previously discussed,

[12] Attributional style refers to the ways in which individuals explain the causes of events within their lives.

negative health and social behaviours represent a significant causal factor in the poor health outcomes reported among lonely adults (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Cacioppo, Hawkley, Crawford, et al., 2002; Christiansen et al., 2016; Hawkley & Cacioppo, 2003, 2010; Heinrich & Gullone, 2006; Lauder et al., 2006; Leigh-Hunt et al., 2017; Litalien et al., 2021; Luchetti, Terracciano, et al., 2020; Ong et al., 2016; Segrin & Passalacqua, 2010; Shankar et al., 2011; Solmi et al., 2020; Umberson & Montez, 2010; Wootton et al., 2021). Furthermore, these behaviours serve to perpetuate the processes that are contingent within the loneliness model, thus forming a self-reinforcing, and perpetual loop of loneliness, hypervigilance, and cognitive biases (Cacioppo & Cacioppo, 2014; Christiansen et al., 2016; Duck et al., 1994; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt et al., 2020; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021).

3.5.3 Social breakdown syndrome

Of the 45 papers identified through the literature search, eight papers described and discussed the identification and development of social breakdown syndrome. Two of these papers reported on surveys involving a total of 542 American participants (Brown & Moschis, 2006; Radebaugh et al., 1987), two presented reviews of relevant academic literature (Kuypers & Bengtson, 1973; Zusman, 1966), two presented data from cohort studies including 157 psychiatric staff and patients within an American mental health hospital (Gruenberg et al., 1966; Gruenberg et al., 1972), one presented a theoretical overview based on six years of observational data (Gruenberg, 1967) and one described and discussed the secondary analysis of data from 7,500 participants from two waves of the Health and Retirement Study[13] (Segel-Karpas & Ayalon, 2020). As noted above, this secondary analysis also proved relevant to the consideration of the loneliness model.

[13] USA

One process which serves to both reinforce, and exacerbate, the processes outlined within the context of both the loneliness model and the Health Behaviours approach is Social Breakdown Syndrome. Based on the Gestalt premise that, in general, the whole (in this case society) is greater than the sum of its parts, Durkheim coined the term "Anomie" (Durkheim, 2005). Anomie refers to a situation where clear rules and behavioural norms are lacking. The resulting unpredictable nature of an individual's life may drive them into a sense of aimlessness or despair. It is proposed that this lack of direction may hamper an individual's ability to mitigate the negative consequences of loneliness as they continue to age. Within the context of an ageing population, and in keeping with the life course approach, the social breakdown syndrome was advanced (Brown & Moschis, 2006; Gruenberg, 1967; Gruenberg et al., 1966; Gruenberg et al., 1972; Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020; Zusman, 1966). Initially developed through literature reviews (Zusman, 1966), and several studies within the United States of America, including patient observation (Gruenberg, 1967), mental hospital staff interviews (Gruenberg et al., 1966), and a study of a cohort of 136 psychiatric patients (Gruenberg et al., 1972), the social breakdown syndrome was proposed to explain the evolution of mental illness within the general population. Latterly, this syndrome has been identified and studied within older populations, to assist in the understanding of the impact loneliness may have on health (Brown & Moschis, 2006; Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020).

Social breakdown theory rests on the concept of social norms, or the sets of expectations, or guidelines attributed to specific social roles (Brown & Moschis, 2006; Gruenberg, 1967; Kuypers & Bengtson, 1973). Further to this, and at the heart of social breakdown theory, is the changing nature of these roles and norms over the life course (Gruenberg et al., 1972; Radebaugh et al., 1987; Zusman, 1966). Changes typically associated with the ageing process include retirement, and the

associated loss of income, loss of social status, and loss of physical strength. Also contingent with advancing age are a shrinking social network, and the consequent loss of a reference group and information pertaining to social norms and expectations (Brown & Moschis, 2006; Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020). This may also lead to a loss of coping strategies and the abilities necessary to address the demands of life (Brown & Moschis, 2006; Kuypers & Bengtson, 1973). These changes also influence the individual's sense of self, and may lead to a dependence on social labelling (Brown & Moschis, 2006; Kuypers & Bengtson, 1973). The combined loss of social roles and normative guidance has been reported to leave older members of the population much more susceptible to external sources of labelling and the negative, stereotypical views of themselves as useless, or obsolete (Gruenberg et al., 1966; Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Zusman, 1966). This susceptibility marks the early stages of the development of social breakdown syndrome, which represents a self-perpetuating cycle of susceptibility to, dependence on, and acceptance of negative, age-related stereotypes (Brown & Moschis, 2006; Gruenberg et al., 1966; Zusman, 1966).

Social breakdown syndrome begins, as previously noted, when the loss of roles and norms renders an individual vulnerable to psychological breakdown, and an internalisation and reliance on the negative views held by both society and themselves during earlier stages of their lives, towards older people. This leads the older individual to doubt their own abilities, and results in a loss of physical strength and health, due to lack of confidence, or unwillingness to engage in physical activities (Brown & Moschis, 2006; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020). It may be that these doubts and loss of skills are likely exacerbated by suggestions of retirement and the relinquishment of certain activities, by friends, colleagues, family, and medical professionals. Should an older individual become dependent on, and accept the characterisation as obsolete and useless, they will

tend to adopt a primarily dependent role, resulting in further loss of skills and abilities (Gruenberg, 1967; Gruenberg et al., 1966; Gruenberg et al., 1972). This dependence also reportedly leads to a change in self-concept[14], and the development of learned helplessness[15] and/or biographical disruption[16] (Brown & Moschis, 2006; Kuypers & Bengtson, 1973; Segel-Karpas & Ayalon, 2020). This continuing dependence on the views of others, assumption of a dependent role, and progressive loss of skills and physical atrophy, may result in an individual believing that they are useless, or incompetent, therefore perpetuating this cycle of decline (Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020).

While much of the information pertaining to social breakdown theory, and its associated syndrome, may be considered relatively dated, this consideration has included five empirical studies, including a total of 8,200 American participants. Furthermore, Gruenberg's 1967 paper is underpinned by six years of observational data. However, it is worth bearing in mind that the majority of the earlier work on social breakdown syndrome was conducted within the psychiatric field, and the observational work may likely have been subject to individual interpretation bias. Data gathered since the turn of the century, to specifically investigate social breakdown syndrome (Brown & Moschis, 2006), have offered evidence to support its relevance, but this evidence has been generated from a self-selecting sample, which may have given a skewed view of matters. Perhaps the strongest supporter of the social breakdown syndrome is Segel-Karpas and Ayalon's secondary analysis of data from 7500 individuals participating in two waves of the Health and Retirement Study[17]. However, the use of the UCLA Loneliness Scale may have resulted in response bias because all the items are negatively worded (Penning et

[14] Self-concept refers to the collection of beliefs an individual has about themselves.
[15] Learned helplessness refers to the belief that one cannot affect their own circumstances.
[16] Primarily used within the context of chronic illness, biographical disruption describes a situation where an individual's anticipated biography is disrupted by reality and actual life events.
[17] USA

al., 2014; Russell et al., 1980). Furthermore, the UCLA Loneliness Scale focusses entirely on social loneliness (§ 2.4.2). As outlined in the previous chapter (§ 2.4.2), focussing purely on one form of loneliness will likely produce skewed results in terms of prevalence data, particularly between the genders.

3.5.4 Stress buffering hypothesis

The previous sections have considered factors which may be perceived to precipitate the poor health outcomes allied to loneliness. These have included poor health behaviours, defective maintenance and repair processes, the loneliness model, and social breakdown syndrome. The following two theories address the loneliness-health conundrum through the context of mediational factors: in this case, stress buffering and socioemotional selectivity. Stress buffering is considered by seven papers; two literature reviews (Cohen & Wills, 1985; Sluzki, 2010), two systematic reviews (Ferreira-Valente et al., 2019; Litalien et al., 2021), one study of a cohort of 41 older adults; and two secondary analyses of national data sets encompassing data from a total of 4,156 participants. Of these papers, one also considered health behaviours (Litalien et al., 2021). It is also worth noting that an additional nine of the 18 papers discussing health behaviours highlighted the importance of the social network in the preservation of individual health (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Leigh-Hunt et al., 2017; Litalien et al., 2021; Ong et al., 2016; Segrin & Passalacqua, 2010; Shankar et al., 2011; Umberson & Montez, 2010). As such, these papers are also considered relevant here.

According to the stress buffering hypothesis, social relationships serve as a “buffer” during times of stress, and can influence health outcomes (Cohen & Wills, 1985; Ferreira-Valente et al., 2019; Litalien et al., 2021; Sherman et al., 2016; Sluzki, 2010; Stokes & Barooah, 2021; Van Tilburg & Van Groenou, 2002). In addition to providing an individual with emotional support, the presence of a social network

aids in the moderation of physical and mental responses and reactions to stressful or harmful situations (Cohen & Wills, 1985; Ferreira-Valente et al., 2019; Litalien et al., 2021; Sherman et al., 2016; Sluzki, 2010; Stokes & Barooah, 2021; Van Tilburg & Van Groenou, 2002), as well as serving as a source of valuable information (Berkman et al., 2000; Cacioppo & Hawkley, 2003; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Leigh-Hunt et al., 2017; Litalien et al., 2021; Ong et al., 2016; Segrin & Passalacqua, 2010; Shankar et al., 2011; Umberson & Montez, 2010). Social networks reportedly do this by promoting positive behavioural and neuroendocrine responses to both acute and chronic stressors, a notion which shows great synergy with both the health behaviours and repair and maintenance approaches, and gains support from the body of literature which suggests that the relative risk of mortality is inversely proportional to the size of one's social network (Cacioppo, Hawkley, Crawford, et al., 2002; Hawkley et al., 2009; Shankar et al., 2011; Sherman et al., 2016; Stokes & Barooah, 2021). One explanation for these findings is the suggestion that those who are lonely tend to perceive stressful events more severely, and good things less intensely than those who are not (Sherman et al., 2016; Stokes & Barooah, 2021). Conversely, those who do not report loneliness, are perceived to be better able to deal with stress and more likely to seek help or support (Cacioppo & Hawkley, 2003). Alternatively, it may simply be that lonelier individuals experience decreased levels of buffering when compared to others who are not lonely (Cohen & Wills, 1985; Ferreira-Valente et al., 2019; Litalien et al., 2021; Sherman et al., 2016; Sluzki, 2010; Stokes & Barooah, 2021; Van Tilburg & Van Groenou, 2002). However, as Cacioppo and Hawkley (2003) highlight, it is not clear whether it is the stress which causes loneliness, or the other way around.

Aside from immediate family and close friends, Litalien and colleagues have, in their systematic review, cited religion as a significant buffer to traumatic and stressful events (Litalien et al., 2021). Religion appears to be a particularly effective buffer

under extreme circumstances, and to individuals experiencing multiple negative, or stressful, life events (Litalien et al., 2021). As such, religion has been found to hold a powerful influence over health and coping behaviours (Ferreira-Valente et al., 2019; Litalien et al., 2021), and has been referred to as an invisible social determinant of health (Litalien et al., 2021).

3.5.5 Socioemotional selectivity theory

Much like the stress buffering hypothesis, socioemotional selectivity theory addresses the factors which offer protection from the adverse health consequences associated with loneliness. Socioemotional selectivity was addressed by nine papers, of which two were surveys, with a combined total of 811 participants (Adams et al., 2004; Chang et al., 2015), three literature reviews (Carstensen, 2006; Carstensen et al., 1999; Lockenhoff & Carstensen, 2004), and four secondary analyses of national data sets providing information on a total of 12,780 participants (Carstensen, 1992; Heylen, 2010; Lang et al., 1998; Rico-Uribe et al., 2016).

Initially, developed by Carstensen (1992), and based on the secondary analysis of 50 interview transcripts, Socioemotional Selectivity Theory rests on the two assumptions:

1. as individuals age, the size of their social network shrinks
2. with increasing age, the prevalence of loneliness reduces

This apparent contradiction is explained by the suggestion that, as individuals age, they become increasingly selective, choosing to optimise contact with individuals who are most likely to provide them with the greatest level of social support (Carstensen, 1992). This change reportedly occurs as an individual's awareness of limitations of their future time drives a shift in social motivation over the life course. Consequently, older adults are believed to place increasing value on close and

intimate relationships, at the expense of more distant, and less positive relationships. This theory garners support from the suggestion that, while loneliness is not influenced by the number, or availability, of social contacts, lack of interaction with close friends is likely to prove detrimental (Adams et al., 2004; Carstensen, 1992; Chang et al., 2015; Heylen, 2010; Lang et al., 1998; Rico-Uribe et al., 2016).

3.6 Loneliness, health and wellbeing, and the Meikirch Model

Thus far six key theories have been identified by the literature review and discussed; four which consider the actual causal mechanisms and pathways behind the development of poor health outcomes in lonely individuals (health behaviours, repair and maintenance, the loneliness model, and social breakdown syndrome), and two which focus on factors which mediate the link between loneliness and health (stress buffering hypothesis and socioemotional selectivity theory). The Meikirch model of health and wellbeing (§ 2.2) was selected as a theoretical framework for this study and, based on this approach, one could assert that health behaviours, repair and maintenance, and the loneliness model represent individual determinants of health. It could be further argued that factors responsible for the development and perpetuation of these, such as social breakdown syndrome (§ 3.5.3), may be viewed as examples of either social or environmental determinants of health, depending on their source. Where these determinants are negative or detrimental, one might argue that they may inflict a reduction in biologically given potential. Consequently, in the absence of positive determinants of health and personally acquired potentials, including a strong social network to buffer stressful events and socioemotional selectivity, it could be that the affected individual's health may begin to deteriorate.

3.7 A proposed theoretical framework

Having introduced the six theories identified through the literature search, and discussed their respective contributions to the interactions between loneliness and health, the question now arises regarding how they may inform, and be used in conjunction with, the Meikirch model to facilitate this research project to build the proposed theoretical framework. While none of the theories seems to offer a truly definitive answer to the questions surrounding the influence of loneliness over health, it is argued here that they do all show a degree of unanimity and synergy with each other. The remainder of this chapter explores these synergies and proposes a framework through which all six models may interact, within the context of the Meikirch model, throughout the life course to precipitate, exacerbate, or mitigate the detrimental relationship between loneliness and health.

3.7.1 Building the framework

At the heart of this framework lies the loneliness model (§ 3.5.2), with its self-perpetuating cycle of loneliness, vulnerability, hypervigilance, and cognitive biases. This approach has been selected as the heart of the framework because it most readily identifies the processes through which loneliness may directly impact health. However, health behaviours and physiological maintenance and repair processes may influence, and be influenced by health, regardless of the presence, or not, of loneliness (§ 3.5.1). While it is not clear what, specifically, may be responsible for the initiation of this process, the proposed framework integrates within it the various mental, emotional, and physical factors which may both influence and be influenced by the loneliness model (§ 3.5.2). As may be seen in Figure 3-2, in terms of health behaviours and repair and maintenance, this framework proposes that an individual's levels of stress and their health behaviours interact with the loneliness model to influence the overall process of wear and tear, through the decline of physiological maintenance and repair processes throughout

the life course. Within this context, social relationships have the potential to be either beneficial or detrimental to an individual's health and wellbeing (§ 3.5.1). It is also suggested that the negative effects of these processes are compounded among retired older adults, through the development of Social Breakdown Syndrome (§ 3.5.3).

3.7.2 Mitigating factors

The remaining two theories, at first glance, appear to be contradictory – the stress buffering hypothesis emphasizes the need for a large and consistent network of social contacts for good health, while socioemotional selectivity theory rests on the premise of retained health despite a declining network. However, these theories appear to be less at odds with each other when viewed through the lenses of the Meikirch model, and the life course approach. Both of these lenses view all aspects of health and wellbeing as fluctuating throughout life, with our responses to adverse situations driven by both previous experiences, and the possession of adequate and relevant potentials to deal with them. Within the context of loneliness and health, this suggests that, as individuals progress through the life course, the size of their social network will tend to shrink. At the start of the life course, when the social network tends to be relatively large (Bridges & Villemez, 1986; Glaeser et al., 2002; McDonald & Mair, 2010), the stress buffering hypothesis appears to offer a very relevant model, with the social network serving as a buffer, or safety net between stressful events and the resulting health detriments. As individuals age, and their social network is perceived to diminish (Coleman, 1994; Kalmijn, 2003; McDonald & Mair, 2010), the stress buffering hypothesis may become redundant, and cease to hold sway over the loneliness-health connection. This alone may explain the contradiction between the beneficial and detrimental effects of social relationships. Furthermore, it could be suggested that, as the ageing process continues, and the stress buffering hypothesis becomes less relevant, the socioemotional selectivity theory gradually comes to the fore. This

reflects the development and improvement of socioemotional selectivity, or the ability of an individual to select and optimise the social relationships which are most likely to prove beneficial and supportive (Adams et al., 2004; Carstensen, 1992, 2006; Carstensen et al., 1999; Chang et al., 2015; Heylen, 2010; Lang et al., 1998; Lockenhoff & Carstensen, 2004; Rico-Uribe et al., 2016). In developing this argument further, it is unclear, however, whether the skill of socioemotional selectivity develops naturally throughout the life course or emerges solely in response to the ever-decreasing social network or is a combination of the two; a consideration that is returned to in the following chapters.

The overall, proposed framework, illustrating how, viewed within the context of the life course approach, one may argue that all six theories may interact to influence health outcomes in response to loneliness is shown in Figure 3-2.

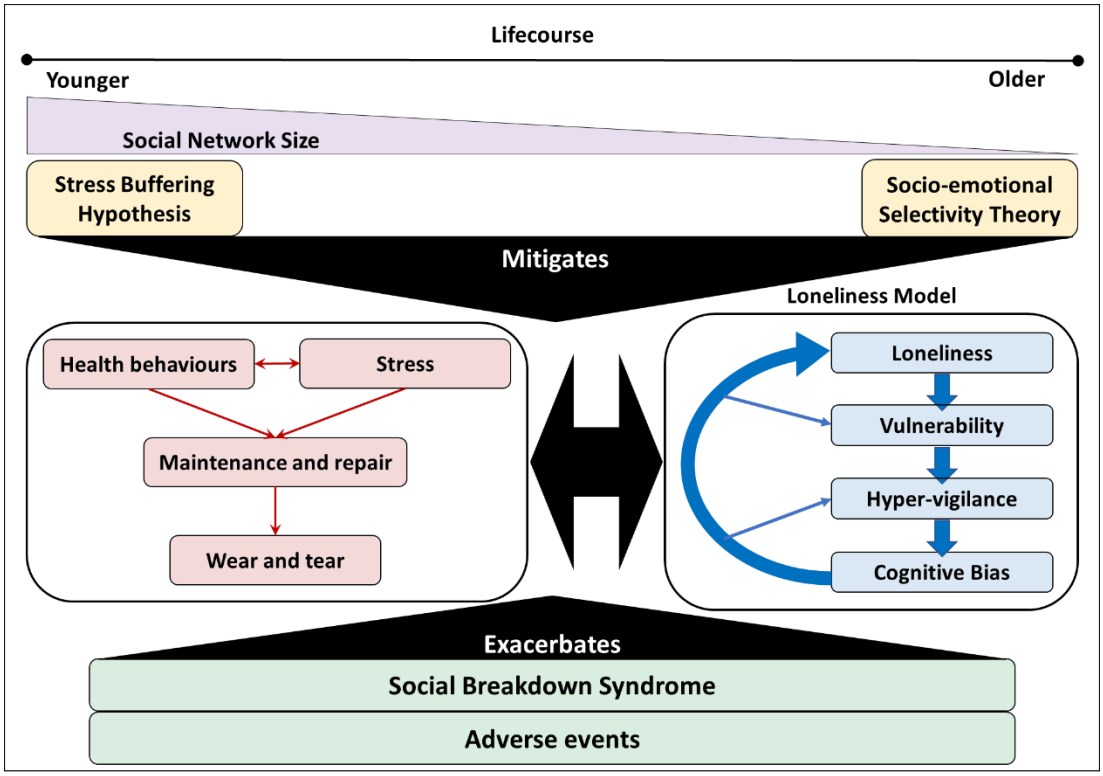


Figure 3-2: Proposed loneliness-health theoretical framework

3.7.3 Evaluating the framework

Taken together as components of a larger framework, it is argued that the six theories concerned with the relationship between loneliness and health, offer an explanation of the changing nature of loneliness throughout the life course, and highlight several key areas to be explored. For example, having emphasized the importance of personally acquired potentials to mitigate the negative consequences of loneliness (§ 2.4.7), questions remain regarding how these potentials develop, what might hinder their development, and how individuals with insufficient personally acquired potentials may challenge the adverse nature of loneliness on their health. Furthermore, there is still much explore regarding the nature and importance of the social network and stress buffering to the loneliness-health relationship over the life course. The outlined framework, along with the questions generated here and outlined at the beginning of the next chapter, provide a firm grounding from which to begin the current research.

It is proposed that the changing nature of the social network, and its impact on loneliness-related health outcomes (§ 3.5.5), offers a potential explanation for why only some, but not all, retired older adults suffer poor health because of loneliness. This could be that the failure to develop sufficient personally acquired potential over the life course allows the processes of the loneliness model and social breakdown syndrome to progress to such an extent that individual health will begin to deteriorate. What remains to be seen, however, is how the proposed framework may be viewed through the lens of the Meikirch model of health and wellbeing, which, as the approach to health and wellbeing adopted within this work, also underpins, and drives this research.

As discussed above (§ 2.2), the Meikirch model of health and wellbeing views health as an emergent state, dependant on the interaction of individual, social, and environmental factors, in response to the demands of life (Bircher & Kuruvilla, 2014;

Card, 2017; Frenk & Gomez-Dantes, 2014). Beginning with the loneliness model (§ 3.5.2) and repair and maintenance approach (§3.5.1), these represent individual responses to external stimuli. In the case of the loneliness model, these are psychological responses, while repair and maintenance, and subsequent wear and tear, typify a purely physiological response. As such, these would seem to offer examples of individual determinants of health. As the literature review has shown, the processes involved in wear and tear, and the way an individual responds to them, are determined by their biologically given potential (§ 2.2.2.1). Health behaviours also seen to represent an individual determinant of health. However, the way an individual chooses to behave, both in terms of health, and socially, is heavily influenced by both the presence, and the nature, of a close social network (Beutel et al., 2017; Byrom, Msetfi, & Murphy, 2015; Gerst-Emerson & Jayawardhana, 2015). As such, one could argue that health behaviours straddle the boundary between individual and social determinants. Furthermore, bearing in mind their tendency to evolve over the life course, combined with their dependence on external stimuli, health behaviours could be viewed as an example of personally acquired potential. Regarding social breakdown syndrome (§ 3.5.3), while this represents a combination of social and individual determinants, through the individual perception of the negative stereotypes and labelling from society in general, it may also serve to intensify the development of negative cognitive biases, thus driving the loneliness model. Furthermore, one might question that the influence of social breakdown syndrome over health behaviours may also serve to highlight the potential importance of this factor within the loneliness-health debate.

The two remaining theories, or mitigating factors, both stress buffering and socioemotional selectivity could arguably represent potentials (§ 2.2.2.1 & 2.2.2.2). Socioemotional selectivity is known to develop over the life course, and is clearly more evident among older populations (§ 3.5.5), suggesting it may typify a personally acquired potential (Adams et al., 2004; Carstensen, 2006; Rico-Uribe et

al., 2016). However, although it could be argued the presence of a social network and subsequent stress buffering represents personally acquired potential, much like health behaviours, this is less clear. Although dependent on the presence of a social network, and by no means a biological process, it could be argued that stress buffering may also represent a form of biologically given potential, because the social network into which we are born is, in most cases, genetically determined (§ 2.2.2.1). This suggestion lends support not only to the proposed nature of the two potentials, but also to the evolving nature, and importance, of the mediating factors as we age. These theorisations, along with the proposed framework, serve to drive not only development of the research questions but also the processes employed to interrogate and analyse the data gathered for this study.

3.8 Chapter summary

While previous research has sought to identify and define the concepts underlying the loneliness-health relationship, this chapter has reviewed and critiqued all relevant models and theories that could be used to explore the association between loneliness and health. These models were then considered within the context of the Meikirch model. This consideration has enabled the development of a proposed theoretical framework (§ 3.7). The exploration of the various models of health and loneliness, in conjunction with the Meikirch model and the proposed theoretical framework have been used, in light of the literature reviewed in chapters 1 and 2 (which focused on older adults, and specifically those who are retired) to propose the overarching research question, and the aims and objectives which are outlined at the beginning of the following chapter.

Despite the lack of a definitive theory to explain the mechanisms through which loneliness and health and wellbeing may be associated, six models of health and loneliness have been identified, outlined, and critiqued. While seemingly disparate, a degree of synergy between these models has been identified through the

inclusion of the life course approach and, illustrating the potential synergies between these six models and the Meikirch model, the new proposed theoretical framework that will underpin this study (Figure 3-2). However, one issue not addressed by either the literature discussed above, or the proposed framework, is why some people respond so adversely to loneliness, whilst others do not. By highlighting the changing nature of the relationship between loneliness and health and wellbeing, and the underlying mechanisms and mitigating factors, this proposed framework highlights key areas for investigation, as well as offering an approach to addressing the research questions, aims and objectives that are outlined at the beginning of the next chapter.

Chapter 4. Methodology, methods, and analyses

4.1 Introduction

Methodology refers to the philosophical and epistemological stance of the researcher, and may be viewed as the theoretical foundation which informs the research study design and on which processes rest (Foster, 1997). The methods refer to the actual tools and processes employed to address the research questions, aims, and objectives. This chapter considers the most commonly used research paradigms, with emphasis placed upon mixed methods research, and the justification for this choice of approach within the current study. Both the quantitative and qualitative methods used in this study are presented. The analytical techniques employed to deal with both the quantitative and qualitative data gathered within this study are described. As this study has involved mixed methods, integration processes are also discussed. The chapter concludes with consideration of the ethical issues relevant to the research process.

4.2 Research questions, aims and objectives

The previous chapters considered the concepts of health, wellbeing, and loneliness, and reviewed the various theories regarding the mechanisms underlying the relationship between them. These chapters highlighted gaps in current research knowledge and these form the starting point of the empirical phase of this study. The main, overarching question of this research is:

What is it that allows loneliness to be detrimental to the health of some, but not all retired older adults?

This question is divided into the following three sub questions, each of which addresses a slightly different aspect of the issue:

1. How do personally acquired potentials influence the individual responses of retired older adults to loneliness?
2. What factors hinder the development of personally acquired potentials over the life course?
3. How do individual responses to loneliness drive the development of poor health as a consequence of loneliness?

The methods and methodology employed to answer these questions has been driven by the following research aims:

1. To clarify the nature of the relationship between loneliness and health within the study population,
2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population,
3. To explore how older people conceptualise loneliness,
4. To identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health,
5. To identify common factors which may protect older adults from the detrimental effects of loneliness on health,
6. To identify factors which influence the development of personally acquired potentials over the life course.

Table 4-1 gives and overview of the overall aims of this study and the methods employed to address them. The forthcoming sections will consider in depth the methods, methodologies, and techniques employed within this study to formulate the thesis which underpins this work.

4.3 Research paradigms

According to Kuhn (1996), a paradigm may be thought of as an accepted model or approach, which demands the use of particular methods, to the exclusion of others. However, it has been argued that the strict adherence to a specific paradigmatic approach or research design may limit researcher curiosity or imagination, and this has certainly been thought to be the case when considering the two traditional, positivist and interpretive, research paradigms (Feilzer, 2010; Mills, 2000).

Table 4-1: Study overview

	Study aim	Methodological approach	Tools employed	Analytical tools/approach
Phase 1	1. To clarify the nature of the relationship between loneliness and health within the study population 2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population	Quantitative survey	De Jong Gierveld 6-item Loneliness Scale R-Outcomes HowRU R-Outcomes Personal Wellbeing Scale R-Outcomes Health Confidence Scale Demographic data	Spearman's Rho correlations Simple & multiple linear regression modelling
↓	**Phase 1 data analyses used to inform phase 2**			
Phase 2	3. To explore how older people conceptualise loneliness and health 4. To identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health 5. To identify common factors which may protect older adults from the detrimental effects of loneliness on health 6. To identify factors which influence the development of personally acquired potentials over the life course	Qualitative interview	Narrative interview	Thematic analyses (Braun & Clarke, 2006)
Integration of data sets through the lens of the proposed theoretical framework (Figure 3-2)				

Historically, research has been dominated by positivism/post positivism, and constructivism/interpretivism (Johnson & Onwuegbuzie, 2004; Sieber, 1973). Often considered to be more scientific, positivism/post positivism encompasses quantitative approaches to research (Creswell & Plano Clark, 2018a; Erlandson, Harris, Skipper, & Allen, 1993; Feilzer, 2010). The positivist/post positivist paradigm

approaches the research question in a deductive manner, in the belief that there is one, single, objective truth or reality to be studied (Creswell & Plano Clark, 2018b; Morgan, 2007; Yardley & Bishop, 2015). It focusses heavily on rigor and replicability of the work being conducted (Johnson & Onwuegbuzie, 2004; Yardley & Bishop, 2015), and is driven by hypothesis testing, and the provision of generalisable data (Baškarada & Koronios, 2018; Creswell & Creswell, 2017).

In contrast, the constructivist/interpretivist paradigm asserts that a single, objective reality does not exist, and that subjective and qualitative approaches are those that should be taken when conducting research (Creswell & Plano Clark, 2018b; Erlandson et al., 1993). Qualitative methods offer a contextual approach to research and allow for theories to be developed throughout the research process (Bassett, 2004; Berg, 2006). This results in the generation of rich data and allows for the achievement of a greater breadth and depth of insight into the issues under investigation (Ely, 1991; Sieber, 1973; Silverman, 2011).

The strict division of quantitative and qualitative methodologies was historically reinforced by the practice in the 80s and 90s to encourage researchers that all methods be firmly linked to a specific philosophical underpinning (Johnson & Onwuegbuzie, 2004; Lincoln & Guba, 1999; Tashakkori & Teddlie, 1998). Support for this notion is garnered from the *Incompatibility Thesis* (Howe, 1988), according to which, qualitative and quantitative methods and methodologies cannot, and should not, be combined. Kuhn (1996) has also referred to the incommensurability of paradigms, which make them impossible to unite. However, there are some who believe that the combination of these two disparate methodologies, allows for more robust research, by allowing the strengths of each approach to counter the weaknesses of the other. The result is the generation of a far greater depth of knowledge and understanding (Bishop, 2015; Creswell, 2016; Shannon-Baker, 2016). This has led to the increasing popularity of mixed methods approaches.

4.3.1 Research paradigms in the present research study

An alternative to the paradigms outlined above is pragmatism, which does not require or exclude any specific methods or techniques when addressing the research question. Pragmatism negates the need to choose between positivist and constructivist approaches, and their contingent quantitative and qualitative methods (Creswell & Plano Clark, 2018b; Feilzer, 2010; Robson, 2002), and acknowledges that:

> *…any knowledge produced through research is relative and not absolute, that even if there are causal relationships they are transitory and hard to identify. (Teddlie & Tashakkori, 2009, p93)*

Within the context of mixed methods research, the aim of pragmatism is to find a compromise between the philosophical underpinnings of qualitative and quantitative approaches (Johnson & Onwuegbuzie, 2004). Unlike positivistic and interpretive approaches, pragmatism equally respects both objectivity and subjectivity (Creswell & Plano Clark, 2018b; Doyle, Brady, & Byrne, 2016), and while accepting the existence of reality, the interpretation of this is grounded in individual experience (Bazeley, 2018). Perhaps more importantly, rather than focussing on epistemological stance and paradigmatic demands, mixed methods research places primary emphasis on the research question, and potential consequences of the research (Armitage, 2007; Creswell & Plano Clark, 2018a; Shannon-Baker, 2016). It has further been stated that, not only should philosophical assumptions not be permitted to dictate choice of methodological approaches and study design (Baškarada & Koronios, 2018; Johnson & Onwuegbuzie, 2004), but that neither epistemology, nor ontology, are of any relevance to the research process (Baškarada & Koronios, 2018; Giddings, 2006). Pragmatism offers a pluralistic approach, asserting that research methods and techniques should be combined in such ways as to ensure the greatest likelihood of answering the research question (Creswell & Plano Clark, 2018b; Doyle et al., 2016; Feilzer, 2010; Johnson &

Onwuegbuzie, 2004; Shannon-Baker, 2015, 2016; Teddlie & Tashakkori, 2003). Moreover, pragmatism seeks to dispel the divide between positivist and constructivist methodologies and extract the best from both approaches (Biesta, 2010; Creswell, 2016; Johnson, Onwuegbuzie, & Turner, 2007). It acknowledges that theories may be both contextual and generalisable, and that researchers may be both objective and subjective, depending on the situation and context (Morgan, 2007). It is for these reasons that this study has adopted a pragmatic stance, utilising a mixed methods approach to explore the mechanisms underlying the relationship between loneliness and poor health outcomes in retired older adults.

4.4 Mixed methods

Researchers have been mixing qualitative and quantitative methodologies and techniques for decades (Bazeley, 2018; Creswell & Creswell, 2017; Maxwell, 2018). This practice has been supported by the claim that, despite their apparently conflicting epistemological underpinnings, qualitative and quantitative methodological approaches are not all that different, as they both seek to find answers to a specific research question (Dewey, 2019; Dzurec & Abraham, 1993; Johnson & Onwuegbuzie, 2004), and both approaches rely on human interpretation for their analytical processes (Bazeley, 2018; K. Howe & Eisenhart, 1990; Johnson et al., 2007). As such, it could be argued that neither qualitative, nor quantitative methods and methodologies offer a superior approach (Dzurec & Abraham, 1993; Foster, 1997), with both being equally important and useful (Johnson & Onwuegbuzie, 2004). Moreover, Johnson & Onwuegbuzie (2004) promote the use of *contingency theory* when selecting research methods and methodologies. Contingency theory acknowledges that each of the epistemological stances and methodologies are superior in different situations, and it is the responsibility of the pragmatic researcher to determine which method, or combination of methods, is best suited to addressing the research questions.

The development of mixed methods approaches has been based on the notion that choice of methods should be driven, primarily, by the aims and objectives of the research (Doyle et al., 2016; Guba & Lincoln, 2005; Johnson & Onwuegbuzie, 2004), and that researchers:

> *…do not have to be the prisoner of a particular [research] method or technique. (Robson, 2002, p291)*

For the purpose of this study, mixed methods research derives from the mixing of distinct research paradigms, and is defined as:

> *The class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. (Johnson & Onwuegbuzie, 2004, p17)*

The main advantage of mixed methods research over single method approaches is that it can allow for a greater breadth and depth of understanding of the phenomena being studied. Philosophically, mixed methods research offers a pragmatic approach which rests firmly between positivism and interpretivism (Hoshmand, 2003; Johnson & Onwuegbuzie, 2004). While other epistemologies have been proposed, pragmatism is the approach most frequently associated with mixed methods research (Cornish & Gillespie, 2009; Feilzer, 2010; Yardley & Bishop, 2015).

4.4.1 Mixed methods study designs

Much akin to qualitative and quantitative approaches, mixed methods research may employ several overarching designs through which research may be conducted. There are three basic designs – convergent parallel, explanatory sequential, and exploratory sequential (Creswell, 2016; Creswell & Plano Clark, 2018b; Doyle, Brady, & Byrne, 2009), and four advanced designs – multistage, intervention, case study,

and participatory (Fetters, Curry, & Creswell, 2013; Lewin, Glenton, & Oxman, 2009; Nastasi et al., 2007). The three basic mixed methods designs are outlined in Figure 4-1.

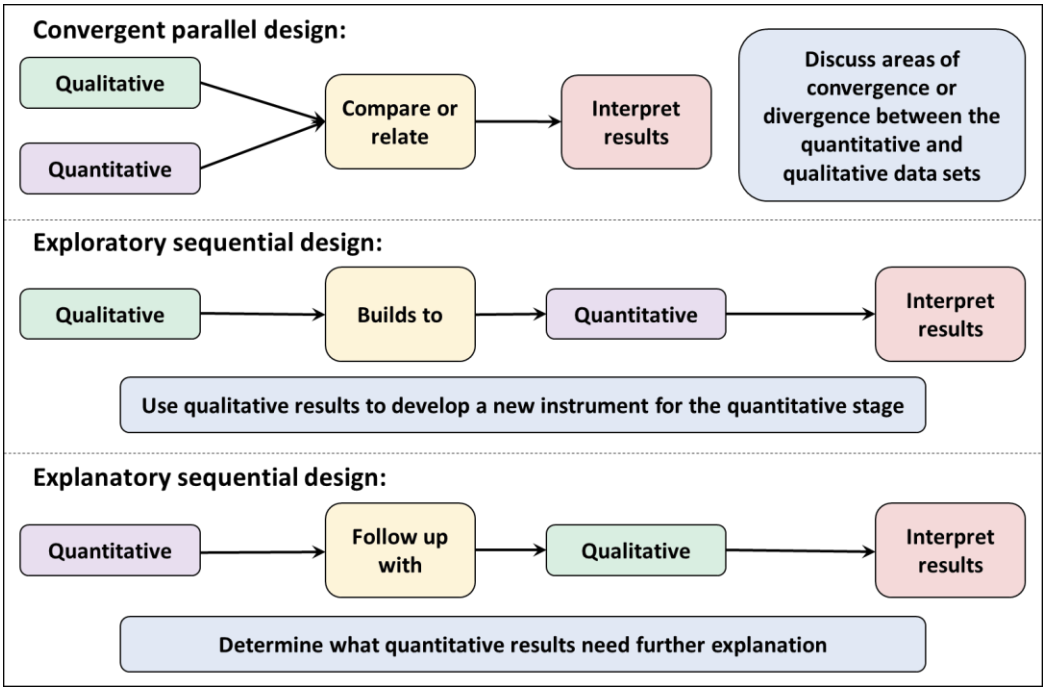


Figure 4-1: Mixed methods research designs (Creswell & Plano Clark, 2018a)

The exploratory sequential approach begins with a qualitative phase, the results of which are used to inform the development, and conduct of a, second, quantitative phase (Creswell & Plano Clark, 2018a, 2018b; Teddlie & Tashakkori, 2009). This approach is driven by the purpose of initiation, which is outlined below (Collins & Benedict, 2006; Creswell & Plano Clark, 2018b; Doyle et al., 2009). The convergent parallel design is characterised by the simultaneous conduct of both quantitative and qualitative aspects of the research design (Creswell & Plano Clark, 2018a; Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2009). In addition to completeness and complementarity, the convergent approach is used to identify if

the qualitative and quantitative data support, or refute, each other (Creswell & Plano Clark, 2018a, 2018b; Teddlie & Tashakkori, 2009).

The explanatory sequential approach, which has been employed within this study, is comprised of two phases. The first, quantitative, phase involves the collection and analysis of data to provide a clear(er) understanding of the research problem, and to inform the development of the second, qualitative phase. The qualitative data, and subsequent analyses, serve to refine and explain the statistical data through an in-depth exploration of participants' views (Creswell, 2016; Creswell & Plano Clark, 2018b; Doyle et al., 2016; Greene, 2007). Several potential aims of this approach have been highlighted, including to use quantitative data to inform the use of groups and subgroups in the qualitative phase, to use quantitative results to inform sampling techniques for the qualitative phase, and to use qualitative data to expand on and explain the underlying mechanisms, which are responsible for the quantitative results (Creswell & Plano Clark, 2018b; Fetters et al., 2013; O'Cathain, Murphy, & Nicholl, 2010).

Several reasons why a researcher may choose the explanatory sequential approach have been cited (Creswell & Plano Clark, 2018b), many of which are relevant to this study. First, and particularly pertinent within the context of a doctoral study, is that the researcher is working alone and is constrained by time. Second, the research question indicated that a single-method approach would not be sufficient to adequately address the phenomena under investigation. This was certainly the case in the current study because, to explore the possible mechanisms underlying the relationship between loneliness and health and wellbeing, it was first necessary to establish both the presence, and nature, of such a relationship. Related to this is that the researcher knows, at the start of the research, what the key variables and outcomes are. While the choice of specific tools and methods were not clear at the initial conceptualisation of this study, it was certain that the independent variable was loneliness, and the dependent, or outcome, variable was health and wellbeing.

Finally, yet equally pertinent to this study was the intention to use the quantitative phase to recruit participants for the qualitative phase. The following section examines the key purposes of mixed methods research.

4.4.2 Purpose of mixed methods research

In addition to facilitating a far greater depth and breadth of understanding and validation than may be achieved through a standard mono-method approach (Denscombe, 2008; Ivankova, Creswell, & Stick, 2006; Onwuegbuzie & Leech, 2007), several key purposes of mixed methods research have been highlighted, the most commonly cited of which is triangulation (Denzin, 2017; Greene, Caracelli, & Graham, 1989; Sandelowski, 1995). Despite its popularity within the realms of mixed methods research, the term triangulation has been used within multiple contexts and, consequently lacks adequate clarity in its definition (Fetters & Molina-Azorin, 2017; Morgan, 2019). For this research, the term triangulation will be discarded in favour of those with a clearer definition and purpose. These include complementarity, initiation, expansion, and completeness (Bryman, 2006; Creswell, 2016; Denzin, 2017).

While complementarity, initiation, expansion, and completeness each have their own place and value within the field of mixed methods research, the process of initiation is not considered relevant for this study. This is because the present study adopts an explanatory sequential approach, whereby the data generated through the quantitative stage of this study is employed to inform the development of the second, qualitative stage of the study. Conversely, initiation refers to the process through which qualitative data is used to drive the development of quantitative tools and instruments, which is typical of the exploratory sequential approach. However, the remaining purposes of mixed methods research are particularly advantageous to the present research study.

Complementarity refers to the ability of a mixed methods approach to allow for the weaknesses of the qualitative methods to be offset by the strengths of the quantitative approach, and vice-versa (Denzin, 2017; Fielding & Fielding, 1986; Flick, 1992). In the case of the present study, the generation of a robust and representative quantitative data set ensures that the sampling used in the qualitative phase of the research results in the recruitment of a more representative sample than might otherwise have been possible. However, O'Cathain et al. (2010) caution the researcher to ensure that both quantitative and qualitative components of the mixed methods research are adequately robust in their own right. Furthermore, the employment of a mixed methods approach offers the researcher the opportunity to address multiple elements of a phenomenon (Creswell, 2016; Flick, 1992; Morgan, 2019). Related to the concept of complementarity is expansion. This is where the findings from an initial, quantitative phase are used to inform the development of the qualitative phase of the research. Additionally, data from the qualitative phase are harnessed to provide an explanation and further understanding of the overall research topic under investigation (Bryman, 2006; Dzurec & Abraham, 1993; Johnson et al., 2007). Within the context of the present study, the quantitative stage was designed to address the first two aims of this research:

1. To clarify the nature of the relationship between loneliness and health within the study population,
2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population.

The data gathered during the quantitative stage was used to inform the classification of participants into subgroups, and to inform the purposive sampling from these groups for the second, qualitative phase of this study. The quantitative survey was also used to recruit participants for the second stage of the research.

The qualitative stage was employed to address the remaining aims of this study:

3. To explore how older people conceptualise loneliness,
4. To identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health,
5. To identify common factors which may protect older adults from the detrimental effects of loneliness on their health,
6. To identify factors which influence the development of personally acquired potentials over the life course.

The final purpose of mixed methods research is completeness and is, in many ways, encompassed by both complementarity and expansion. As the name suggests, completeness implies that the use of multiple methods and research paradigms may provide the researcher with a more comprehensive and expansive account of the phenomena being studied than would be possible with a mono-method approach, and strict adherence to one specific epistemological stance (Caracelli & Greene, 1993; Greene et al., 1989; Johnson & Onwuegbuzie, 2004).

4.4.3 Mixed methods in the present research study

As discussed above the intention had been to employ an explanatory sequential approach, whereby the quantitative and qualitative components represent distinct, consecutive phases, with the quantitative data being employed to inform the content of the qualitative interview. (Cresswell & Clark, 2018; Fetters et al., 2013; Ivankova et al., 2006). Although the quantitative data was used to inform the content of the interviews, and the two phases remained distinct, the actual conduct of the present study followed a different trajectory.

Following an initial four-month period of stakeholder engagement, recruitment to the quantitative survey phase began in April 2018. The response to this initial phase of recruitment, and the level of participant interest in continuing to participate in the qualitative phase of this research was greater than anticipated. Rather than risk losing the good will and interest of the participants, the decision was taken, after two and a half months of data gathering, to request approval to commence the qualitative stage while the survey was still ongoing. This decision was supported by

sample size calculations, which indicated that the participants already engaged with the study constituted a fair representation of the sample population. This resulted in, what Sandelowski (2003) has referred to as a hybrid of the sequential and convergent designs, whereby the quantitative and qualitative phases may alternate multiple times, as necessary. Although the quantitative survey was left to run throughout the qualitative phase, recruitment was further boosted by an advertisement, which appeared in October 2018, in a county-wide publication, produced by West Sussex County Council. As with the initial phase of recruitment, the response to this advertisement was far greater than expected, and almost doubled the participant numbers with the survey. Following the sampling approach outlined in section 4.7.1, it was decided that a second series of qualitative interviews was justified, and these took place in November 2018. Access and recruitment to the quantitative survey was closed at the end of December 2018. The actual design followed by this study is illustrated in Figure 4-2.

The trajectory followed within this study also fits well with the underlying ethos of mixed methods research, which calls for pragmatism and methodological pluralism, which advocates the use of two or more paradigms together, based on the best way to tackle the aims of the research (Creswell & Plano Clark, 2018b; Doyle et al., 2016; Shannon-Baker, 2016). Furthermore, it has frequently been suggested that, instead of being driven by choice of study design, the research methods should be mixed in such a way as to maximise the chance of answering the research question (Bishop, 2015; Doyle et al., 2016; Johnson & Onwuegbuzie, 2004). It was considered that the ability to properly address the research questions may have been limited, had the participants been left to lose interest in the research between the quantitative and qualitative phases if this time period was too long.

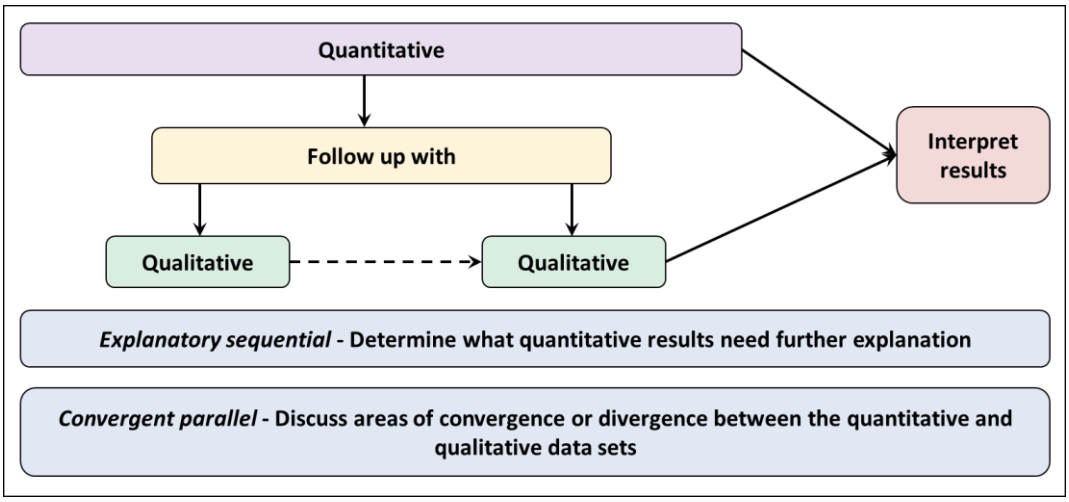


Figure 4-2: Research trajectory

4.5 Phase one – quantitative data collection

As noted above, the aim of the quantitative phase of this study was:

1. To clarify the nature of the relationship between loneliness and health within the study population, and
2. To identify the demographic characteristics which may influence the relationship between loneliness and health within the sample population.

This phase was also used to recruit participants to the second, qualitative phase of this work. Furthermore, the data generated by the quantitative survey were used to inform the classification of participants into lonely, healthy, and outlier subgroups, as well as informing the purposive sampling of the participants who were interviewed during the second phase of this research. A survey was designed which included well-validated measures of loneliness, health and wellbeing, and general demographic data. The survey method was selected to ensure that the data gathered were standardised across the sample population, and generalisable beyond the sample group, to a larger population.

4.5.1 Data collection

As noted above, the quantitative phase of this study sought to explore whether there was a relationship between loneliness, health and wellbeing, and various demographic variables. The measures included are discussed below and the full survey may be found in appendix 2.

4.5.1.1 **Measuring loneliness**

Perhaps the simplest way to measure loneliness among any sample population is to just ask the participants if, and how often, they feel lonely. However, due to the complex nature of loneliness, and the assumption with these approaches that everybody holds a common understanding of the concept of loneliness this approach is seldom recommended (Shiovitz-Ezra & Ayalon, 2012; Victor, Grenade, & Boldy, 2005). Furthermore, as many may feel embarrassed to admit to feeling lonely, or stigmatised, upon the admission of loneliness, they are more likely to provide what they consider to be a socially desirable response, when asked about loneliness (Cornwell, 1984; National Academies of Sciences Engineering Medicine, 2020; Victor, Grenade, et al., 2005). Consequently, direct questions regarding loneliness are unlikely to elicit a true response from the participant, and tend to result in an under-representation of loneliness throughout the sample population (Cornwell, 1984; Victor, Grenade, et al., 2005).

A more in-depth critical review of the loneliness literature may be found in section 2.4, however, a specifically focused succinct overview of some of that literature is revisited here to give context to the conversation of how best to measure loneliness. Within this study, loneliness was measured using the De Jong Gierveld 6-item Loneliness Scale (De Jong Gierveld, 1989; De Jong Gierveld & Havens, 2004; De Jong Gierveld & Kamphuls, 1985). Based on the discrepancy definition of loneliness, which defines loneliness as the perceived discrepancy between desired and realised social interactions (Peplau & Perlman, 1982), this was initially

developed as a 34-item, multidimensional scale, looking to capture data pertaining to aspects of both social, and emotional loneliness (De Jong Gierveld & Kamphuls, 1985; De Jong Gierveld & Raadschelders, 1982; De Jong Gierveld & Van Tilburg, 1999b). The scale was developed using the written experiences of 114 lonely individuals and piloted on a sample of 59 participants. Although found to successfully measure the most severe feelings of loneliness, this initial scale failed to capture data relating to the less intense aspects of loneliness. This led to the development of an 11-item, unidimensional, and self-administered version (De Jong Gierveld & Van Tilburg, 1999b). Much like its predecessor, this scale displayed adequate reliability and validity (De Jong Gierveld & Van Tilburg, 1987, 1999a, 1999b; Penning et al., 2014). However, in certain circumstances, the 11-item version was considered too long, particularly when used as a part of large surveys. For this purpose, the 6-item scale was developed (DJG6) and validated (De Jong Gierveld & Van Tilburg, 1987, 1999b, 2006, 2010). In addition to offering a reliable and valid measure of loneliness within the target population, it also allows for the individual measurement of both emotional and social loneliness (De Jong Gierveld & Van Tilburg, 1999b, 2006, 2010; Penning et al., 2014). As noted in section 2.4.2, emotional and social loneliness are thought to derive from the absence of different types of relationship. As such, one could also assume that they are subject to different types of risk factors and have differing impacts on individual health and wellbeing.

One commonly used alternative to all three versions of the De Jong Gierveld scale is the University of California, Los Angeles (UCLA) Loneliness Scale (Penning et al., 2014; Russell, Peplau, & Cutrona, 1980; Russell, 1996). Although considered, by some, to be a more psychometrically rigorous measure of loneliness (Allen & Oshagan, 1995; Hartshorne, 1993; Penning et al., 2014), there are several considered reasons why this tool was rejected in favour of the DJG6. Firstly, all 20 items included within the UCLA scale are worded in the same (negative) direction,

raising the potential for response bias. Response bias indicates the tendency for participants to respond falsely, based on, among other factors, the way questions are worded. This may in turn negatively impact the validity of any data gathered (Penning et al., 2014; Russell et al., 1980). Secondly, the UCLA scale focuses solely on social loneliness (Penning et al., 2014; Weiss, 1973). Finally, although the DJG6 may, superficially, lack the psychometrically robust nature of its counterpart (Allen & Oshagan, 1995; Hartshorne, 1993; Penning et al., 2014), the DJG6 is better validated within and, as such, more likely to offer an accurate measure of loneliness within an older adult population (De Jong Gierveld & Van Tilburg, 1999a; Penning et al., 2014).

4.5.1.2 **Measuring health**

Three scales from the R-Outcomes (https://r-outcomes.com/) suite of patient-reported outcome measures were employed to gauge various elements of health: Health Status (HowRU), the Personal Wellbeing Scale (PWS), and the Health Confidence Scale (HCS). The Health Confidence Scale was included on the personal recommendation of the r-outcomes creator, due to its high correlation with the Personal Wellbeing and HowRU scales. Although relatively new, these scales have been well tested and validated among populations of older adults (Benson, Potts, Bark, & Bowman, 2019; Benson et al., 2010; Benson, Sladen, et al., 2019). These scales are short, evidence-based measures, each comprising four items. They allow for the monitoring of health, wellbeing, and confidence. In addition to being well-validated, these measures have been selected because they score significantly higher on measures of readability than their competitors, making them more inclusive, and less reliant on individual reading ability (Benson, Potts, et al., 2019; Benson et al., 2010; Benson, Sladen, et al., 2019).

Health status (HowRU)

The HowRU health status measure is a patient-reported outcome measure, consisting of four items, and gives an indicator of participant quality of life. It asks patients to rate how, over the preceding 24 hours, they felt physically and mentally, and how much they can do in terms of function and independence (Benson, Potts, & Bowman, 2016; Benson, Potts, Whatling, & Patterson, 2013; Benson et al., 2010). This scale correlates well with other well-validated measures, including the EQ-5D (Benson et al., 2016; Benson et al., 2013), the Oxford Hip and Knee Scores (Benson et al., 2016), and the SF-12 (Benson et al., 2010). However, the HowRU has the advantage of being shorter and has a higher completion rate than all the other measures. Furthermore, due to the nature of the rating scale, which is based on "emoji" type icons, the HowRU scores significantly higher on measures of readability (Benson et al., 2016; Benson et al., 2013; Benson et al., 2010), thereby reducing any potential for inequality within the sample group. Hence, this scale was favoured over the more well-established alternatives noted above.

Personal Wellbeing Scale (PWS)

This scale represents a simplified version of the four Office for National Statistics personal wellbeing questions. These routinely appear in the Annual Population Survey, and are approved governmental measures (Benson, Sladen, et al., 2019). The PWS seeks to measure three aspects of wellbeing: evaluative (life satisfaction), eudemonic (sense of purpose and/or meaning), and hedonistic (feelings of happiness and/or sadness) and has been validated through the secondary analysis of data gathered as part of an evaluation of five social prescribing programmes. Unlike the HowRU, the PWS provides a measure of wellbeing over the preceding two weeks, thereby offering a more general view than that provided by the HowRU. As above, this measure was selected in preference to alternative measures due to its readability rating and ease of administration.

Health Confidence Scale (HSC)

Based on the notion that better health and greater confidence are associated with each other, this scale gathers data on an individual's confidence in their ability to engage with clinicians and other healthcare providers, as well as their ability to manage their own health (Benson, Potts, et al., 2019).

It is accepted here that all three of the included health-related measures represent a relatively short-term view of health and wellbeing, when compared to their competitors. However, the purpose of these measures within this survey was simply to establish the presence and magnitude of any relationship between loneliness and health, in order to inform the purposive sampling of participants for the second phase of this study. As such, a cross-sectional view of individual health and wellbeing was considered sufficient to ascertain the levels of health and wellbeing present among the participants. Furthermore, as a longer-term view of health was not considered necessary for the recruitment of participants to this study, the inclusivity and readability offered by the R-Outcomes measures was favoured over the familiarity of the more established alternatives.

4.5.1.3 **Demographic data**

There are many factors which may impact on health and loneliness (§2.4.3), including income and deprivation (Delaney, Wall, & O'HAodha, 2007). Data were collected relating to age, gender, rurality, and the index of multiple deprivation quintile (based on postcode), to identify what, if any, influence these factors may have had over participants' measures of health, wellbeing, and loneliness, within the sampling frame. Due to the focus of this research being on the mechanisms underlying the relationship between loneliness and health, rather than the various risk factors for loneliness, data relating to marital status or whether they lived alone

(living status) were not collected as part of the quantitative survey[18]. However, as will be seen below, living status was recorded for the 41 interview participants, and subsequently analysed (§ 5.5).

In addition to providing data pertinent to the aims of the research, the quantitative phase was also used as a tool to recruit participants to the qualitative phase, as all were given the opportunity to volunteer to engage further. The survey was made available to participants, both in printed hard copy format, and electronically via Survey Monkey. Both formats of the survey included a participant information sheet (see appendix 4), outlining the nature of, and justification for the study and researcher contact details. The information also included details of several voluntary sector organisations relevant to the topic under investigation, as sources of support if any of the participants felt emotionally distressed subsequent to their interview. This detail was included to ensure that all participants were able to give fully informed consent to participate. Assumed consent was taken from those who completed the survey online. Those wishing to participate further, as part of the qualitative phase of this study, were asked to provide their name and contact details. These identifiable participant data were removed when the data were imported into SPSS, and the data cleaned and analysed.

4.5.2 Sampling

Sampling refers to the selection of a subset of individual participants from within the target population (Jones, Carley, & Harrison, 2003; Kadam & Bhalerao, 2010; Noordzij et al., 2010). In the case of this work, the target population is defined as community-dwelling, retired adults aged 65 years and above. This specific demographic group was selected primarily due to the impact of retirement which represents a key life transition, affecting both finances and social involvement. The

[18] The initial decision was made to exclude this data from the survey, based on the purpose of the research. However, in hindsight, this omission may potentially weaken the results of the statistical analyses. This is further considered within the discussion chapter.

minimum age of 65 years was selected because, although state retirement age is currently increasing, 65 represents the age at which all the sample population, who were recruited in 2018, will have become eligible to claim their state pension. Recruitment was restricted to those who were residing within the community to minimise the influence on responses of institutionalisation.

As with the majority of research, accessing the full target population was neither practical, nor possible (Kadam & Bhalerao, 2010), and so a sampling frame was employed, which represented the actual population from which the study population was recruited. In this case, the sampling frame restricted recruitment to members of the target population who were residing within West Sussex. To quantify, and illustrate this approach, while the overall population of the United Kingdom in 2018 was 66.5 million, the target population – retired adults aged 65 years and over – was 12.2 million. By limiting the sampling frame to those residing in West Sussex, the recruitment pool was limited to 200,968 individuals.

Selection of participants from any sampling frame may be dependent on several techniques. Random sampling may be viewed as the best approach to ensure a representative sample of participants. It is a type of probability sampling, which ensures that all members of the sampling frame have an equal chance of being selected to participate. However, due to both financial and time constraints, a random sample was not considered possible. In terms of the actual sampling technique employed, three approaches were adopted within the current study. Recruited through either advertisement, face-to-face meeting, or third-party recruitment (§ 4.5.5), the 266 participants recruited to the quantitative phase of this research represented a self-selecting sample. This is a non-probability sample, where individuals from within the sampling frame have chosen to participate, through their own volition. However, although all individuals who took part in the qualitative phase of this study had volunteered to do so, purposive sampling was employed to select which, of the 163 volunteers, would actually be invited to be

interviewed. Purposive sampling is also a form of non-probability sampling, and represents a technique, which relies on the judgement of the researcher to decide who to include in the sample.

4.5.2.1 **Target population and sampling frame**

As outlined above, the target population is defined as all retired older adults, aged 65 or over, within the UK. West Sussex was chosen as the sampling frame for this study due to its demographic profile. It is a large county within the south of England, covering around 769 square miles. Its actual location is highlighted in Figure 4-3, along with an outline of the neighbouring counties. According to the Office for National Statistics mid-year population estimates, in 2018, West Sussex was home to around 858,852 people, 23% of whom were aged 65 and above. This compares to around 18% in England as a whole (Park, 2021). This discrepancy is still present when only adults aged 85 years and older were considered (3.5% compared to 2.5%; Park, 2021). These deviations from the overall demographic profile of England are likely exacerbated by the internal migration of retirees to the county. Over the five-year period up to 2018, 3,875 new residents have moved to the area each year, of which around 17% are 85 years or older (Park, 2021).

In terms of deprivation, which is quantified using the 2015 indices of deprivation reports by the Office for National Statistics, West Sussex is significantly more affluent when compared to much of England, ranking 125th out of the 151 English unitary authorities in terms of degree of deprivation (Oxford Consultants for Social Inclusion, 2019). However, at a more local level, there is a good distribution of all levels of deprivation across West Sussex, allowing for sampling from across all quintiles of deprivation. The distribution of the quintiles of deprivation within West Sussex are shown in Figure 4-4. This is an important factor to consider, because deprivation is often considered to represent a significant risk factor, both for loneliness and poor health (Dahlberg & McKee, 2014; Novak et al., 2020; Victor, Scambler, et al., 2005). However, as preliminary analyses (later confirmed by final

analyses) indicated no association between deprivation and measures of loneliness, or health and wellbeing, participant quintile of deprivation was not used to inform the sampling of participants for the second phase of this study.

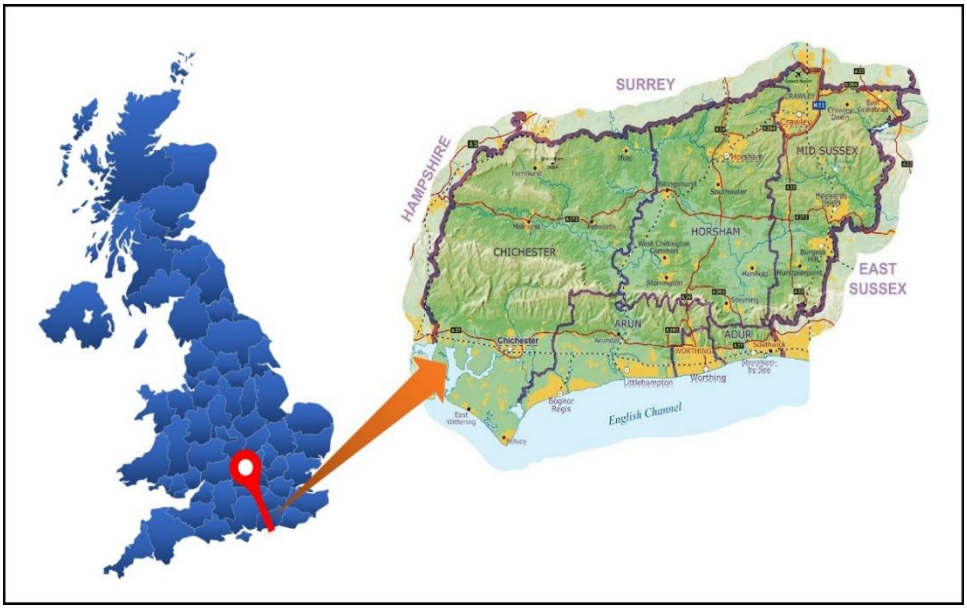


Figure 4-3: West Sussex - sampling frame location

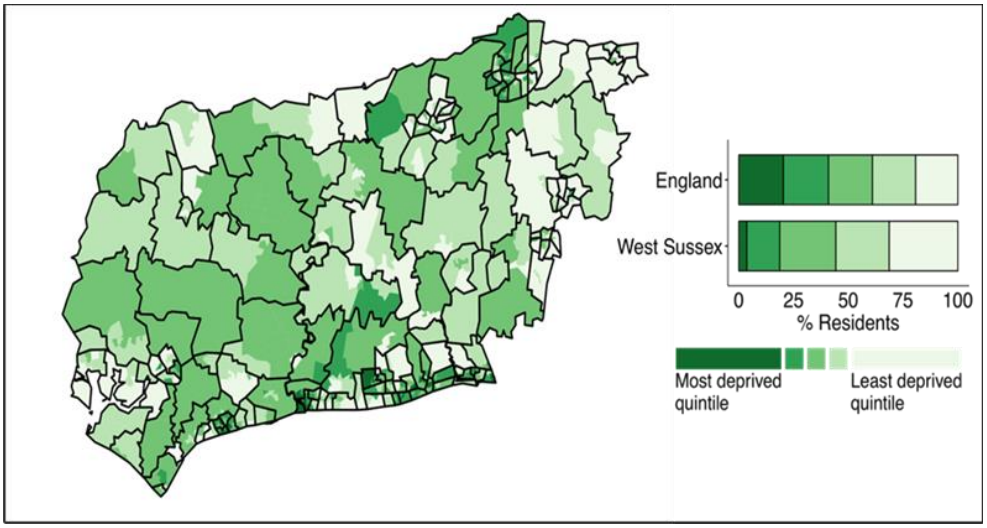


Figure 4-4: Overall deprivation in West Sussex – 2018 (Public Health England)

Risk factors for loneliness also bear relevance when considering the comparability of West Sussex to other locations. Based on data taken from the 2011 census of England, Age UK have produced a series of *loneliness heat maps*, which offer a graphical representation of the relative risk of loneliness across 32,844 neighbourhoods in England (Age UK, 2018). These levels of risk are based on figures pertaining to marital status, self-reported health status, age, and household size. According to the English Longitudinal Study of Ageing, and, consequently, these heat maps, are believed to predict around 20% of the loneliness observed among the population of adults aged 65 years and older. Figure 4-5 shows the loneliness heat map for West Sussex and highlights an even distribution of the levels of relative risk of loneliness among the populated areas. Furthermore, visual comparison of the loneliness heat map with the map of deprivation appears to support the assertion that the prevalence of loneliness among older adults is associated with degree of deprivation. However, it should be noted that not all factors associated with loneliness are captured or available at census level. It is not clear what impact this missing data may have had on the overall estimates of the relative risk of loneliness given in such heat maps. That being said, the map does suggest that all levels of both risk of loneliness, and deprivation, are represented within the West Sussex populations.

4.5.3 Sample size calculations

Having identified an appropriate sampling frame for this research, attempting to study a population of over 200,000 individuals is still far from practical. This raised the question of how many participants should be recruited to each phase of this research. This is an important consideration from both an ethical, and a methodological standpoint (Jones et al., 2003; Kadam & Bhalerao, 2010; Noordzij et al., 2010). For example, if too few participants are recruited to a study, it may lack the statistical power to detect any effects. In this instance, it would be ethically inappropriate to subject the participants to potentially harmful, or adverse,

situations. In the case of this research, although there are no clinical treatments or interventions involved, participants were asked to talk about their experiences of health and loneliness, both of which may have been embarrassing, or emotionally disturbing. Conversely, if too many participants are recruited, this would result in a waste of both participant and researcher time and resources (Noordzij et al., 2010).

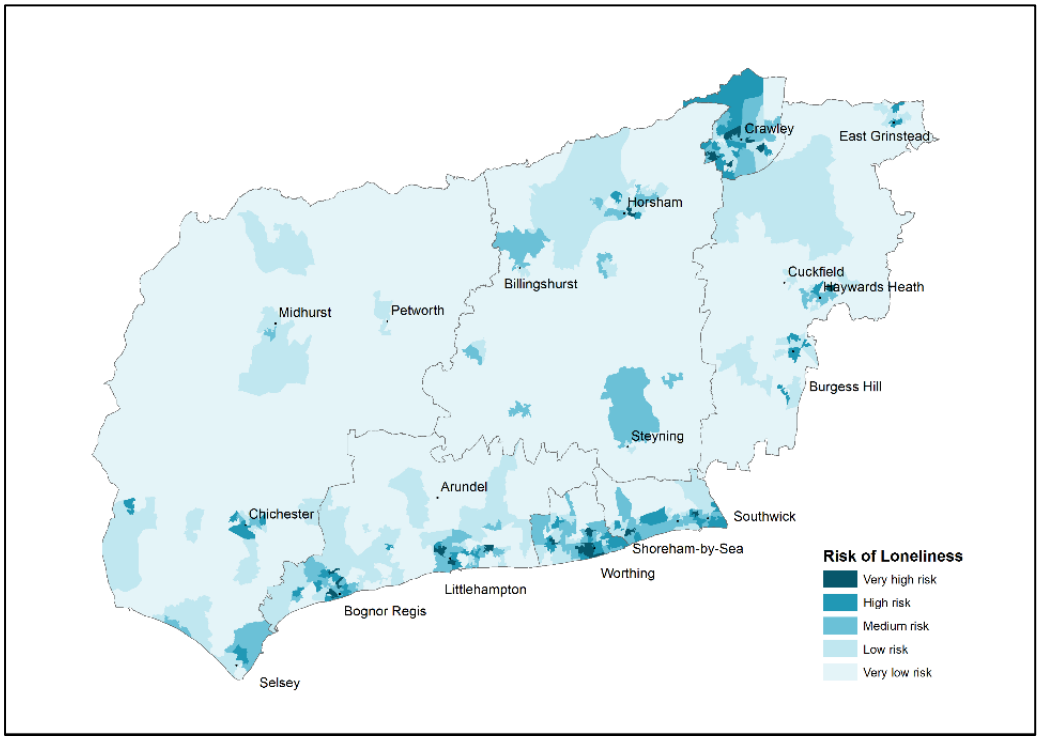


Figure 4-5: West Sussex Loneliness Heat Map

To minimise participant risk, and to ensure the study can detect any statistically significant effects of loneliness on individual health, sample size, or power, calculations must be conducted (Kadam & Bhalerao, 2010; Nayak, 2010; Pourhoseingholi, Vahedi, & Rahimzadeh, 2013). In addition to ensuring the statistical power of the study, sample size calculations are conducted to minimise both type 1 errors, or false positives, and type 2 errors, or false negatives. Sample size calculations are based on the precision and variance of the measurements

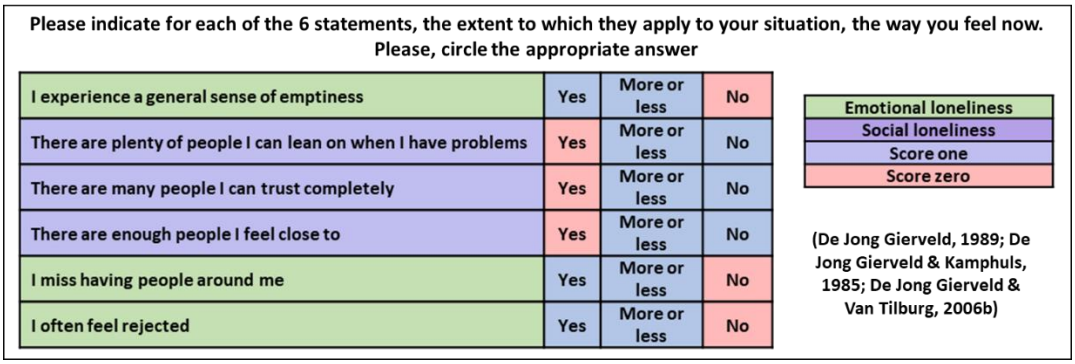
employed, the magnitude of the difference expected between sample sub-groups, and the level of type 1 errors we are willing to accept (Jones et al., 2003; Noordzij et al., 2010). There are several methods through which a sample size may be calculated, choice of which is dependent on study design, and the data gathered (Jones et al., 2003; Kadam & Bhalerao, 2010). The initial assumption at the onset of this study was that the data gathered during the quantitative phase, for measures of health and loneliness, would be dichotomised, with participants being categorised as healthy or unhealthy, and lonely or not lonely (§ 4.7.1). Initial sample size calculations were made using the population size and desired margin of error[19] to determine the proportion of the population required to be 95% or 99% certain that the actual population mean lay within a given range, or confidence interval. This indicated that, once the sample size had reached 96 participants, there was a 95% certainty that the actual population parameters for measures of loneliness, health, and wellbeing lay somewhere within the margin of error, and that the sample was representative of the overall target population.

However, following the conclusion of the quantitative stage of this study, but prior to the formal statistical analyses, the decision to dichotomise the data gathered from the measures of health, wellbeing, and loneliness was rejected. The main reason behind this decision was that, although reducing each of the variables down to one of two values may, superficially, seem to simplify matters, this process tends to reduce the ability to detect any relationships between variables, thereby increasing the likelihood of type 2 errors (MacCallum, Zhang, Preacher, & Rucker, 2002; Osborne, 2013). Conversely, dichotomisation may also result in erroneous significant results, which will increase the potential for type 1 errors, and subsequently bias the results (Hin, Lau, Rogers, & Chang, 1999; Osborne, 2013). Furthermore, the dichotomisation of a continuous variable will likely result in a loss of information pertaining to individual participant differences or mask any

[19] Margin of error is a measure of the amount of random sampling error in the results of a survey.

interactions within the dataset (Knüppel & Hermsen, 2010; MacCallum et al., 2002; Osborne, 2013). Consequently, dichotomisation may result in misinterpretation of the statistical analyses (MacCallum et al., 2002; Osborne, 2013). With this in mind, it was necessary to conduct post hoc sample size calculations to clarify that the sampling approach adopted for the qualitative phase had been appropriately powered. At this point, advice was sought from a professor of statistics. While post hoc sample size calculations are not recommended, it was possible to calculate confidence intervals to ascertain how confident one may be that the study results reflect what may be observed within the overall target population (Noordzij et al., 2010).

The main issue of concern with dichotomisation in this case was the scoring of the DJG6. The scale comprises six statements, to which each participant can respond "yes", "no", or "more or less". Depending on the direction of the statement (positive or negative), the participant scored zero or one if they said "yes" or "no". However, all participants scored one point if they responded with "more or less" to any statement, thereby doubling the chance of scoring a point for each of the six statements. Figure 4-6 shows the six statements and scoring system. A higher score indicated a greater degree of loneliness. As such, all data from measures of loneliness and health and wellbeing were treated as continuous.



Please indicate for each of the 6 statements, the extent to which they apply to your situation, the way you feel now. Please, circle the appropriate answer

I experience a general sense of emptiness	Yes	More or less	No
There are plenty of people I can lean on when I have problems	Yes	More or less	No
There are many people I can trust completely	Yes	More or less	No
There are enough people I feel close to	Yes	More or less	No
I miss having people around me	Yes	More or less	No
I often feel rejected	Yes	More or less	No

Emotional loneliness
Social loneliness
Score one
Score zero

(De Jong Gierveld, 1989; De Jong Gierveld & Kamphuls, 1985; De Jong Gierveld & Van Tilburg, 2006b)

Figure 4-6: DJG6 scoring scheme

As the sample size calculations were no longer considered valid, it was necessary to conduct retrospective analyses to ascertain the degree of confidence held that the results from the quantitative study reflect what might be observed in the overall target population (Noordzij et al., 2010). This was established by conducting confidence intervals for the scores recorded in the sample group. A narrower confidence interval may be assumed to give a more precise estimate, and the size of the interval may be reduced by increasing the sample size. Both 95% and 99% confidence intervals were calculated as follows:

$$\overline{x} \pm z\frac{s}{\sqrt{n}}$$

Where "$\overline{x}$"is the sample mean, "z" is the z score for the desired interval (1.96 in the case of a 95%, and 2.58 for a 99% confidence interval), "s" is the standard error, and n is the sample size.

Based on the achieved sample size of 266, with a mean personal wellbeing score of 7.3 (±3.3), 95% CI (6.8, 7.6); 99% CI (6.7, 7.7), the confidence intervals indicate that there is a 99% certainty that the population mean personal wellbeing score lies between 6.7 and 7.7. As the mean personal wellbeing score lay within the confidence interval when the sample size was 100, the decision to begin the qualitative stage of this study was considered well justified.

4.5.4 Stakeholder engagement

Prior to the submission of the application to the ethics committee for approval to conduct this research, a period of stakeholder engagement was conducted. This involved the identification of key groups and potential gatekeepers to the sample population. This engagement included attendance, and presentation of the proposed research, by the researcher at stakeholder events and board meetings,

and informal conversations over coffee. Key stakeholders identified included local branches of Age UK, Guild Care, and the University of the Third Age (U3A), local older people's networks, local charities, and local church groups. This engagement facilitated the distribution of the quantitative survey at various day centres and older people's groups. Several of the stakeholders also included a recruitment advertisement (appendix 3) within their newsletters and e-mail alerts.

4.5.5 Recruitment

Initial recruitment to the survey was conducted with the assistance of key stakeholders, through attendance at Age UK centres, Guild Care Day centres, U3A groups and older people's network meetings, as well as church and social groups. Once the study had been operational for six months, the researcher, as an employee of West Sussex County Council, was given the opportunity to place a recruitment advertisement within a county-wide, local government newspaper (see appendix 3). This publication is delivered to every property within West Sussex which, consequently, offered potential access to the entire sample population.

4.5.6 Missing data

It was intended that, where possible, all available data would be included in the quantitative analyses, with no missing values imputed. However, any participants returning an incomplete dataset were excluded from participating in the qualitative phase of this research. In the case of missing data, all statistical analyses were conducted first with these values left out, and second with the missing values imputed using the median values from the complete quantitative sample. These secondary analyses were conducted to ensure that the missing data did not hold any significant influence over the final analyses.

4.5.7 Phase two participant survey data

All quantitative analyses were repeated with just the survey data provided by the 41 phase two participants. This was in order to ensure the representativeness of the participants selected completer the second, interview phase of this study.

4.5.8 Summary of quantitative analysis

The quantitative phase of the current study employed a survey, designed to address the presence of any relationship between loneliness and health, and the impact of any demographic characteristics on both loneliness and health and wellbeing. Both electronic and paper versions of the survey were available to participants, who were recruited through partnership working with key stakeholders and gatekeepers, and advertisement in a county-wide publication. The following section focusses on the quantitative analysis phase of this study.

4.6 Quantitative analysis

Quantitative analyses were conducted on data generated through the survey. As outlined above, the survey comprised measures of loneliness, quality of life, personal wellbeing, and health confidence, as well as a series of demographic items. Demographic data included age, gender, and postcode. Postcode was used in combination with local data pertaining to the indices of multiple deprivation, to extrapolate level of deprivation. The analyses of these data were used to address objectives one and two (§ 4.2), by establishing the existence, and nature of any relationship between loneliness and health and wellbeing, as well as the influence of gender, age, or deprivation on these variables. These analyses were also used to inform the purposive sampling of participants for the qualitative stage of this project. The full data analysis plan for the quantitative phase of this study is outlined in Figure 4-8.

4.6.1 Scoring the quantitative measures

Prior to conducting any statistical analyses, the four quantitative measures were scored.

4.6.1.1 **De Jong Gierveld 6-item Loneliness scale**

The basic scoring system for the DJG6 Loneliness Scale has already been outlined above in Figure 4-6. Each completed scale may score up to six points, with up to three points each available for social and emotional loneliness. A higher score, either overall, or for the individual subtypes of loneliness indicated a higher degree of loneliness. In the overall scale, those scoring zero to two were classified as not lonely, and those scoring three or above were classified as lonely.

4.6.1.2 **R-Outcomes measures of health and wellbeing**

The HowRU, Personal Wellbeing and Health Confidence Scales were scored as follows. Figure 4-7 outlines the scoring process for each item on each scale. Depending on participant response, each item is scored from zero to three. Regardless of the item statement, or the rating options, the scoring remains the same throughout the scoring process. This is the case both within and between the quantitative measures of health and wellbeing.

	None	A little	Quite a lot	Extreme
Participant rating				
Score	3	2	1	0

Figure 4-7: R-Outcomes scoring scheme (Benson et al., 2010)

The maximum score on each scale is 12, with a higher score indicating a better outcome. In all three scales, those scoring from zero to six were classified as unhealthy, and those scoring between seven and 12 were classified as healthy.

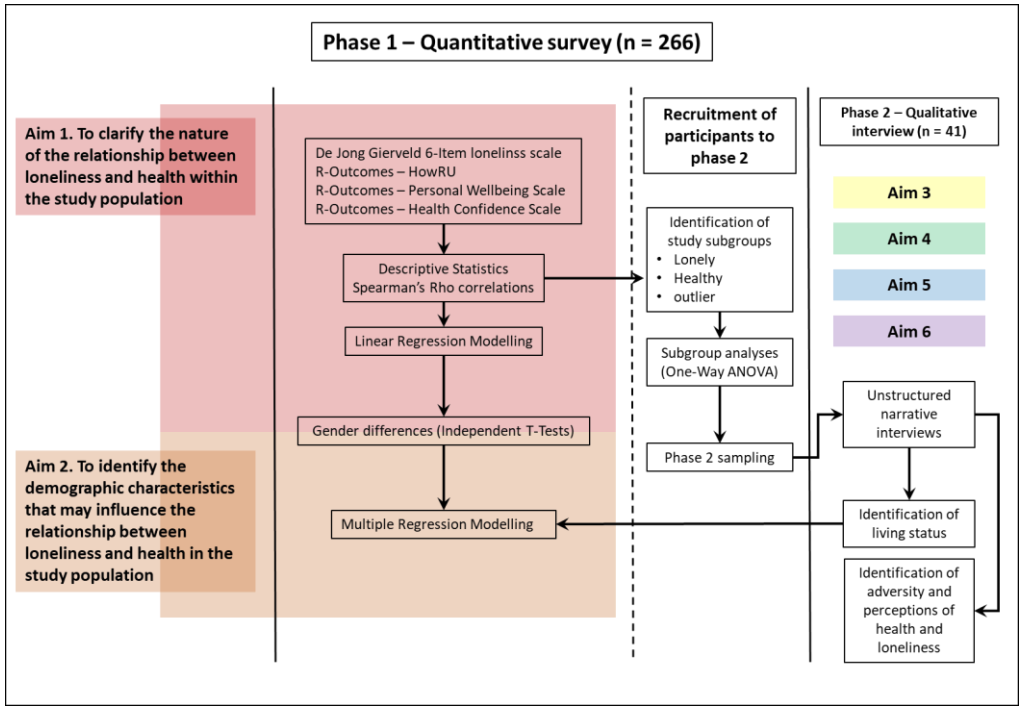


Figure 4-8: Quantitative data analysis plan

4.6.2 Statistical analyses

Statistical analysis may be described as the collection, exploration, and presentation of data to discover any patterns or trends underlying these data, and specific target populations. Statistics may be either descriptive or inferential. Descriptive, or summary, statistics are those which may be used to describe the nature, or characteristics of the data set, in particular, whether or not the data are normally distributed (see below). Inferential statistics venture beyond simple description, and may be used to test hypotheses, draw conclusions, and make generalisations

about the population beyond those included within the study, and rely on the use of statistical tests which are outlined below.

4.6.2.1 **Spearman's rank-order correlation**

Correlational analyses were conducted to address the first two aims of this research; to clarify the nature of the relationship between loneliness and health, and to identify the demographic characteristics which may influence the relationship between loneliness and health. Correlational analyses were also carried out to inform both the allocation of participants to one of the three subgroups (lonely, healthy, outlier), and the sampling of participants for the second phase of this study.

As the data sets were found to be non-normally distributed, Spearman's rank-order, or Spearman's Rho, correlations were conducted between the following variables: age, deprivation quintile, emotional loneliness, social loneliness, overall loneliness, HowRU, personal wellbeing, and health confidence. The Spearman's Rho is a non-parametric test and, as with all non-parametric tests, it lacks the statistical power of its parametric counterpart (Spencer, Lay, & Kevan de Lopez, 2017). However, this type of test makes no assumption regarding the distribution of the data under investigation. That being said, the Spearman's Rho does assume that the data are continuous, that the observations are paired, and that the relationship between the paired variables is monotonic, or linear. Preliminary analyses indicated a strong, significant, inverse correlation between individual scores of personal wellbeing and overall loneliness. Significant correlations were also found between loneliness and the other two measures of health and wellbeing, however, none of these relationships was as strong as that observed between loneliness and personal wellbeing. Because of this, individual scores of loneliness and personal wellbeing were used to classify the participants as lonely or healthy, as described in section 4.7.1.

4.6.2.2 **Linear regression modelling**

The correlational analyses described above serve to highlight the presence of any associations between loneliness and health and wellbeing, as well as demographic variables. However, correlational analyses do not provide any information to indicate how predictive loneliness or any of the demographic characteristics, may be of individual health and wellbeing. For this purpose, a series of simple linear regression models were constructed. In addition to allowing for the value of the dependant variables, in this case health and wellbeing, to be predicted based on the value of the independent variable, in this case loneliness, regression modelling can be used to determine the degree of variation in the dependant variable that is caused by the independent variable (Laerd Statistics, 2015a). As with most statistical tests, conduct of linear regression rests on several assumptions. These are that the data are continuous; the relationship between the independent and dependant variables is linear; there is independence of the observations; there are no significant outliers within the data set; the residuals, or errors, show homoskedasticity, which refers to a state where the residuals are the same across all values of the independent variable (overall loneliness); and that the residuals are normally distributed (*ibid*).

The linearity of the data was demonstrated by plotting the correlations between scores of overall loneliness and each of the three measures of health and wellbeing. The independence of the observations may be established through statistical testing, however, as there was no reason to suspect that any of the observations were related, this assumption was taken as a given. Regarding outliers, one participant's HowRU score strayed from expectation, however, due to the highly subjective and variable nature of this measure, their data was left in the regression model, as it was believed that the value represented a true reflection of the individual's health at the time of survey completion.

4.6.2.3 **Hierarchical multiple regression modelling**

Having established the predictive value of loneliness in estimating measures of quality of life, personal wellbeing, and health confidence, it remains important to consider the influence of various demographic characteristics over the relationship between loneliness and health (aim 2). To establish the degree of influence that age, gender, and deprivation may have had on the relationship between loneliness and health, multiple regression modelling was conducted. Considered to be an extension to simple linear regression modelling, multiple regression allows for the investigation of how one may predict the value of a single continuous dependent variable (in this case wellbeing) based on the values of multiple continuous or categorical independent variables (Laerd Statistics, 2015b). In the standard approach to multiple regression modelling, all the independent variables are added to the regression model simultaneously. However, hierarchical regression modelling allows for the independent variables to be added to the regression equation sequentially, and for the resulting regression models to be compared. In addition to allowing the effects of any covariates on the results to be controlled, the hierarchical approach allows for the observation of possible causal effects of each of the independent variables when predicting the dependant variable (*ibid*).

Multiple regression modelling rests on the following six assumptions; that the observations are independent, that the relationship between the dependent and each of the independent variables is linear, the data show homoskedasticity (§ 4.6.2.2), that none of the independent variables are highly correlated (multicollinear), there are no significant outliers, and that the residuals are normally distributed. Except for multicollinearity, all the assumptions were tested according to the methods outlined in section 4.6.2.2. The absence of multicollinearity was established through the inspection of correlation coefficients, tolerance, and variance inflation factor values. In total, four regression models were compared to

investigate the effects of loneliness, age, gender, and deprivation on health and wellbeing.

As previously noted, data pertaining to marital or living status (alone/not alone) were not collected from the full survey population. However, reliable living status data was consistently available for all the 41 participants who were interviewed (there was no consistent data available regarding marital status). Consequently, the multiple regression modelling was repeated using data from these 41 participants, and included age, gender, deprivation, and living status as the independent variables. These analyses are presented within hapter 5.

4.6.3 Summary of quantitative analysis

This section has detailed how the quantitative data were dealt with. The choice of statistical tests employed to analyse and understand the data, and their purposes, were explained and justified. These analyses were primarily used to address the first two objectives outlined in section 4.2. Correlation analyses were conducted to establish the presence and nature of any association between loneliness, and any demographic characteristics, with the three measures of health and wellbeing. Linear regression modelling was employed to ascertain the predictive value of these associations. To identify the relevance of age, gender, deprivation, and living status on the association between loneliness and health, multiple regression modelling was conducted. The results of the quantitative analyses are reported in Chapter 5.

4.7 Phase two – qualitative data collection

The aim of the qualitative phase of the present study was to:

3. To explore how older people conceptualise loneliness.
4. Identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health.

5. Identify common factors which may protect older adults from the detrimental effects of loneliness on their health.
6. Identify factors which influence the development of personally acquired potentials over the life course.

These aims were addressed through the administration of an unstructured, narrative-type interview.

4.7.1 Sampling and recruitment

All participants in the qualitative stage of this project were recruited from the pool of 187 individuals who completed the quantitative survey and indicated a willingness to participate further. This desire was indicated by the participant including their contact details when filling in the participant consent form (appendix 4). All participants who were interviewed were asked, at the beginning of their interview, to provide written consent to participate, and reminded that their consent could be withdrawn at any stage, should they decide they no longer wished to be involved.

All survey participants, as well as those who volunteered to be interviewed, represented a self-selecting sample. However, purposive sampling, informed by data generated through the quantitative survey, was used to select which participants to interview. As discussed above (§ 4.5.2), sampling refers to the selection of a subset of individual participants from within the target population (Jones et al., 2003; Kadam & Bhalerao, 2010; Noordzij et al., 2010). A self-selecting sample is a type of convenience sample comprising participants who have volunteered to participate. In contrast, purposive sampling refers to the intentional selection of participants based on their ability to clarify a specific phenomenon (Campbell et al., 2020). While the gold standard approach, within the context of the survey, is considered to be random sampling, whereby all members of the target population have an equal chance of being selected to participate, self-selected sampling ensures the presence of a willing participant group, and

purposive sampling ensures that those participants represent all of the subgroups identified through the initial analyses of the quantitative data (Alvi, 2016; Sharma, 2017; Taherdoost, 2016). This increased the likelihood that a comprehensive answer to the research question may be identified.

Purposive sampling of participants for the qualitative part of the present study was informed by the data generated through the first 100 completed quantitative surveys. Using this data, correlational analyses were performed to identify any significant relationships between loneliness, health, and the gathered demographic data. These analyses highlighted a strong, statistically significant, negative association between loneliness and quality of life scores ($r = -0.30$; $p<0.05$), personal wellbeing scores ($r = -0.67$; $p<0.05$), and health confidence scores ($r = -0.42$; $p<0.05$). As the strongest significant relationship was observed between measures of loneliness and personal wellbeing, this is the relationship that was used to inform the sampling for the phase two interviews. Plotting scores for loneliness and personal wellbeing graphically against one another on a scatter plot (Figure 4-9), allows for the identification of two clear participant subgroups fitting with these analyses: those who were lonely and unhealthy (Lonely), and those who were healthy and not lonely (Healthy, § 4.6.1). Also identified was a small group of outliers, who, contrary to the correlational analyses, represented those who were either lonely and healthy, or not lonely and unhealthy (Outlier). This sampling process was repeated once the full quantitative data set was available. Details of all 167 members of the three participant subgroups are reported in table 4.2.

As neither the preliminary, nor final analyses identified any significant association between quintile of deprivation and any of the measures of health, wellbeing, or loneliness, it was not deemed necessary to take this variable into account when selecting which participants to interview. Furthermore, as the aim of this research was to understand the mechanisms underlying the development of poor health as a consequence of loneliness, rather than the associated risk factors, combined with

the finding of no significant relationship between any of the demographic variables and measures of loneliness, health, and wellbeing, no other risk factors were taken into consideration at this stage of the study.

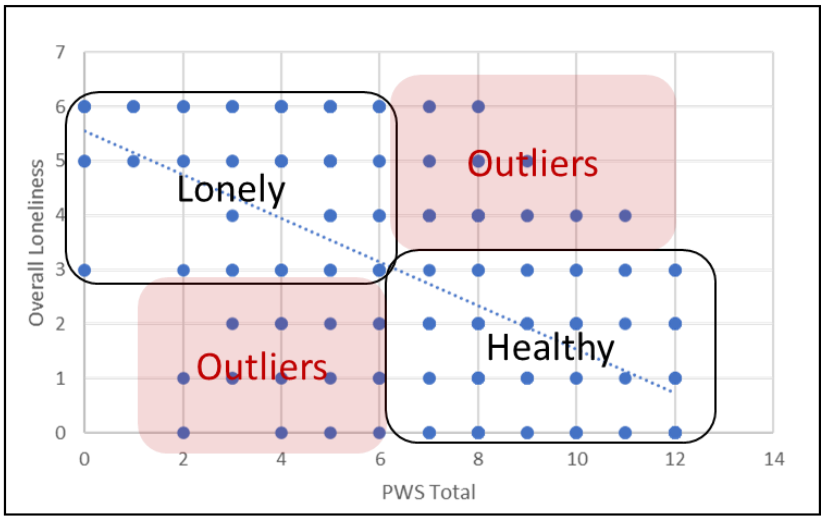


Figure 4-9: Scatterplot highlighting the loneliness/wellbeing relationship

Table 4-2 Participant subgroup details

Subgroup	Lonely	Healthy	Outliers	Total
Female	34	63	12	109
Male	22	32	4	58
Total	56	95	16	167

Based on individual participant scores of health and wellbeing and loneliness, it was possible to identify, from the plot, which participants fit into each of the three subgroups. Having identified two clear participant subgroups (Lonely, and Healthy), and outliers, along with the finding that neither deprivation, nor any other demographic characteristics included in the survey were significantly related to

health, wellbeing, or loneliness within the sample population (n = 167), the decision was taken to recruit to the qualitative interview stage as follows:

- As many outliers as possible recruited to address the overarching research question; *what is it that allows loneliness to be detrimental to the health of some, but not all, retired older adults?* In total 16 outliers had volunteered to participate; however, one participant withdrew their consent to participate due to ill health.
- Equal numbers of male and female participants from each of the lonely and healthy groups to allow for the identification of patterns of behaviours, perceptions, and life course events which may represent mitigating or exacerbating factors within the loneliness-health relationship. To match the number of participants in the outlier group, it was decided to attempt to recruited 15 male and female participants from each of the lonely and healthy subgroups.

From a total of 167 volunteers, 41 participants were interviewed: 15 in each of the healthy and lonely groups, and 11 outliers. Participant characteristics for this cohort may be found in table 6.1. These groups were selected as it was considered that this combination offered the greatest potential of addressing the research questions. It was hypothesised that those in the lonely group would display different life experiences and personally acquired potentials when compared to those in the healthy group. Furthermore, exploration of the outlier participants would serve to address why loneliness proves detrimental to the health of some, but not all, retired older adults. Most interviews were conducted in the participants' homes, however, two participants preferred to meet in a public place.

The sampling approach adopted here was influenced by the aims of the present study (§ 4.2). In addition to granting depth to the survey data, which had clarified the nature of the relationship between loneliness and health, the identification of the three distinct subgroups offers the opportunity to explore individual perceptions of loneliness and health, as well as highlighting how these perceptions may vary between the lonely, healthy, and outlier subgroups. The identification of healthy and lonely participant subgroups also allowed for the investigation and

discussion of common factors among the groups which may be responsible for the detrimental effects of loneliness within the lonely subgroups, or those which have conferred protection over the health of those in the healthy subgroup. By comparing the narratives of these groups, it is also anticipated that common factors which influence the development of personally acquired potentials may be identified. As many outliers as possible have been included in the interest of understanding why they appear to display an atypical relationship between loneliness and health, as well as assisting in the understanding of why loneliness does not affect all individuals in the same way.

4.7.1.1 **Subgroup analyses – Analysis of Variance**

In order to ensure the relevance and accuracy of participant subgroup allocation, and the sampling approach adopted, subgroup analyses of survey data were conducted. These analyses employed analysis of variance (ANOVA) tests. The ANOVA performs a similar function to the t-test but allows for the comparison of more than two groups. It is an omnibus test, meaning that, while it detects group differences, it does not indicate precisely where these differences lie. Conduct of the ANOVA statistic relies on the assumptions that the dependent variable is continuous; the independent variable is categorical; the observations are independent; there are no significant outliers; the dependent variable is normally distributed; and there is homogeneity of variances. If the tests highlight any statistically significant differences, post-hoc analyses are conducted to identify where precisely these occur. Post-hoc analyses typically involve the use of a series of Tukey tests. These provide a significance level for each pairwise comparison. However, the three study subgroups (lonely, healthy, outlier) presented an unbalanced design because the three groups are not the same size. In this case, a modified version of the Tukey test; the Tukey-Kramer post-hoc test, was utilised.

The results of the ANOVA tests highlighted statistically significant differences between the three subgroups on all measures of health and wellbeing.

4.7.2 Data collection

Following the life course approach (§ 2.3.1), which seeks to understand the impact and influence of adverse childhood events upon later life (Kuh & Ben-Shlomo, 2004; Nurius et al., 2015; Nurius et al., 2012), and influenced by the narrative process (discussed below), qualitative data was gathered through undertaking unstructured interviews. The topic guide employed for this interview can be found in appendix 5. The guide includes topics such as family structure, personality, religion and spirituality, and barriers to social engagement, as these were all considered to be factors which some of the wider determinants of health and are influential in the development of personally acquired potentials, as well as the protection of biologically given potentials (§ 2.2.2). The purpose of the interviews was to encourage participants to discuss their own experiences of loneliness and health, as well as significant events, throughout their lives.

4.7.2.1 **The narrative approach**

Rather than a single method or technique, the narrative approach represents several processes and procedures (Brinkmann & Kvale, 2015; Casey, Proudfoot, & Corbally, 2016; Ntinda, 2019) which may, overall, be thought to focus on the ways people use stories to understand and describe various aspects of their lives (Kim & Latta, 2009; Ntinda, 2019; Riessman & Quinney, 2005). While considered primarily to be a qualitative method, the narrative approach rests its feet in several methodological groundings, including phenomenology, which seeks to understand individual lived experiences (Bauer, 1996; Casey et al., 2016), social constructionism, which explores the development of shared assumptions about reality (Berger & Luckmann, 1966; Casey et al., 2016), and social constructivism, which focuses on the learning that may result from an individual's interactions within a group setting (Ntinda, 2019). Bearing in mind the assertion that the narrative process represents multiple approaches (Brinkmann & Kvale, 2015; Casey et al., 2016; Ntinda, 2019), this is perhaps not surprising. One could also assert that

this fits well with the pluralistic and pragmatic approach advocated and the adoption of a mixed methods approach within this current study.

Before considering the various narrative approaches, it is worth considering that the narrative itself may exist in more than one form. Indeed, several subtypes of narrative have been identified, including relational, lived, autobiographical, and narrative therapy. Relational narrative refers to that which is shared between the researcher and participant in their understanding of the phenomena being studied and is based on their construction of meanings (Murphy & Aquino-Russell, 2008; Ntinda, 2019). Lived narration may be observed when participants tell their stories about their lives, with no assumptions made regarding the importance of any particular experience (Connelly & Clandinin, 2006; Ntinda, 2019). Autobiographical narrative considers individual stories as autobiographies, each set within a cultural context (Bruner, 2004; Ntinda, 2019). Narrative therapy refers to a counselling technique, which is based on the notion that there is no single truth, and that symptoms of agitation and depression, and overall quality of life may be improved through the sharing and discussion of personal experiences, or narratives (Heidari, Amiri, & Amiri, 2016; Kim & Park, 2017; Nwoye, 2006). Within the current study, it was anticipated that the interviews would elicit a combination of lived and autobiographical narrative, however, elements of narrative therapy were observed throughout several of the interviews, as will be considered in the discussion. While each of these narratives may command their own specific approach, or method, the technique most commonly adopted within the narrative approach, and indeed, with much qualitative work, is the interview (Bauer, 1996; Ntinda, 2019). The narrative interview encourages the research participants, or informants, to tell their own story about some significant event in their life (Bauer, 1996; Josselson, 2006). It offers the informant the opportunity to reconstruct social events from their own perspective, yielding all their richness and complexity (Bauer, 1996; Muller, 1999; Webster & Mertova, 2007).

The narrative process has relevance to many disciplines and may be summarised as an approach that captures how human beings experience their world. Furthermore, and in contrast to other, structured, semi-structured, and unstructured types of interviews, the main purpose of the narrative is to provide the participant with the opportunity to narrate their experience, rather than focussing on the more traditional question-answer approach generally expected of an interview. Consequently, rather than those engaged in the interview being viewed as either the interviewer or interviewee, within the narrative interview they are characterised as either narrator or listener (Allen, 2017). The narrative interview itself is, as noted above, a qualitative method (Bauer, 1996; Josselson, 2006) which, much like the actual narrative, may come in several forms. These include Murray's experience-centred approach, which may be used to achieve an understanding of the meanings of individual lived experiences, through the administration of semi-structured interviews and the elicitation of stories (Murray, 2000, 2003). The Biographical Narrative Interpretive Method seeks to view the experiences of the participants within their historical and social contexts and may also follow a structured approach (Casey et al., 2016). However, the narrative interview may also take an unstructured approach (Bauer, 1996; Ntinda, 2019; Wengraf, 2001), as is the case with the current research study.

The present study utilised an unstructured approach to the interview, and was informed by both the four-phase approach described by Bauer (1996), and the *Single Question Aimed at Inducing Narrative* aspect of the Biographical Narrative Interpretive Method (Wengraf, 2001). According to Bauer (1996), the four phases of the narrative interview are 1. presenting the main topic, where the researcher introduces the concept, or concepts, being investigated; 2. main narration, where the informant is asked to tell their story, with little, or no interruption from the researcher; 3. questioning, which provides the researcher with the opportunity to

clarify any issues arising from the narration; and 4. small talk, which takes a more relaxed conversational approach.

As discussed here, the four phases outlined above were loosely followed during the qualitative phase of the present study. Following the initial introduction of the aims and purpose of this study, the interview participants were asked first to explain their understanding of the term loneliness, and second, to discuss whether loneliness was, or ever had been, an issue for them. From this point onwards, each participant was encouraged to talk about their experiences of loneliness throughout their lives, how they coped with, and reacted to, these episodes of loneliness, and how they felt this may have impacted their health and wellbeing. In contrast to Bauer's approach, the main narration and questioning phases were amalgamated, with participants asked for clarity regarding their narrative, as the need arose, rather than waiting until after they had concluded their narratives. In addition to maintaining affiliation with the pragmatic paradigm, which advocates the use of multiple approaches, with selection and conduct based on those approaches that are most likely to generate a comprehensive response to the research question (Creswell & Plano Clark, 2018b; Doyle et al., 2016; Feilzer, 2010; Johnson & Onwuegbuzie, 2004; Shannon-Baker, 2015, 2016; Teddlie & Tashakkori, 2003), the flexible use of the four phase approach also fits well with Bauer's own assertion that his framework should be viewed as no more than a guide, and not adhered to strictly (Bauer, 1996). This assertion is also supported by Bornat (2008), who suggested that, focusing on the process, and following a specific approach too closely, may lead to the decontextualization of the narrative, as information regarding personal interaction and context may be missed, or overlooked. Furthermore, the combination of these two phases was observed to put at ease those participants who were expecting to be questioned.

The decision to adopt a narrative approach brings with it several advantages. Typically employed to investigate social problems, the unstructured approach

allowed the informants to tell their story using their own language, enabling the investigation of personal, and potentially embarrassing issues (Bauer, 1996; Hermanns, 1991; Mühlfeld, Windolf, Lampert, & Krüger, 1981). The narrative approach allowed the researcher to gain insight into the meaning of personal experiences, by prioritising these experiences over other factors (Bauer, 1996; Carless, Sparkes, Douglas, & Cooke, 2014; McAdams, 1993). It also allows for the generation of a life story, with the emphasis placed on personal, social, and sociocultural context (Douglas & Carless, 2009a, 2009b; McLeod, 1997). Furthermore, by giving the participants a voice, they are more likely to give a truthful and accurate account of their own personal story, than might be achieved through a traditional question-answer approach (Creswell, 2012; Newby, 2014).

In addition to enabling the investigation of adverse childhood events, as is fitting with the life course approach, the narrative process also resonates well with the Meikirch model of health and wellbeing, which emphasises the changing nature of both biologically given, and personally acquired potentials throughout the life course (Bircher, 2020; Bircher & Hahn, 2016a; Bircher & Kuruvilla, 2014). The choice of an unstructured approach also serves to minimise the risk of researcher bias, as it can be argued that a more structured approach may have a tendency to highlight more about the researcher and their own ideas, rather than the issues being studied (Bauer, 1996). The unstructured approach also serves to reduce the impact of individual participant assumptions regarding what is expected of them, and what the researcher may already know (Bauer, 1996; Witzel, 1982). Also, while the researcher is afforded less control over the content of an unstructured, narrative interview, the approach does facilitate the elicitation and development of previously unidentified topics and factors linked to the topic under investigation. In the case of the present study, which explored the mechanisms fundamental to the relationship between loneliness and health, these factors included victim mentality, resilience, and determination. The interviews also served to reinforce the perceived

importance of the successful development and maintenance of personally acquired potentials over the life course. Unless specifically referred to by the participant, the survey data were not discussed during the interview. This was to minimise any bias that knowledge of these results may have had on each individual's chosen narrative. Furthermore, it was believed that by not discussing with the participant their loneliness status, the risk of stigmatisation or emotional distress was reduced. That being said, an unstructured narrative approach is not without its problems. As Ntinda (2019) highlights, the lack of structure, and deviation from a *traditional* question-answer approach can lead to difficulty in establishing the roles played by both the researcher and the participant during the interview. Furthermore, setting boundaries within the context of a narrative may prove troublesome due to the lack of clarity surrounding the scope of the narrative (Ntinda, 2019), however, this did not prove to be an issue within this series of 41 interviews.

4.7.3 Summary of qualitative research phase

Qualitative data were generated through undertaking unstructured, narrative-type interviews. Participants were recruited from a pool of 167 volunteers who had already participated in the quantitative survey, returned a full dataset, and indicated a willingness to participate further. These interviews offered the participants the opportunity to tell their own stories and proved pivotal to the exploration of the various factors underlying the relationship between loneliness and health and wellbeing.

4.8 Qualitative analysis

Unlike quantitative data analysis, the analysis of qualitative data occurs both throughout the research process, as well as following its conclusion, rather than forming a distinct phase in its own right (Basit, 2003; Eben & Matthew, 1995; Ely, 1991; Roberts & Wilson, 2002). The qualitative analyses were conducted on the

data gathered from a series of face-to-face narrative-type interviews with community-dwelling, retired older adults. In keeping with the mixed methods approach, a combination of techniques were employed to analyse the qualitative data. These analyses sought to provide a response to objectives three to six of the current study (§ 4.2). The full analysis plan for this phase of the research is outlined in Figure 4-10.

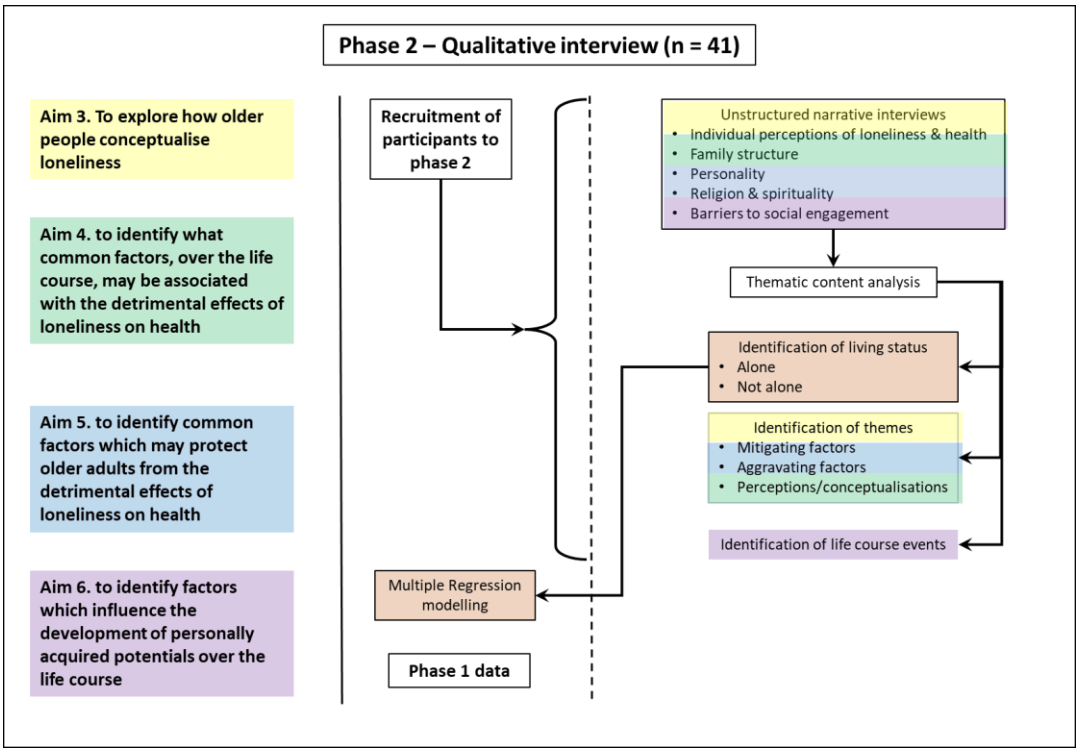


Figure 4-10: Qualitative data analysis plan

As with both the narrative, and the processes involved in its generation, there are several ways in which the data generated within the context of a narrative interview may be analysed. These approaches fall into one of two categories: structural, or thematic (Clandinin & Connelly, 2004; Frank, 2002; Riessman, 2008). While the structural approaches investigate the way a story, or narrative, is structured and developed, the thematic techniques instead focus on the purpose of the narrative,

and in particular, the story the narrative is employed to convey (Clandinin & Huber, 2019; Freeman, 2007). Within the present study, the research questions were addressed using thematic analysis. While both thematic and content analyses share the same common goal of analysing narrative data gained through individual accounts of life stories (Sparker & Holloway, 2005; Vaismoradi, Turunen, & Bondas, 2013), content analysis takes a descriptive approach to the phenomenon under investigation (Elo & Kyngäs, 2008; Vaismoradi et al., 2013), while thematic analysis offers a more rich and detailed account of the data (Braun & Clarke, 2006).

4.8.1 Thematic analysis

Thematic analysis is a purely qualitative technique, which may be employed to identify, analyse, and report patterns, or themes, within data (Braun & Clarke, 2006; Vaismoradi et al., 2013). However, rather than fragmenting the data into its component themes, within the context of narrative research, the themes are employed to maintain the coherence of the narrative (Bingley, 2020). Thematic analysis is a flexible device, which provides a rich and detailed account of the data (Braun & Clarke, 2006), and may be inter-thematic, where the themes are compared between participants, or intra-thematic, where the themes are compared within a specific transcript (Overcash, 2003). While the intra-thematic approach may be used to gauge the strength and consistency of any theme within each transcript, it may also help to highlight any instances where different words, or phrases, are used to describe the same theme. Having established these themes, and their relevance to the topic being studied, an inter-thematic approach can be employed to establish the prevalence of these themes within the sample population, as well as identifying patterns of themes specific to particular demographic and study subgroups. As will be seen in section 4.8.2, the present study employed an intra-thematic approach through the initial manual coding of the interview transcripts, as a tool to identify themes. Subsequently, all the transcripts were uploaded to the computer-assisted qualitative data analysis

software package, NVivo. This software served as a data management tool to facilitate the inter-thematic analysis of the full qualitative data set.

While historically there has been a lack of consensus regarding the definition of thematic analysis, and how it may be carried out (Attride-Stirling, 2001; Boyatzis, 1998; Tuckett, 2005), this study draws guidance from the six-step approach proposed by Braun & Clarke (2006).

4.8.2 Thematic analysis within the present study

As alluded to above, the practical aspects of this current study have drawn guidance from Braun and Clarkes (2006) six phase approach to thematic analysis. The six phases as outlined below. These six phases represent an iterative process, with each phase repeated and revisited as often as deemed necessary.

Familiarising with data. This phase involves transcribing data, reading, and rereading the data, noting down initial ideas. While the raw data were professionally transcribed by a third party, familiarisation with, and immersion in the data set occurred throughout the interviews and through the reading and re-reading of the transcribed interviews, while listening to their corresponding digital recordings. During this phase, the transcripts were manually coded. In addition to maximising immersion within the data, this allowed for the initial identification of codes and themes as well as ideas relating to patterns of co-occurring themes.

Generating initial codes. During this phase, interesting features of the data are coded systematically across all the interview transcripts. All data relevant to each code is collated. This was driven primarily by the proposed theoretical framework (§ 3.7), with examples of the various component models and theories underlying the development of poor health among the lonely subgroup actively sought out. As the manual coding progressed, informal inter-thematic analysis also occurred as

trends of co-occurring themes became apparent across the full data set. This served to highlight the relevance of such factors as stress buffering, socioemotional selectivity, and social breakdown syndrome among the sample population, with lonely participants routinely displaying a greater degree of social breakdown, combined with lower levels of socioemotional selectivity and stress buffering. This initial coding phase also served to highlight the continued importance of the social network, and social capital throughout the ageing process. This phase also assisted the later computer assisted coding and analysis, by helping to limit the *need* to try to code everything, regardless of its relevance to the aims and objectives of this research. Where it was possible, the initial grouping of codes into themes was initiated where it was judged that the codes were related.

Searching for themes. Codes are grouped into potential themes, with all relevant data gathered to that theme. Having manually coded the data intra-thematically, and begun the process of inter-thematic analysis, all the interview transcripts were uploaded to NVivo, a computer-assisted qualitative data analysis software package. This was carried out to lend both rigour and transparency to the coding process (Ahmad & Newman, 2010; Rodik & Primorac, 2015; Thompson, 2002). Using this software, all the transcripts were coded in a manner similar to the manual coding process, with transcripts initially coded intra-thematically, with subsequent inter-thematic analysis occurring as the process of thematic content analysis progressed. Throughout this stage of coding, each manuscript was re-coded whenever a new code, or theme, was identified. This was done to ensure that the integrity of the themes and coding processes were maintained throughout the entire data set.

Reviewing themes. Themes are tested across the entire data set to establish if they work with the coded extracts. Having coded the interview manuscripts, both manually, and using NVivo software, the codes were grouped hierarchically into codes and subcodes. For example, codes pertaining to socioemotional selectivity (§ 3.5.5) and social capital were grouped together they were considered to represent

examples of personally acquired potential (§ 2.2.2.2). Similarly, symptoms of social breakdown syndrome (§ 3.5.3), such as learned helplessness, biographical disruption, and victim mentality, were grouped together under the theme of social breakdown syndrome. The coding manual generated throughout this process may be found in appendix 6, with a fully coded interview transcript shown in appendix 7. All themes were continuously reviewed to ensure their relevance to the research questions.

Defining and naming themes. Overall, these coding processes identified seven themes judged to be relevant to the aims and objectives of this research. These themes were further grouped into three overarching themes: those relating to factors which are considered to mitigate the negative influence of loneliness on individual health and wellbeing, those pertaining to factors thought to exacerbate the association between loneliness and health, and those which considered individual perceptions and conceptualisations of loneliness, and its relationship with quality of life and personal wellbeing. These themes and sub-themes are outlined in Table 4-3

Table 4-3: Themes and sub-themes identified through qualitative analyses

Themes	Mitigating factors	Aggravating factors	Perceptions/conceptualisations
Sub-themes	Potentials Social network Social capital	Negative life events Social breakdown	Concepts – loneliness Concepts – age

Throughout the literature reviewed in Chapter 2 and Chapter 3, factors perceived to mitigate the negative impact of loneliness on individual health outcomes included personally acquired potentials, a robust and proactive personality, and a strong and reciprocal social network. Factors perceived to aggravate the detrimental effects of

loneliness on health included experiences of adversity in childhood, a weak social network, and the presence of social breakdown syndrome.

Having completed the coding processes outlined above, each transcript was further coded, using NVivo classification coding techniques, so that groups of manuscripts could be identified according to gender, whether they considered themselves to be lonely, and which group they had been assigned, based on their survey scores. This was conducted to assist with the integration of quantitative and qualitative data sets, as outlined below in section 4.9.1.

Producing the report. Rather than a distinct, standalone process, the thematic content analysis employed within this study identifies the production of a report as a final stage in the analytical process (Braun & Clarke, 2006; Elo & Kyngäs, 2008; Terry et al., 2017). In this case, the reporting phase offered a final opportunity to analyse the data through the selection of quotes to illustrate the various themes, and how they related to both the research question, aims and objectives, and the literature identified over the preceding chapters, which informed the research design and implementation. As noted above, these phases do not constitute a strictly linear process (Braun & Clarke, 2006), with the analysis moving back and forth between the phases as necessary and appropriate (Terry et al., 2017). Figure 4-11 illustrates the actual processes followed as the qualitative data from the interviews were analysed.

4.8.3 Summary of qualitative analysis

A series of 41 unstructured, narrative-type interviews were transcribed and checked for accuracy. The transcripts were coded both manually, and with the assistance of NVivo software. A thematic content analysis approach was adopted, which employed both intra-, and inter-thematic components. This hybrid approach was selected to enable both the identification and quantification of the themes being

explored. By employing thematic content analysis, it was possible to identify both participant, and subgroup specific themes, as well as those pertinent to the broader sample population. In addition to best serving the demands of this research, the hybrid thematic content analysis approach was also considered to reflect the pragmatic ethos of the mixed methods approach employed throughout this research. The results of the qualitative analyses are reported in Chapter 6.

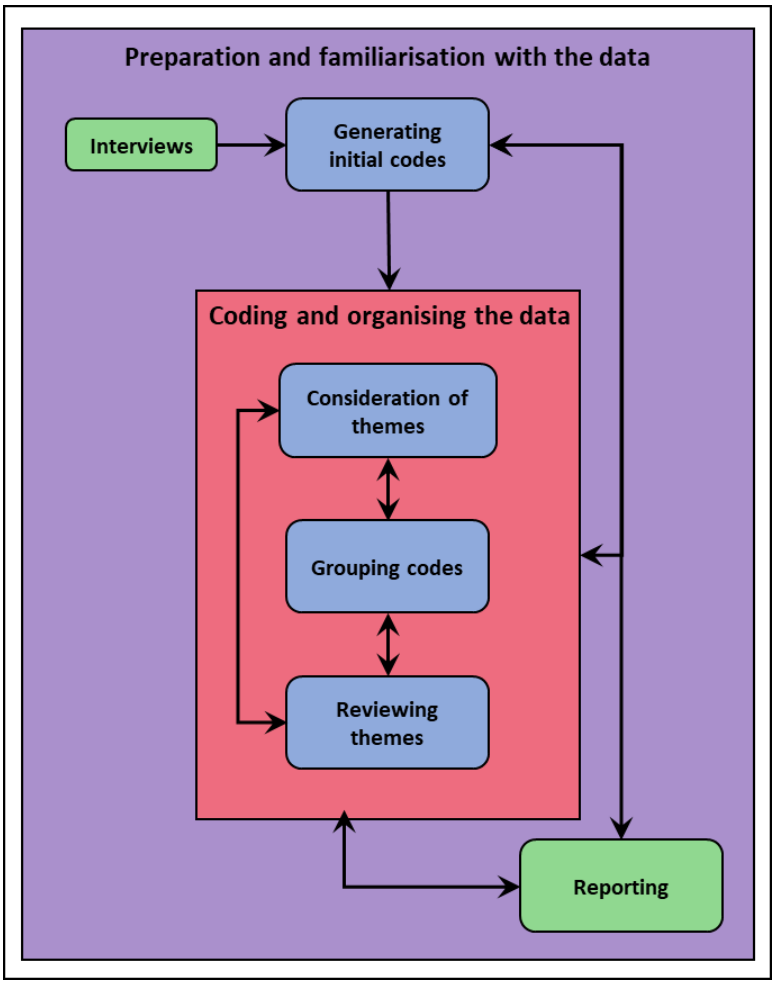


Figure 4-11: Thematic content analysis process

4.9 Integration of data sets

Arguably at the heart of any mixed methods study is the integration of the two datasets (Fielding, 2012). In the case of an explanatory sequential design, such as that employed here, integration may occur at two stages: when the quantitative data are employed to inform the collection of further data, and when the results are reported. However, there is no clear or established approach or guidance in how this data integration may, or even should, be conducted (Brannen & Moss, 2012; Bryman, 2016). Furthermore, there are several researcher who assert that integration may occur at any stage of the research study design, conduct, and analyses (Fetters et al., 2013; Ivankova et al., 2006; Teddlie & Tashakkori, 2003). This lack of best practice is further hindered by the numerous designs available to the mixed methods researcher (Niglas, 2009). The waters are further muddied, as Niglas (2009) highlights, by the lack of consensus regarding what actually constitutes a mixed method study:

> *…there [still] does not seem to be any final agreement…on whether a study to be classified as a mixed method(s) study has to involve data-collection and analysis methods from both approaches (qualitative and quantitative) or not. (pp 36)*

This ambiguity regarding both design and the need (or not) for data integration led to the introduction of the term *studies in the grey areas* to describe much mixed methods work (Cresswell & Plano-Clark, 2007). From the methodological literature, it appears there is no obligation to integrate the qualitative and quantitative data sets through any of the analyses. This notion is supported by Greene et al. (1989), who found that, over a review of 57 journal papers reporting the results of mixed methods research studies, only around half (56%) attempted any form of integration during data analysis. However, where integration does occur, it is likely

to enhance the value of the research (Bryman, 2016; Creswell & Plano Clark, 2011; Fetters et al., 2013).

Putting the issue of integration to one side for the moment, it is worth considering instead the overall purpose of a mixed methods approach. One frequently cited reason for employing a mixed approach is that mixed methods are necessary to "capture the trends and details of the situation" (Cresswell et al., 2004, p7), and that mixed methods research allows the researcher to "represent the world more completely" (Yoshikawa et al., 2008, p4). However, perhaps more important was the purpose suggested by Maxwell (2010), who stated that:

> *I believe that the main value of mixed methods research…is in creating a dialogue between different ways of seeing, interpreting, and knowing, not simply in combining different methods and types of data. (p 478)*

Accepting the notion that integration during the final, analytical, stage of any mixed methods research project can be problematic, and may even be considered inadvisable (Uprichard & Dawney, 2019), it may be worth considering an alternative to data integration, in this case, data diffraction. In contrast to the integrative approach, diffraction emphasizes the differences between, as well as the potential overlap of qualitative and quantitative findings (Barad, 2007; Law, 2004; Uprichard & Dawney, 2019). One advantage of this approach is that:

> *Diffractive methodology is respectful of the entanglement of ideas and other materials in ways that reflexive methodologies are not. In particular, what is needed is a method attuned to the entanglement of the apparatuses of production, one that enables genealogical analyses of how boundaries are produced rather*

> *than presuming sets of well-worn binaries in advance. (Barad, 2007, p30)*

The interest in data diffraction stems from the paradoxical nature of mixed methods research itself (Uprichard & Dawney, 2019). On the one hand, one may argue that mixed methods research offers the only tenable approach to understanding the complexities and multidimensionality of the social world (Creswell & Plano Clark, 2018b; Fetters & Freshwater, 2015; Uprichard & Dawney, 2019). On the other hand, however, this acceptance that the social world is multifaceted and complex, would seem to directly contradict the assumption that findings from different types of research can, or even should, be integrated (Fetters et al., 2013; Fetters & Freshwater, 2015; Uprichard & Dawney, 2019).

Within the present study, integration occurred through the use of quantitative data to inform the sampling of participants to the quantitative phase of the research and again here through the use of a novel theoretical framework to guide the interpretation of the study findings. Informed and influenced by both the Meikirch model of health and wellbeing, and the Life course approach, as well as review and critique of the academic literature, the theoretical framework underpinning the study initially served to facilitate the generation of the research design and conduct. Latterly, it was employed to guide the identification of overarching themes, and both the analyses and interpretation of the data generated by the quantitative surveys, and qualitative interviews (Chapter 5 & Chapter 6).

4.10 Ethical considerations

Approval was initially granted for this study to commence the first phase in April 2018, by the University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority (HSK/PGR/UH/03285). Disclosure and Barring Service checks were conducted, and comprehensive adult safeguarding, and Mental Capacity Act training were undertaken prior to the

initiation of the active phase of this research. Furthermore, to ensure the personal safety of the researcher, the Lone Worker policy published by the Centre for Research in Primary and Community Care was strictly adhered to. The approach taken to the application to gain ethical approval was informed by both university guidelines, and those issued by the British Society of Gerontology, both of which are based around the four core principles of ethics; autonomy, beneficence, nonmaleficence, and justice (Aluwihare-Samaranayake, 2012; Beauchamp & Childress, 2001; Gilhooly, 2002; Mauthner & Birch, 2002).

Autonomy (or the right to self-determination; Gilhooly, 2002), is typically respected through gaining informed consent from the participants. This represents a key component of ethical research, with roots traceable back to the 1947 Nuremberg Code (Aluwihare-Samaranayake, 2012; Ghooi, 2011). Informed consent refers to an individual's agreement to participate (Silverman, 2011), and must be informed, voluntary and competent (Gilhooly, 2002; Kennedy, 1988). This study, in concord with the majority of health and social research, facilitated the acquisition of informed consent through the use of a participant information sheet (appendix 8), which, where possible and necessary, was supplemented with verbal information, either by phone, email, or in person. This was accompanied by a consent form (appendix 4), which all volunteer participants were asked to sign, to confirm that they understood the nature of the research, and were consenting through their own volition. All forms of information included full details of the research process, and what involvement would entail for the participant. Also included was information pertaining to third or voluntary sector services offering support and/or counselling services, as it was recognised that any form of personal disclosure may have the potential to leave the participant vulnerable and distressed (Bassett, 2004).

Unlike clinical or medical research, the direct benefits of social research are not always easily identified (Gilhooly, 2002), however, the concept of beneficence was

still served, through the assurance and protection of anonymity and confidentiality. An important point to consider first is that confidentiality and anonymity are not the same thing. While, from a participant's standpoint, confidentiality is typically thought to mean that only the researcher has full access to their data, this does not mean their participation is completely anonymous. For the data to be truly anonymous, it should not be possible for anyone, the researcher included, to identify a participant from the data they provide. Within this context, and because the researcher has securely held personal data, this study may, at best, be considered to be strictly confidential. Significant measures were taken to ensure the privacy and confidentiality of each participant, and all data were gathered and stored according to the 2018 UK General Data Protection Regulation, and Data Protection Act. While the majority of confidentiality issues related to the methods of data collection and storage, it was clear through several of the interviews that the participants both knew, and had discussed this research with other individuals who had participated in the first phase of this study. Great care was taken to guarantee that the involvement of other participants was neither confirmed nor denied, and that no personal participant data was divulged to any other participant.

Data gathered during the first phase of this study were received from several sources: online, via post, or over the telephone. All online forms were stored under password protection, on an encrypted USB memory stick. All survey data gathered over the phone were transcribed onto the formal research documents and stored, along with the postal responses, in a locked storage box. All participants were assigned a unique identification number as their data were input into both Excel and SPSS[20], to allow for later analyses. Contact details of those who had volunteered to participate in phase two were stored in an Excel spreadsheet which was password protected. In addition, all quantitative data were stored on an encrypted and password protected USB memory stick.

[20] Statistical Package for the Social Sciences

Regarding the collection and management of the qualitative data, the decision was taken, prior to study commencement, to digitally record all the interviews, to allow the researcher's focus to rest on the interview and the participant. Not only did this ensure the capture of a full and accurate account of the interview (Bryman, 2012), it also allowed for greater interaction between the researcher and participant (Brinkmann & Kvale, 2018). Although Rubin and Rubin (2012) suggest that note-taking may be advantageous in terms of noting further questions, and any form of non-verbal communication, it was felt that this might prove detrimental to the overall interaction process. Once the interviews were completed, they were sent, in batches, to a professional transcribing service. This was due to time constraints on the part of the researcher. The company chosen to conduct this work were fully aware of the need for confidentiality. Following transcription, all digitally recorded interviews were transferred to an encrypted and password protected USB memory stick at the earliest opportunity, and the original, unsecured, recordings deleted, to ensure only the researcher had access to this data. It was not felt that the outsourcing of the transcription lessened data immersion on the researcher's part, as all interviews were listened to, on numerous occasions, as the corresponding transcripts were analysed and checked for accuracy.

One point to consider is that the protection of confidentiality may actually conflict with the process of safeguarding (Gilhooly, 2002; Social Care Institute for Excellence, 2019). As both a postgraduate research student, and a professional researcher within a local government setting, the researcher had a personal and professional duty of care towards the participants, and an obligation to report any observed safeguarding issues to the relevant authorities. While not referred to explicitly within the participant information sheet, this issue was discussed with all participants prior to interview, and individual consent was re-confirmed with all participants before commencing with their interview. Fortunately, safeguarding issues were only identified in one case who, at their request, and with their

permission, was referred to the West Sussex County Council Housing Department. There was a second participant, who displayed frequent signs of distress throughout their interview. The participant was repeatedly asked if they wished to terminate the interview, but on all occasions, they insisted and reinforced their wish to continue. All concerns were allayed after a follow-up telephone call to the participant later that same day. This was the longest of all the interviews (almost two hours), perhaps serving to reinforce the suggestion that many participants in gerontological research may view the interview as a therapeutic opportunity.

While older people are often perceived to be more vulnerable (Binstock, 1983, 2010), the majority of older adults are considered to be competent, independent and autonomous (Gilhooly, 2002; Sleap, 2018). As such, the ethical issues here are no different from and should be treated in the same way as they would in any other research project (Kapp, 1999). As any participant deemed to be lacking the capacity to formally consent to participate in this research was excluded, there were no special circumstances requiring additional ethical consideration. Capacity to consent was determined according to the Mental Capacity Act Two-Stage Test of Capacity (NHS Choices, 2015). However, it is worth bearing in mind that Gilhooly (2002) has suggested that older people are more likely to agree to take part in research conducted by postgraduate students than they are if the work is conducted by a more seasoned researcher, as they feel they are helping a student with their studies, rather than participating in research. However, in the present study, it was considered that successful recruitment was a consequence of participant interest in the topic under investigation, rather than the researcher's student status.

4.11 Chapter summary

In addition to introducing the aims and objectives of this study, this chapter has addressed both the methodological and philosophical foundations of the research,

as well as outlining the actual tools and techniques employed to address the aims and objectives of this study. Also considered were the analytical techniques employed to make sense of the data gathered through both phases of this research. The use of mixed methods, and the procedures outlined above facilitated the research objectives in the following ways:

Objectives 1 and 2, regarding the gathering of demographic data, and clarity concerning the nature of the relationship between loneliness and health and wellbeing were satisfied through the administration of a nine-item quantitative surveys. The surveys included the DJG6 Loneliness Scale, and the HowRU, Personal Wellbeing, and Health Confidence Scales from the R-Outcomes suite of patient-reported outcome measures. The statistical significance of any relationships noted between the quantitative variables was established using SPSS software. The survey was also used as a tool to recruit volunteers, and to inform the purposive sampling, for the second, qualitative phase of the present research study.

Objectives 3, 4, 5, and 6, which sought to identify common conceptualisations of loneliness and health and wellbeing, and to identify common factors which may exacerbate, or ameliorate the detrimental effects of loneliness over the life course, were addressed through a series of unstructured, narrative-type interviews, which were conducted to explore individual life histories, and personal perceptions of loneliness and health and wellbeing over the life course. Thematic content analysis was applied to the interview transcripts, both manually and with the assistance of NVivo software.

The chapter concluded with a consideration of the stage at which the quantitative and qualitative aspects of the study should be combined to meet the requirements to be classified as a mixed methods approach, along with a consideration of the mixed analyses employed with the quantitative and qualitative data sets.

Chapter 5. Quantitative findings

5.1 Introduction

This chapter deals with the exposition and exploration of the data gathered during the first, quantitative phase of this study. The main purpose of this phase was to address the following research aims:

1. To clarify the nature of the relationship between loneliness and health within the study population
2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population

This was achieved through the administration and analysis of a 21-item survey, which included measures of loneliness, quality of life, personal wellbeing, and health confidence. Participants were also asked to provide their age, gender, and postcode. In all analyses, results were considered to be statistically significant where a P value of less than 0.05 was observed.

5.2 Sample population

Over the course of nine months (April to December 2018), a total of 266 participants (188 female; 78 male), with a mean age of 75.6 years, completed the quantitative survey. Table 5-1 provides an overview of the characteristics of the 266 survey participants.

While early analyses of postcode data resulted in deprivation being discounted as a factor in sampling for the second phase of this study (§ 4.7.1), the location of the participants, which is shown in Figure 5-1, demonstrates that participants have been drawn from all levels of risk for loneliness, suggesting that the quantitative findings may be considered generalisable beyond the bounds of the study populations. However, as all but one of the participants was of White-British

ethnicity, caution is advised when considering the relevance of this data set and findings to other ethnic groups.

Table 5-1: Participant characteristics

	N	Mean age (SD)[21]	Mean deprivation (SD)	Healthy (%)	Lonely (%)	Outliers (%)	Missing data (%)
Total	266	75.6 (7.6)	3.7 (1.1)	143 (54)	86 (32)	28 (11)	9 (3)
Female	188	75.9 (7.5)	3.5 (1.1)	103 (55)	54 (29)	23 (12)	8 (4)
Male	78	74.8 (7.5)	3.9 (1.0)	40 (51)	32 (41)	5 (6)	1 (1)

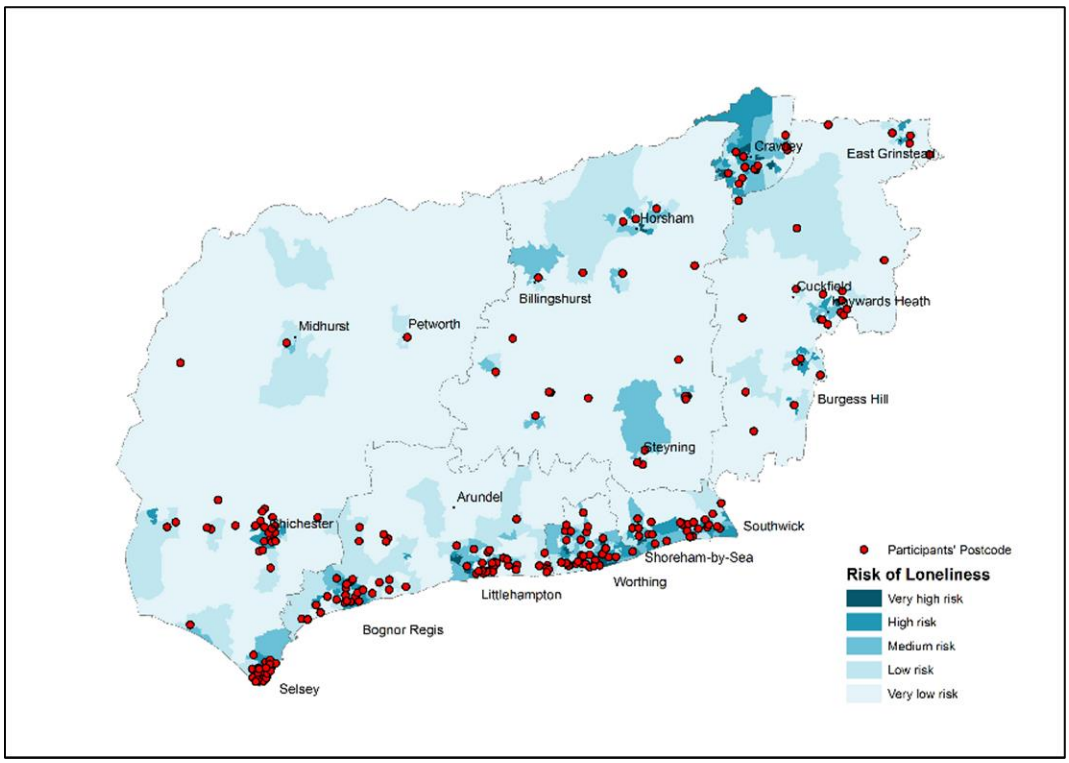


Figure 5-1: Geographical location of all participants

[21] Standard deviation

5.3 Measures of loneliness, health, and wellbeing

Data from the quantitative survey are summarised in table 5-2. Quantified using the six-item De Jong Gierveld loneliness scale (DJG6), the prevalence of loneliness among the study population was found to be 34%. When male and female participants were compared, the prevalence of loneliness was found to be greatest among the men (42% versus 30%). The mean score of overall loneliness was 2.6/6. Mean emotional and social loneliness scores were 1.1/3 and 1.5/3 respectively.

Table 5-2: Participant survey results

	Mean HowRU* (SD)	Mean PWS** (SD)	Mean HCS*** (SD)	Mean Loneliness (SD)	Mean Emotional loneliness (SD)	Mean Social loneliness (SD)
Total (n = 266)	9.2 (2.4)	7.2 (3.3)	8.3 (2.9)	2.6 (2.1)	1.1 (1.1)	1.5 (1.3)
Female (n = 188)	9.1 (2.4)	7.3 (3.3)	8.4 (3.1)	2.5 (2.1)	1.1 (1.1)	1.4 (1.3
Male (n = 78)	9.3 (2.4)	7.1 (3.1)	8.1 (2.5)	2.9 (2.1)	1.1 (1.1)	1.8 (1.3)
*How RU, quality of life scale; **Personal Wellbeing Scale; ***Health Confidence Scale						

Regarding the three measures of health and wellbeing, the mean scores for all tended towards the healthy end of the scale, with the highest mean score noted for the HowRU scale (9.2 out of 12), which suggests that the overall self-reported quality of life was high among the survey participants. The mean score of overall wellbeing was 7.2 (out of 12), and health confidence was 8.3 (out of 12). No significant difference was noted between the mean scores of male and female participants.

5.4 Understanding the relationship between loneliness and health

As outlined in section 4.6.2, correlational analyses were performed throughout the collection of survey data to continuously inform the sampling of participants for the interview phase. Once the survey had closed to recruitment, the complete data set was analysed in full, with further statistical testing conducted. The correlational analyses of the full data set (n = 266) are summarised in Figure 5-2, and have been used to explore the first two aims of this study (§ 4.2), which pertain first to establishing the presence of an association between loneliness and health, and second to empirically explore the nature of this association. Statistically significant correlations were found between each of the three measures of health and wellbeing, suggesting that the measures of quality of life, wellbeing, and health confidence were related. Similarly, overall, emotional, and social loneliness scores significantly correlated with each other, reinforcing the assumption that they are related measures.

Of note was the statistically significant inverse correlation between overall loneliness and personal wellbeing (PWS; $r = -0.612$, $p < 0.01$). Statistically significant inverse associations were also observed between overall loneliness and quality of life (HowRU; $r = -0.302$; $p < 0.01$), and health confidence (HCS; $r = -0.412$; $p < 0.01$), however, the effect sizes of these correlations was smaller than that observed between loneliness and wellbeing. This suggests that the associations between loneliness and measures of quality of life and health confidence are weaker than that between loneliness and wellbeing. Regarding the emotional and social loneliness subtypes, their associations with measures of quality of life, health confidence, and personal wellbeing mirrored those noted above, for scores of overall loneliness. However, the strength of the correlations were stronger between the health measures and emotional, rather than social, loneliness. This suggests that emotional loneliness has a stronger influence over individual health and wellbeing than social loneliness. In terms of demographic variables, age

displayed a statistically significant negative correlation with both quality of life (HowRU; r = -0.266; p < 0.01), and health confidence (HCS; r = -0.150; p < 0.05).

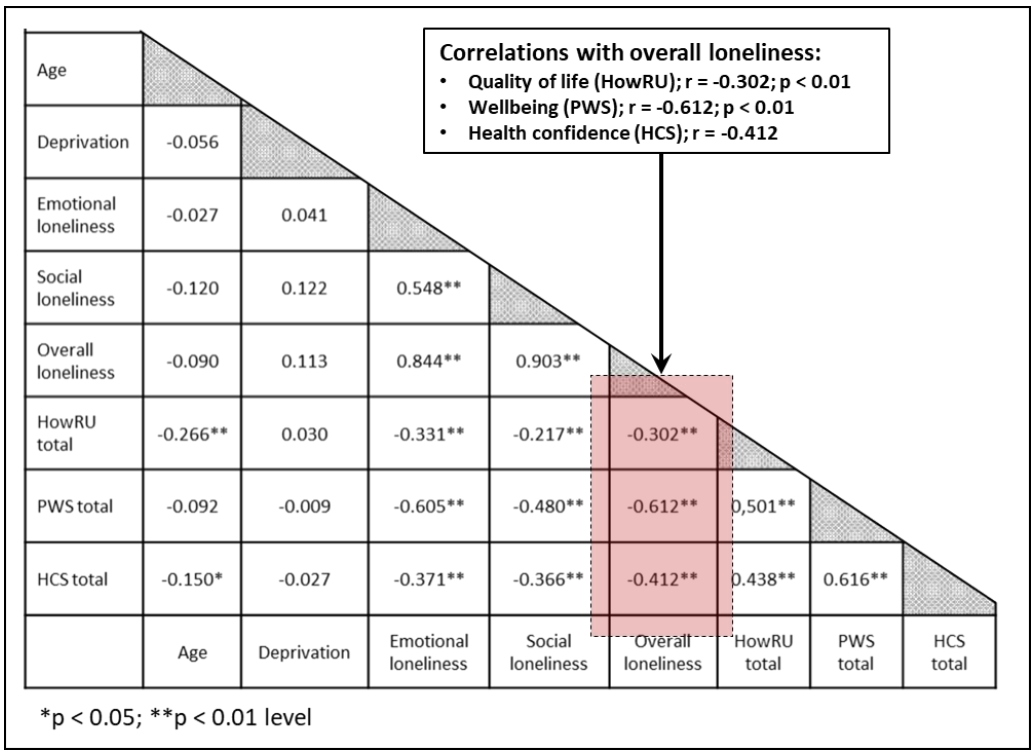


Figure 5-2: Summary of correlational analyses

5.4.1 Using loneliness to predict poor health outcomes

In wanting to clarify the nature of the relationship between loneliness and heath within the study population (aim 1), it was shown that the correlational analyses established the presence of a statistically significant inverse correlation between loneliness and measures of health and wellbeing, such that, as scores of loneliness increase, health and wellbeing scores decrease. This suggests that loneliness may prove detrimental to health and wellbeing. However, correlational analyses only indicated the presence of an association between the two variables, with no indication given regarding how the two factors may be influencing each other, or

even if the association is simple coincidence. To both establish, and quantify, the predictive value of loneliness on the three measures of health and wellbeing, linear regression modelling was conducted (§ 4.6.2.2). The resulting regression equations are outlined in table 5.3.

Table 5-3: Regression equations

Dependent variable	N	Regression equation	Adjusted R^2 (%)	P value
Quality of life	**259**	**HowRU = 10.1* – (0.4)$^{\beta}$O-Lon†**	**9.6**	**< 0.01**
Personal wellbeing	**259**	**PWS = 9.7 – (0.9)O-Lon**	**37.5**	**< 0.01**
Health confidence	**260**	**HCS = 9.8 – (0.6)O-Lon**	**16.6**	**< 0.01**
*Constant; $^{\beta}$Beta coefficient; †Overall loneliness				

As already indicated by the correlational analyses, and confirmed here by the regression modelling, scores of overall loneliness may be used to predict all the three measures of health and wellbeing. Common to each equation is the constant, which represents the value of the dependant variable (HowRU, PWS, or HCS), when the dependent variable (overall loneliness) is 0; the beta coefficient, which represents the value by which the dependent variable changes for every one unit change in the independent variable; and the adjusted R^2, which indicates the amount of variation in the measures of health and wellbeing which may be attributed to overall loneliness.

The regression modelling indicates that loneliness holds greatest influence over personal wellbeing scores (R^2 = 37.5%), and the smallest impact on quality of life (R^2 = 9.6%). This reinforced the decision to use the personal wellbeing scores, rather than quality of life, in combination with scores of loneliness, to inform the allocation of the participants into the lonely, healthy, and outlier subgroups. According to the regression equation, an individual showing no signs of loneliness

may be expected to have a personal wellbeing score of around 10 (9.7). For every one-point increase in overall loneliness score, an individual's wellbeing score will decrease by almost one point (0.9). Therefore, if an individual has a score of four on the De Jong Gierveld Loneliness Scale, they may be expected to have a score of six (6.1) on the R-Outcomes Personal Wellbeing Scale.

5.5 Demographic characteristics, loneliness, and health

To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population (aim 2), hierarchical multiple regression modelling was conducted (§ 4.6.2.3). This was carried out to establish if the addition of gender, followed by age, and then deprivation quintile influenced the predictive value of overall loneliness on the three individual measures of health and wellbeing; quality of life, personal wellbeing, and health confidence, respectively. In each set of analyses, four regression models were compared. The results of these analyses are summarised in Table 5-4. Analyses have indicated that the differences in mean scores between the three groups are statistically significant. While all three subgroups were significantly different from each other in terms of their loneliness scores, those in the lonely and outlier participant subgroups were not significantly different from each other in terms of their health and wellbeing scores. Those in the healthy participant subgroup were significantly different from both outliers and lonely participants on all four measures of loneliness, health and wellbeing.

In all three of the health outcome measures, the full model, which included overall loneliness, gender, age, and deprivation proved to be non-significant, indicating that quintile of deprivation has no significant influence over the relationship between loneliness and heath. However, the third model (overall loneliness, gender, and age) did show statistical significance in all three cases. This suggests that each individual participant's gender and age interacts with the observed

relationship between each measure of health (quality of life, personal wellbeing, health confidence) and loneliness. It is interesting to note that when only gender is added to the model, no significant differences are noted in the regression equation. Furthermore, repeat analyses indicated that when age alone was added to the regression equation, or was added before gender, both factors remained statistically insignificant. This indicates that the variables age and gender interact with each other as well as measures of loneliness to influence the individual health outcome measure.

As with the initial correlations and regression models, the greatest predictive value was observed with the scores of personal wellbeing (PWS; R^2 = 41%), and the lowest with quality of life (HowRU; R^2 = 19%. The predictive value of this regression model (overall loneliness, gender, age), when compared to overall loneliness alone as a predictive measure, remains similar when considering personal wellbeing as the outcome measure. However, in the case of both quality of life and health confidence, the addition of gender and health increased the predictive value of loneliness on these outcome measures. This suggests that both health confidence and quality of life may be more susceptible to the influence of age and gender than overall wellbeing.

As noted in chapter four (§ 4.5.1.3), while data pertaining to whether participants was living alone was not routinely gathered, this information was available for all 41 phase two participants, and is summarised in Table 5-5. Data pertaining to these variables were correlated against overall loneliness, quality of life, personal wellbeing, and health confidence, to establish the presence of any statistically significant associations between these variables. These analyses are summarised in Figure 5-3.

Table 5-4: Summary of regression models

	Model	R^2(%)	R^2 change	Sig
Quality of Life (HowRU)	1	11	n/a	< 0.001
	2	11	0.00	Non-significant
	3	19	0.08	< 0.001
	~~4~~	~~19~~	~~0.00~~	~~Non-significant~~
Equation: HowRU = 17.21 – (0.39)O-Lon – (0.15)Gender – (0.09)				
Wellbeing (PWS)	1	39	n/a	< 0.001
	2	39	0.00	Non-significant
	3	41	0.02	0.01
	4	~~41~~	~~0.00~~	~~Non-significant~~
Equation: PWS = 14.66 – (0.97)O-Lon – (0.13)Gender – (0.06)Age				
Health Confidence (HCS)	1	18	n/a	P < 0.001
	2	18	0.00	Non-significant
	3	23	0.04	P < 0.001
	4	~~23~~	~~0.00~~	~~Non-significant~~
Equation: HCS = 15.78 – (0.60)O-Lon + (0.18)Gender – (0.08)Age				
Model 1 – Overall loneliness; Model 2 – Overall loneliness, Gender; Model 3 – Overall loneliness, Gender, Age; Model 4 – Overall loneliness, Gender, Age, Deprivation				

Table 5-5: Phase two participants' living status

	N	Female (%)	Male (%)	Healthy (%)	Lonely (%)	Outliers (%)
Living alone	33	18 (55)	15 (45)	9 (27)	14 (42)	10 (30)
Not living alone	8	5 (63)	3 (38)	5 (63)	1 (13)	2 (25)

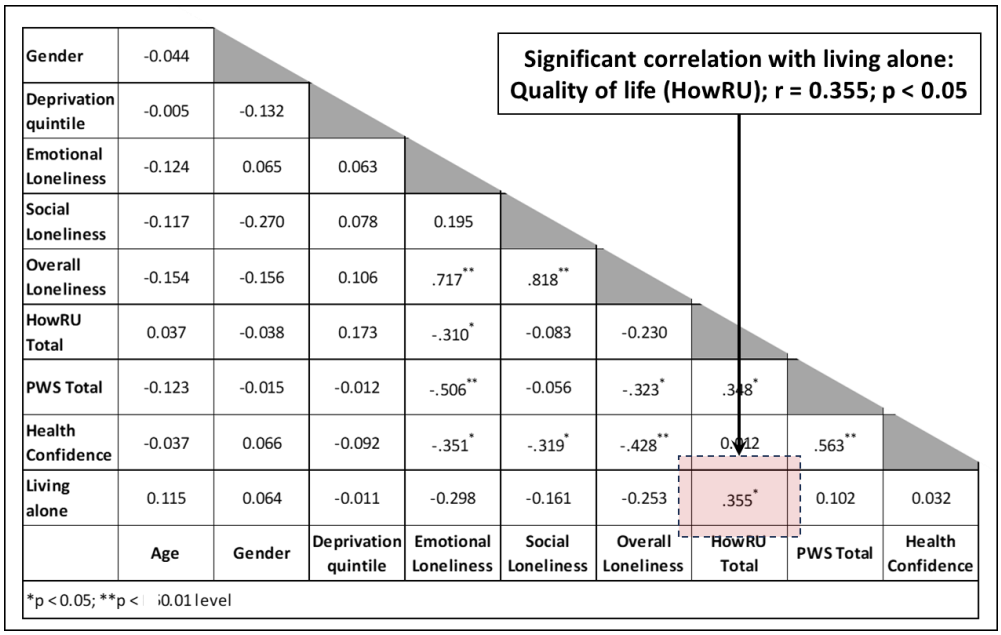


Figure 5-3: Summary of phase two correlational analyses

As with the initial analyses, significant negative relationships were observed between overall loneliness and both personal wellbeing ($r = -0.32$, $p < 0.05$) and health confidence ($r = -0.43$, $p < 0.01$). However, the association between loneliness and quality of life was non-significant ($r = -0.23$). In terms of living status, these analyses highlight a significant positive association between living alone and quality of life ($r = 0.36$, $p < 0.05$), however, living status appears to hold no significant sway over personal wellbeing ($r = 0.10$) or health confidence ($r = 0.03$). Furthermore, no statistically significant association was noted between living alone and measures of either emotional ($r = -0.30$), social (-0.16), or overall loneliness (-0.25). This suggests that living alone did not pose a significant risk factor for loneliness among the study cohort.

5.6 Subgroup analyses

To further investigate the nature of the relationship between loneliness and health (aim 1), and to highlight any specific differences, or commonalities, between the three study subgroups, a series of one-way ANOVA tests (§ 4.7.1.1) were conducted. Table 5-6 shows the mean loneliness, health, and wellbeing scores for the three subgroups.

Analyses have indicated that the differences in the mean scores between the three subgroups are statistically significant. While all three participant subgroups were statistically significant from each other in terms of their loneliness scores, those in the outlier and lonely participant subgroups were not statistically different from each other in their health and wellbeing scores. Those in the healthy participant subgroup were significantly different from both outliers and lonely participant subgroups on all four measures of loneliness, health, and wellbeing.

Table 5-6: Mean loneliness, health, and wellbeing scores

Subgroup	N	Loneliness (SD)	Quality of Life (SD)	Wellbeing (SD)	Confidence (SD)
Healthy	141	1.2 (1.1)	10.0 (2.0)	9.3 (2.1)	9.6 (2.4
Lonely	86	5.2 (0.8)	8.2 (2.6)	4.7 (2.4)	6.7 (2.7)
Outliers	28	2.4 (1.2)	8.2 (2.4)	4.3 (2.6)	6.5 (2.8)
All participants	257	2.7 (2.1)	9.2 (2.4)	7.2 (3.3)	8.3 (2.9)

The data in Table 5-6 indicate that, overall, those in the healthy subgroup were both significantly healthier, and significantly less lonely than the complete sample population. Conversely, lonely participants were significantly lonelier, and significantly less healthy than the overall sample population. Regarding the outliers, the analyses indicated that, compared to the overall sample population, they were

significantly less healthy. Their mean level of loneliness did not differ significantly from the overall sample population.

The outlier participant subgroup is considered in greater depth below. However, in the meantime, to further inform aim one, the ANOVA tests offered sufficient justification for further data analyses, in this case, linear regression modelling. While initial subgroup analyses indicated differences between the three subgroups on all the measures of health and wellbeing, only the wellbeing scores are considered here, first because this is the measure that has been identified to be most closely related to loneliness (§ 0), and second, because this is the measure which was selected to inform participant sampling for the qualitative phase of this research (§ 4.7.1). The equations resulting from the liner regression modelling conducted with the loneliness and wellbeing score of the three participant subgroups are displayed in Table 5-7.

Table 5-7: Regression models – wellbeing (PWS) by subgroup

Subgroup	Regression equation – PWS	Adjusted R^2 (%)	P value
Healthy (143)	= 9.8 – (0.4)O-Lon	3.4	<0.01
Lonely (86)	= 12.0 – (1.4)O-Lon	20.6	< 0.01
Outliers (28)	= 1.9 + (1.0)O-Lon	17.2	0.07
All participants (257)	= 9.7 – (0.9)O-Lon	37.5	< 0.01

These analyses highlight several important points. First, although overall loneliness was found to be responsible for around 17% of the variability in wellbeing scores among the outlier participants, this finding was not significant. Perhaps of greater interest is the indication from these analyses that, in the case of outliers, a reduction in loneliness is accompanied by a decline, rather than improvement in health. Furthermore, even outliers scoring zero on the DJG6, score relatively low on

the wellbeing scale (1.9 out of 12). Neither the outliers, nor the other two participant subgroups display as great a response to loneliness on their wellbeing scores than the overall participant group. However, the lonely participants appeared to be more susceptible to their loneliness than the healthy participants (20.6% versus 3.4%). Regardless of this, both the healthy and lonely participants scored higher than average on the wellbeing scale, when scores of loneliness were zero (9.8 and 12.0, respectively), suggesting that the lonely participants may, as a group, have been healthier than their counterparts in the other two subgroups. Another point to consider is that, based on both the adjusted R^2, and the beta coefficients, those in the lonely participant subgroup are the most susceptible to the influence of loneliness on their overall wellbeing. The causes of these findings and apparent discrepancies are considered in the following sections.

5.6.1 Loneliness subtypes

One of the reasons for selecting the De Jong Gierveld six-item measure to capture levels of loneliness within the sample population was its ability to distinguish between, and individually quantify, emotional and social loneliness, as well as providing a measure of overall loneliness (§ 4.5.1.1). the investigation of these two subtypes of loneliness also allows for continued exploration of the first aim of this study. The prevalence and mean score of emotional and social loneliness, among the full sample population, birth cohorts, gender, and study subgroups are shown in Table 5-8.

5.6.1.1 **Emotional loneliness**

The prevalence of emotional loneliness (§ 2.4.2) among the various participant subgroups ranged from 4.2% among the healthy participants, to 83.7% within the lonely participant group, with mean scores between 0.3 and 2.3 out of 3. Statistical analyses indicated no significant differences in scores of emotional loneliness between the male and female participants. However, significant differences were

observed between the healthy, lonely, and outlier participant subgroups, with emotional loneliness most prevalent, and scores highest, among the lonely participants, and lowest within the healthy subgroup.

Table 5-8: Prevalence of emotional and social loneliness

	Emotional loneliness		Social loneliness		Between groups
Participant group	**Prevalence (%)**	**Mean score**	**Prevalence (%)**	**Mean score**	**Mean difference**
All (n = 266)	32.7	1.1	35.9	1.5	0.4
Female (n = 188)	31.9	1.1	48.4	1.4	0.3
Male (n = 78)	34.6	1.1	59.0	1.8	0.7
Lonely (n = 86)	83.7	2.3	98.8	2.9	0.6
Healthy (n = 143)	4.2	0.3	25.9	0.8	0.5
Outliers (n = 28)	25.0	1.0	46.4	1.4	0.4

5.6.1.2 **Social loneliness**

Social loneliness was observed in both genders, and all lonely, healthy, and outlier subgroups. Prevalence ranged from 25.9% among the healthy participants, to 98.8 in those classified as lonely. Scores of social loneliness ranged from 0.8 to 2.9 out of 3. Analyses indicated no significant differences between scores of social loneliness between male and female participants. Significant differences were observed between all three participant subgroups in terms of prevalence and scores of social loneliness. It is interesting to note that, while the healthy subgroup exhibited the lowest mean social loneliness score, this form of loneliness was still prevalent in around a quarter of the healthy participants (25.9%).

5.6.1.3 **Emotional versus social isolation**

Having considered the between-group differences, in terms of both emotional and social loneliness, the question arises as to whether there are any significant

differences within the groups in terms of individual emotional and social loneliness scores. This investigation adds to the investigation of aim 1, which seeks to understand the nature of the relationship between loneliness and health. This was investigated using a set of paired t-tests. The mean differences between individual emotional and social loneliness scores may be found in Table 5-8. Except for participants in the outlier subgroup, statistically significant differences were found between scores of emotional and social loneliness across all participant subgroups and genders. In all cases, participants achieved higher scores on the social component of the DJG6, than on the emotional component. When the lonely, healthy, and outlier subgroups were compared, the highest scores for both types of loneliness were observed among those participants who had been classified as lonely. It was also the lonely subgroup of participants who displayed the greatest individual differences between the two loneliness scores, as well as being the only subgroups in which all members experienced both forms of loneliness.

5.7 Missing data

Of the 266 survey participants, 8.6% (23) failed to provide a full data set. This resulted in 42 items of missing data. The distribution of this missing data is outlined in Table 5-9. Most missing data (61%) pertained to levels of deprivation. This was a result of incomplete, inaccurate, or new/unrecognised postcode data. In addition, one participant responded “65+” in response to the age question. As this age meets the study inclusion criteria, the remainder of their data were included in the analyses. The cause for the remaining missing data remains unclear.

As discussed above (§ 4.5.6), analyses were conducted using all the available data, and this is what has been reported thus far. However, to ensure that the missing data did not significantly influence the overall results, analyses were repeated, using median values in the place of the missing data. median values were used in preference to the mean, as this value is better suited to a skewed distribution with

multiple outliers (Acuña & Rodriguez, 2004; Jiri, 2014). Table 5-10 shows the revised participant characteristics when the missing values are replaced by the median values. The original data is displayed alongside for comparison.

Table 5-9: Summary of missing data

Variable	Number missing	Variable	Number missing
Age	1	**Overall loneliness score**	3
Deprivation	14	**Quality of life score**	7
Emotional loneliness score	3	**Personal wellbeing**	6
Social loneliness score	2	**Health confidence score**	6

Table 5-10: Participant characteristics with missing data imputed

	N	Mean age (SD)		Mean deprivation (SD)		Healthy (%)		Lonely (%)		Outliers (%)	
Total	266	75.6 (7.6)	75.6 (7.6)	3.7 (1.1)	3.7 (1.1)	148 (56)	143 (54)	89 (33)	86 (32)	29 (11)	28 (11)
Female	188	75.9 (7.5)	75.9 (7.5)	3.6 (1.1)	3.5 (1.1)	108 (57)	103 (55)	56 (30)	54 (29)	24 (13)	23 (12)
Male	78	74.8 (7.7)	74.8 (7.5)	3.9 (1.0)	3.9 (1.0)	41 (53)	40 (51)	32 (41)	32 (41)	5 (6)	5 (6)
		Original data (Table 5-1)									

Table 5-11 displays the overall survey results when missing data are imputed. While the initial intention had been to repeat all the statistical analyses with this modified data set, as the mean values for both survey scores and demographic characteristics were almost identical, this was considered unnecessary.

Table 5-11: Participant survey results with missing data imputed

	Mean HowRU* (SD)		Mean PWS** (SD)		Mean HCS*** (SD)		Mean Loneliness (SD)		Mean Emotional loneliness (SD)		Mean Social loneliness (SD)	
Total (n = 266)	9.2 (2.4)	9.2 (2.4)	7.2 (3.2)	7.2 (3.3)	8.3 (2.9)	8.3 (2.9)	2.6 (2.1)	2.6 (2.1)	1.1 (1.1)	1.1 (1.1)	1.5 (1.3)	1.5 (1.3)
Female (n = 188)	9.2 (2.3)	9.1 (2.4)	7.3 (3.3)	7.3 (3.3)	8.4 (3.0)	8.4 (3.1)	2.5 (2.1)	2.5 (2.1)	1.1 (1.2)	1.1 (1.1)	1.5 (1.3)	1.4 (1.3
Male (n = 78)	9.3 (2.4)	9.3 (2.4)	7.1 (3.1)	7.1 (3.1)	8.1 (2.5)	8.1 (2.5)	2.9 (2.1)	2.9 (2.1)	1.1 (1.1)	1.1 (1.1)	1.8 (1.3)	1.8 (1.3)
*How RU, quality of life scale; **Personal Wellbeing Scale; ***Health Confidence Scale												
		Original data (table 5-2)										

5.8 Chapter summary

This chapter has considered the first two aims of this research:

1. To clarify the nature of the relationship between loneliness and health within the study population
2. To identify the demographic characteristics that may influence the relationship between loneliness and health within the study population

It has reported the quantitative findings of the present research, which highlighted that loneliness was more prevalent among male, rather than female, participants. However, no significant difference was noted between the male and female participants in either of the three measures of health and wellbeing. The analyses presented here served to establish the presence of a statistically significant inverse correlation between loneliness and wellbeing. This means that, as scores of loneliness increase, scores of health will decrease, suggesting that loneliness may prove detrimental to health and wellbeing. The strongest association was noted between loneliness and personal wellbeing, with much weaker associations observed between both quality of life and health confidence and overall loneliness. That being said, a statistically significant inverse correlation was observed between

age and both quality of life and health confidence. This may be indicative of an interaction between age and the three measures of health and wellbeing. However, this was only found to have a statistically significant impact on the association between loneliness and health when both age and gender were considered together. These findings also indicated that health confidence and quality of life are more vulnerable to the influence of age and gender than overall wellbeing.

Regression analyses have confirmed the predictive nature of loneliness, both as a standalone variable, and in combination with gender and age, on individual health and wellbeing. Subgroup analyses provided confirmation that the technique employed to classify the participants as lonely, healthy, or outlier was justified. While the outlier and lonely participants were not significantly different from each other in their health and wellbeing scores, the healthy participants were statistically significantly different from both lonely and outlier participants on all four of the quantitative measures. Although no gender differences were noted in scores of emotional loneliness, significant differences were observed between the subgroups, with emotional loneliness most prevalent among the lonely, and least prevalent among the healthy participants. On average, all the participants showed greater levels of social, than emotional, loneliness.

The following chapter presents the qualitative findings from the 41 unstructured, narrative-style interviews and explores how they address the four remaining aims of this study.

Chapter 6. Qualitative findings

6.1 Introduction

Having established the presence and examined the nature of the relationship between loneliness and health among the sample population from their survey data (aims 1 & 2), this chapter presents the deductive analysis of data from 41 unstructured, narrative-type interviews. The findings from the 41 interviews were coded and themed, in light of the academic literature, the overarching research question of this study, and proposed theoretical framework, through deductive thematic analysis (Braun & Clarke, 2006; § 4.8.1). With the significance of the findings from the previous chapter in mind, this chapter now addresses the following research aims:

3. To explore how older people conceptualise loneliness,
4. To identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health,
5. To identify common factors which may protect older adults from the detrimental effects of loneliness,
6. To identify factors which influence the development of personally acquired potentials over the life course.

Data from the three participant subgroups (healthy, lonely, outlier) are initially considered separately, with individual narratives employed to facilitate the identification of common traits and factors specific to each group, and to provide examples of the overarching themes arising from the analyses. These themes were outlined in chapter four (Table 4-3), and were summarised as factors which may either mitigate, or aggravate, the negative association between loneliness and health, and individual perceptions and conceptualisation of loneliness. Individual narratives from Sylvia (§ 6.3.1), Noel (§ 6.3.2), Cathy (§ 6.4.1), Albert (§ 6.4.2), Belinda (§ 6.5.1), and Elsie (§ 6.5.2), presented within this chapter, have been selected as they were considered to provide clear examples of several of the

concepts identified through the academic literature and represented in the proposed theoretical framework, as well as highlighting the distinctions between the three subgroups. These narratives also serve to illustrate the complexity of the data, and the entanglement of multiple themes throughout the participant narratives. The chapter begins with a consideration of the individual perceptions of loneliness and old age among the 41 phase two participants.

6.2 Individual conceptualisations of loneliness and old age

This section offers an exposition of the individual perceptions of both loneliness and old age observed among the phase two participants. This is a key consideration as the way an individual conceptualises loneliness could potentially influence how they experience loneliness and perceive its effects on their overall health and wellbeing.

6.2.1 Loneliness

In considering individual responses to the negative effects of loneliness on their personal health and wellbeing, one important point to consider is how the individual participants have defined the key concept of loneliness (aim 3). In terms of loneliness, 29 of the 41 participants who were interviewed offered an explicit conceptualisation of loneliness. These included the belief that loneliness is a subjective concept, with each of us potentially experiencing it differently from others. Some participants believed that loneliness was the same as being alone, while others spoke of loneliness as a form of rejection, or something they experienced following bereavement.

The definition of loneliness employed by the researcher within this study:

> *Loneliness is the perceived discrepancy between desired and realised social interactions (Peplau & Perlman, 1982)*

highlights the subjective nature of loneliness, through the individual desire for social interactions. Furthermore, the individual perceptions of any discrepancy between desires and realised social interactions serves to highlight the role of individual perceptions, conceptualisations, and definitions. Taken in combination with both the life course approach, and the models explored throughout chapter three, one could suggest that these individual conceptualisations and perceptions may themselves change throughout the life course. The subjective and changing nature of loneliness was specifically highlighted by two participants:

> *I think loneliness must be, for an older person, very different than to a young person, a young person must be terrified, and I'm not terrified. (Cathy; lonely)*

In contrast to Cathy, who felt that loneliness might be worse for younger people, and supporting the supposed subjective nature of loneliness, Joyce (outlier) felt that loneliness was worst for older adults:

> *[older adults have a] very different outlook, different attitude, and I fail to understand it sometimes. It's very difficult for an older person.*

These quotes illustrate the subjective nature of loneliness among individuals in the same stage of their lives: While Cathy believes younger individuals will be worst hit by the effects of loneliness, Joyce felt the reverse was the case. The quotes also highlight the relevance of individual perception to the nature and experience of loneliness. Of note here is the fact Cathy and Joyce fall into different participant subgroups (lonely and outlier respectively). As will be seen later (§ 6.5), Joyce's narrative is used as a representation of a subgroup within the outlier participant group whose behaviours tend to mirror those of the healthy participant subgroup.

In further consideration of the individual conceptualisations of loneliness, 18 participants believed that loneliness and being alone are the same thing – four healthy, nine lonely, five outliers. This was manifested, by several participants, through the context of having no one to talk to, or share things with:

> *Yes, it's like being in prison. To be honest, I would have more one-to-one talking in prison, more company in prison…it's a life sentence. (John; lonely)*

> *I suppose when I was working, I was with people all day, and then you'd get home and nobody to talk to, discuss things with (Pam; outlier)*

> *It's seeing a good film and you've got nobody to talk about it too; that's when it hits you I think. (Angela; healthy)*

Conversely, 11 participants – three healthy, four lonely, four outliers – were adamant that, for them, being alone does not mean they feel lonely:

> *Alone is different. I love being alone, believe it or not, but it's not the same as being lonely. (Jessie; healthy)*

> *I wouldn't say I was lonely because I enjoy my own company, but I am alone. (Carole; outlier)*

Being lonely following the loss of a partner was cited by ten participants, four within the context of divorce, and six through bereavement:

> *I'm lonely…I miss my husband very much (Sarah; healthy)*

> *If you've had a happy marriage, you can be lonely, but you only want your husband. (Joyce; outlier)*

The impact of bereavement was noted equally between the healthy and outlier participant subgroups. The impact of bereavement on loneliness was not discussed by anyone in the lonely participant subgroup.

The variety of views regarding the nature and definition of loneliness observed throughout the thematic analyses serve to illustrate the complex and changing nature of loneliness between individuals. However, it should be noted that, despite adopting an overall life course approach, the consideration of individual conceptualisations of loneliness presented here represents a snapshot of individual opinion, rather than a longitudinal view. Consequently, it has not been possible to fully explore the changing nature of loneliness over the life course.

6.2.2 Old age and retirement

In addition to individual perceptions of loneliness, individual perceptions of old age, are also a key factor to consider, when exploring the relationship between loneliness and health among a cohort of retired older adults. This is because, these perceptions lie at the heart of the evolution of social breakdown syndrome (§ 3.5.3), which represents a significant aggravating factor in the proposed theoretical framework (Figure 3-2). As the social breakdown syndrome progresses, the individual becomes more dependent upon the negative stereotypes of old age. This dependence leads them to believe they are incompetent and unable to do anything to combat their loneliness. Also pertinent are perceptions of retirement and ageism which, depending on their nature, may also maintain the cycle of social breakdown syndrome. This occurs through their perpetuation of individual beliefs of incompetence and dependence on others.

In terms of retirement, this was discussed by 15 of the 41 participants; six who felt retirement had been a positive experience, and nine who perceived retirement negatively. Equal numbers of healthy, lonely, and outlier participants viewed

retirement as a negative event. For some, retirement seemed to precipitate a loss of purpose:

> *…for the first six to nine months I was totally lost. I was totally at my wits end because I didn't know what to do. (John; lonely)*

> *You lose that sense of purpose. You know, you're working, or studying, you know… (Joyce; outlier)*

This loss of purpose may, for some, mark the initiation of a cycle of social breakdown (§3.5.3) through the self-perceived loss of competence and consequent atrophy of skills. It may also serve to perpetuate the negative cognitive biases inherent within the loneliness model (§3.5.2).

For others, retirement was associated with a significant loss of social contact and camaraderie:

> *When I was working, you see, I was mixing with people all the time. (William; healthy)*

> *So, I do miss, to some extent, companionship and the camaraderie from working. (Jenny; lonely)*

In addition to losing a valuable resource for stress buffering, the loss of a significant social network may potentially remove from the individual a vital source of information regarding social norms and healthy behaviours. In both cases, the newly retired individual may well be rendered vulnerable to the initiation and perpetuation of both the loneliness model and social breakdown syndrome.

It's interesting to note that, while all three subgroups (healthy, lonely, outlier) of participants described the negative experiences of their own retirement, one

healthy participant also voiced the negative aspects associated with their partner retiring.

> *It's quite a culture shock when you have your husband at home all day, especially when I finished. (Jessie; healthy)*

However, Jessie was still able to carve out time for herself most days:

> *I get up early. He's a late bird, I'm an early bird.*

This would seem to suggest that, for some, the need for solitude may override the need for a large social network. It could be argued that this may be perceived as evidence of well-developed socioemotional selectivity, or the ability to identify which relationships are most likely to prove reciprocal, and prove most beneficial to the individual. Considerations that will be returned to in the next chapter

Positive experiences of retirement were only observed among the healthy participants, and those outlier participants who claimed never to be lonely. This suggested that they may have developed new and enduring social network, thus adapting positively to retirement:

> *…how did I adjust to it, I loved it. I was playing bowls and I was doing all these other things. (Esther; outlier)*

> *After that, I was retired and doing, if you'll excuse the expression, the best part of bugger all…Yes, oh yes. We could do what we wanted (Sean; outlier)*

It could be that these quotes illustrate that, those who viewed retirement positively, seemed to define retirement as a long-awaited opportunity to choose how their time was filled and to engage in new hobbies and pursuits.

Regardless of how the participants viewed their experiences of retirement, all participants who discussed retirement identified the loss of both their social network, and their personal identity. However, a positive view was certainly associated with less loneliness in later life, which reflects the importance of individual perception on the ability to cope with loneliness in later life. The positive view of retirement may also be perceived as evidence of both a proactive personality (this is further discussed in the next section) and well-developed socioemotional selectivity. While all who discussed retirement identified the loss of a significant social network, those with a positive view were perceived to be able to readily adjust to the change in their situation, without the need for a large support network, suggesting the quality of the network is more important than its size.

In addition to the role of retirement in the disengagement of older adults (§ 2.3.1), individual perception of old age and, in particular, ageism, has also been closely linked with the identification and development of social breakdown syndrome (§ 3.5.3; Brown & Moschis, 2006; Kuypers & Bengtson, 1973; Myers, 1993). These concepts were found within the narratives of 22 of the 41 participants. Over half (12) of these participants were lonely, and their views of retirement were predominantly negative. For some this negativity was associated with a loss of identity, and feelings of uselessness:

> *you lose your identity, you become this OAP and it's like all your life has just disappeared, nobody has got any use for that now. (Cathy; lonely)*

For some participants, old age was associated with negative expectations of the ageing process:

> *I prefer to live alone because as we get older we tend to get set in our ways. (Eric; lonely)*

Am I just old? All old ladies get grumpy. (Joyce; outlier)

I just, generally, feel lonely. I think, "Well, I've reached this time of life. I would expect to" (Elsie; outlier)

Based on these quotes, old age may be typified as a time of being stubborn, grumpy, and lonely. These negative stereotypes may be associated with the development of social breakdown syndrome, both through the susceptibility to dependence on external labelling, and through self-labelling as incompetent (§ 3.5.3).

It was also interesting to observe the negative stereotyping of old age held by some of the participants towards others, despite their being a part of the same demographic group:

My wife and I did discuss at what age we should stop driving the car, because almost every week, you read in the paper about some old dodderer who has done something really stupid. (Reginald; lonely)

That's why I don't like mixing with old people, because all they'll talk about is blooming Brexit and all their pills and potions, and how many times they can't see a doctor. (Elsie; outlier)

However, the negative views were not all limited to the older adults. Indeed, seven participants (two healthy, two lonely, three outlier) held a negative view of younger generations:

Nobody wants to take responsibility for their own children, for their own lives at all. (Marjorie; lonely)

I think younger people, like you, probably are more busy because of social media. You're busy telling everyone you're boiling an egg (Richard; lonely)

While positive views of ageing were noted among some of the healthy participants:

You get wiser as you get older. (Jessie; healthy)

The consensus seemed to point more towards a negative view of the ageing process, even among the healthy participants:

So, yes, what's the alternative? I must admit I'm not looking forward to great old age. (Sylvia; healthy)

6.2.3 Section summary

This section has explored individual perceptions of both loneliness and old age observed among the phase two participants. In addition to highlighting the subjective nature of loneliness throughout the phase two participant cohort, conflicting views were noted between whether or not participants considered loneliness to be the same as being alone. Interestingly, it was perceived that those who believed the two to be the same were more likely to be part of the lonely participant subgroup. In terms of perceptions and conceptualisations of old age, these were considered within the context of retirement. Among the participant group, both negative and positive views were aired. However, the lonely participants were found to be more prevalent among those who described retirement negatively.

6.3 Factors which mitigate the loneliness-health relationship

One of the three themes arising from both the academic literature and the thematic analyses is mitigating factors (§ 4.8.2). These are the factors which are perceived to

mitigate the negative influence of loneliness, and include potentials, social capital, and the social network, and it is proposed that they help protect the individual from the detrimental effects of loneliness on their health. In addition to the social network, these mitigating factors are represented in the proposed theoretical framework (Figure 3-2) as stress buffering (§ 3.5.4), socioemotional selectivity (§ 3.5.5), and health-promoting behaviours (§ 3.5.1).

This section seeks to address aim five through the exploration of healthy participant narratives, to identify what common factors may protect older adults from the detrimental effects of loneliness on health (aim 4 is addressed in section 6.4 below). This section also seeks to explore factors which may influence the development of personally acquired potentials over the life course (aim 6). It explores both the commonalities and differences found among the participants who had been classified as healthy. These are illustrated through the extended narratives of Sylvia (§ 6.3.1) and Noel (§ 6.3.2), and supported by data gathered from those classified as healthy participants in the survey. The most notable are the shared characteristics, which have been hypothesised to mitigate the destructive effects of loneliness on individual health and wellbeing. Narrative data from all three subgroups are also explored, within the context of the factors which have been perceived to mediate the negative association between loneliness and health among the older population. This exploration will serve to illustrate how such factors may influence, or be influenced by the presence of loneliness, or how these factors may be expressed differently between the lonely, healthy, and outlier participant subgroups.

With the assistance of both Sylvia and Noel's narratives, examples of factors perceived to dampen the detrimental effects of loneliness are illustrated below. These mitigating factors, collectively viewed within this research as personally acquired potentials, include socioemotional selectivity, various personality traits,

and social networks[22]. Also observed among these participants was evidence of stress buffering[23]. Evidence was also noted of the influence of positive health behaviours over general health, through the maintenance and repair pathways (§ 3.5.1).

6.3.1 Sylvia's narrative

Sylvia is a 75-year-old widow, with two children, and three grandchildren, all of whom live locally to her. She has lived in West Sussex for the past 11 years, and comes from a small, but close family. She has one brother and one sister. She is very busy, and claims never to be, or have been, lonely:

Never refuse an invitation, join everything in sight…

She feels this is due to her keeping herself busy with friends and family. In this respect, she feels a constant need to be proactive, to ensure she always has things to do:

I think you've got to plan ahead when you're getting older…

She explains that she may have felt lonely when she was first married, because her husband was away during the week, and they had no telephone. However, she used to "pester the neighbours" to remedy this, and soon got a part-time job. She further explains that she has always felt happy in her own company and has never been one to rely on someone else. She puts her proactive nature down to her mother, who was always well-organised, prepared, and outgoing. She feels we are all responsible for our own health and wellbeing, an assertion also made within the Meikirch model of health.

[22] A social network is a network of individuals connected by interpersonal relationships.
[23] According to the Stress Buffering Hypothesis, social support may protect against, or mediate, the effects of stress on health.

Sylvia lost her partner two years ago, however, felt she was able to cope because she had always had her own interests. She has also been involved in voluntary work, is engaged with social media, and considers herself to be an enabler:

> *… it, sort of, fulfilled my personality to be nosy and helpful*

She is a regular churchgoer, attending mainly for the music and singing, both of which she feels are beneficial to her mental and physical health and wellbeing. Sylvia also attributes her good health to her genes. She had a happy childhood, and feels this is essential for mental stability and the ability to cope in later life:

> *I lost my sister, my mother, my partner, my dog, all within two years – and moved house – which is a lot…*

Sylvia insists that her ability to cope with adverse situations and proactive personality are a direct product of her childhood, and the influence of her parents. This assertion provides endorsement for one of the key assumptions underpinning the proposed theoretical framework. This is that the negative consequences of loneliness may be mitigated by the possession of adequate personally acquired potential, in this case determination and a proactive personality. Sylvia's life course examples have also been interpreted as evidence that a proactive personality may fulfil the role of a personally acquired potential, due to the nature and development of personality as the individual copes with both their dwindling biologically given potential, and the various demands of life. It is further proposed here that well-developed personally acquired potential, such as personality, shows great synergy with the preventive approach underpinning many public health promotional activities. This means that, rather than responding to the symptoms of loneliness and poor health outcomes as they occur, individuals, such as Sylvia, who demonstrate a proactive approach, take action to prevent, or mitigate, loneliness happening in the first instance. Consequently, they are less likely to experience negative health outcomes.

Perceived evidence of a proactive personality, or preventive approach to loneliness, was an important theme throughout the narratives of ten of the 14 healthy participants. These include Edith, who has recognised a need to be proactive, and make the most of seeing friends, and maintaining her mobility for as long as she is able:

> *Getting old, it's not a pastime, that you can sit and let it happen, you have to go for it. (Edith; healthy)*

Bernard also provided evidence for the importance of being proactive, through the propagation of prior interests, and making new friends:

> *I think half of it is you've got to get out. You've got to motivate yourself to some extent and go and find people to talk to. (Bernard; healthy)*

This preventive approach, displayed by some through their need to be always busy and involved with their social network, is interpreted again to illustrate the importance of positive health behaviours (§3.5.1) on the preservation of physiological maintenance and repair, as well as mediating the effects of wear and tear on their health. However, in several cases, the adoption of positive health behaviour included taking up sports, or more active pastimes. In contrast to other mitigating factors, such as a proactive personality, engagement in healthy behaviours and activities may influence individual health outcomes regardless of the presence of loneliness. Indeed, the increased levels of cardiovascular exercise and muscle condition are likely a direct consequence of participation in sports or more active pastimes. It may be that this direct influence of physical activity levels may completely bypass the association between loneliness and health.

It is notable that, while more than half of the healthy participants displayed a preventive approach, there were still four who did not. However, these four

remaining healthy participants displayed other coping mechanisms, including Bert, who attributed his health and wellbeing down to his relationship with his dog:

> *My wife died…I had a dog which saw me through it…I'm in a long-term relationship now…She has a dog and she said exactly the same thing, when her husband dies, the dog was a lifesaver (Bert; healthy)*

Other coping mechanisms included a reliance on friends, neighbours, and the broader community for support:

> *So, we've got the shops, and the shopkeepers are all the same. They don't change. So, you get to know them and get to know different people (Edith; healthy)*

> *Well, in…there's every conceivable club…Churches do teas and there's art and craft…So, within the village, there's a lot going on (Matilda; healthy)*

It is also worth noting that several elements that could be interpreted as examples of the proactive/preventive approach were also observed among both the lonely and outlier participant subgroups. These included a sense of determination, self-reliance, a degree of stoicism[24], and the need to be busy. However, while the healthy participants' narratives were interpreted as examples of when they used these traits to their own positive benefit, this was not the case with the lonely participant subgroup. Instead, among the lonely participant subgroup, traits such as determination, self-reliance, and stoicism were thought to prevent the individuals from accessing help and support when needed:

[24] Stoicism is a philosophy which advocates that individual's lives should be driven by reason and nature, and that focus should be placed upon that which they are able to control.

> *I mean people other than close family don't know when I'm feeling depressed, I don't go around saying, "I'm feeling depressed I'm having a bad day." I just get on with it (Jeanie; lonely)*

In some cases, this stoicism appeared to be tempered by self-blame and a degree of learned helplessness:

> *…just a bit of loneliness sometimes, and I think that's more my fault than…it's obviously more my fault than anybody else's (Richard; lonely)*

> *You've been dealt a card, you've been dealt a life. So, you damn well get on with it. There's no-one to blame except yourself. So, that's that, but you cannot control or deal with the positive things (Jenny; lonely)*

These three quotes are here used to emphasise an unwillingness to share their loneliness or poor health with others, or to seek advice and support from outside their closest family members. Those without access to close family appear to perceive themselves to be responsible for, and helpless to remedy, their loneliness and poor health. These examples conceivably serve to illustrate how the development of personally acquired potential, such as personality, over the life course may result in the manifestation of either proactive or detrimental traits, depending on individual circumstances. Elements considered to be influential in the development will be explored further throughout the remainder of this chapter.

Returning to Sylvia and the healthy participants, it is proposed that in addition to the proactive/preventive approach representing a personally acquired potential in its own right, being proactive also appeared to serve as an effective facilitator in the development of other personally acquired potentials (§ 2.2.2.2). Most notable in Sylvia's case and interpreted within the narratives of several of the healthy

participants is the acquired ability to prioritise those relationships which are most likely to prove beneficial. This has been referred to in the academic literature as socioemotional selectivity (§ 3.5.5). This represents an aspect that is important to this research first, because socioemotional selectivity represents a significant personally acquired potential which features within the proposed theoretical framework and second, because it plays a key role in explaining the changing nature of the social network over the life course.

The presence of socioemotional selectivity was evident through Sylvia's recognition of the importance of having developed and maintained friendships and interests throughout her life.

> *What do I do? I walk a dog for charity…I sing in the church choir…I'm in two book groups…I'm in the U3A…I play canasta, I also play cribbage…I'm a hands-on grandmother…*
>
> *I've always had my own interests, I think it's vital*

It was also reinforced by her own acknowledgement that she is happy in her own company and does not feel the need to be surrounded by people, or reliant on others:

> *I think it's my personality…I live alone, but I'm not lonely*

In addition to her proactive personality, it is here proposed that this ability to prioritise rewarding relationships has likely helped Sylvia to develop her ability to cope with negative life events, including the loss of her mother and partner. This is because she has, over her lifetime, developed a close reciprocal social network, comprised of individuals who are most likely to provide support and empathy when she experiences any form of crisis or difficulty.

Evidence of socioemotional selectivity was seemingly apparent among five of the 14 happy participant narratives and three of the 12 outlier participants. There was, however, no evidence of it reflected among the lonely participant subgroup. Socioemotional selectivity was most notable through the recognition that some relationships are more important than others:

> *And you get friends and you get to know people and you have a bit more fun. And you don't really get that lonely. In fact, what you end up with is the opposite of lonely. Oh god, can't I be lonely for a couple of days, please? (William; healthy)*

> *I find it very difficult to spend a long time with other women…I don't find that company stimulating, for me, at all (Elsie; outlier)*

and that the size of one's social network does not lie at the heart of its usefulness or efficacy:

> *It doesn't bother me in the slightest [only having a few friends]. You know the saying. "A friend in need is a pain in the arse." (Bert; healthy)*

> *As I say, I'm not antisocial, but I'm not a pack animal (Peter; healthy)*

The social network seems to continue to play an important role among the healthy participants, and serves to reinforce the relevance of stress buffering (§ 3.5.4) both to the proposed theoretical framework (§ 3.7), and throughout the ageing process. This notion is discussed below, with the assistance of Noel's narrative.

6.3.2 Noel's narrative

In tandem with Sylvia's narrative, Noel's narrative also provides evidence of the behaviours and characteristics observed among the healthy participants. These behaviours include a proactive/preventive personality, as well as the influence of positive health behaviours over individual loneliness and health outcomes. In addition to offering a male perspective, Noel's narrative also demonstrates the importance of a positive family dynamic and strong social network.

Noel is an 85-year-old man with two brothers and four sons. He lives with his wife and says he never experiences loneliness. As a child, his parents lived in the middle east and, from the age of eight to 13, he attended a boarding school. During this period, he was only able to see his parents during the summer holidays, and spent the weekends at his grandmother's house, and the other holidays with different relatives. Noel did not enjoy boarding school and was caned (physically punished) regularly. His parents returned to England when Noel was 14, and he lived with them from that point onwards. He indicated that he performed reasonably well academically, leaving school following his A levels.

Noel spent his entire working life as a pilot, initially through the military, and latterly as a commercial airline pilot. He explained that he retired early due to a medical problem, which stopped him flying. Initially he felt awkward as he missed the camaraderie of belonging to something. He said that he has always had one or two close friends and is close to his four sons. He describes himself as pragmatic and easy going, which he puts down to his personality and upbringing, and he has always felt able to cope on his own. Noel considers himself to be a problem solver and, following retirement, joined the local gym, and currently engages in some form of physical, sporting activity five days a week. He also has an allotment and feels that he needs to be busy all the time. He tries to visit London once a month with his wife and believes he will always find a way to do the things he wants.

In concert with Sylvia's narrative, Noel also demonstrates a proactive personality, as a problem solver, and through his need to always be busy:

> *So, I fill myself up with jobs. I am, as a person, task orientated. I like to have tasks. So, today I will have tasks…and I will fill my day…(Noel; healthy)*

In Noel's case, this need for continuous stimulation is manifest through his engagement in various physical and sporting activities.

> *… we do gym Monday, Wednesday and Friday at 7:00am. I usually, on a Monday and a Friday, I will then go and play mixed badminton at the over 55's at Crawley. I will do badminton on a Tuesday evening. I'll do yoga on a Saturday and yoga on a Wednesday. In the evening, on the Wednesday in the morning. I have been doing golf, but this year we've been just re-renovating this house…(Noel; healthy)*

While it could be argued that Noel's healthy status has arisen as a direct result of his regular participation in physical activity, rather than just a proactive personality, this alone demonstrates his engagement in positive health behaviours. These behaviours may, in turn, promote the physiological responses to stress and wear and tear on the body (§3.5.1). Similar characteristics are also evident across several of the 14 healthy participant interviews and are manifested through a positive view of social media (n = 4), and a favourable family dynamic (n = 5), in both childhood and adulthood.

One potential mitigating factor which was observed predominantly among the narratives of the 14 healthy participants, was the social network, in a variety of forms. As theorised previously, the presence of a well-developed, supportive reciprocal social network may serve, not only to mitigate, or buffer, the potentially

negative effects of loneliness. Additionally, this may also provide examples of social norms and socially acceptable behaviours. As noted above, a reciprocal social network is one which has successfully developed through the employment of socioemotional selectivity (§ 3.5.5). Based on the premise of socioemotional selectivity, this network will be one that is based on the quality, rather than quantity, of relationships involved.

It has been argued that at the heart of any social network lies family (Coleman, 1988; Goldin, 2016; Lavalle, Omosebi, & Desmarteau, 2015), and this was a topic discussed by all the participants. In addition to the provision of information regarding social norms, and the buffering of stressful events, the family has been shown (§ 6.3.1) to influence the development of both personally acquired potential to cope with the demands of life and personality:

> *As a child my parents moved a lot because of my father's work and whatever, and so I think, I find that if you stay in one place, that can be quite closing in breadth of thought. Or confidence, I guess (Belinda; outlier)*

> *Because I was crafty…I was the middle one…she [elder sister] was entrusted to take me to the pictures and I could be a big girl. Well the twins were three years younger, so sweets were rationed, for instance, and if 'Aunty Somebody' brought in a bag of sweets, I could be a baby with the twin and have some sweets (Joyce; outlier)*

While Sylvia demonstrated this through her proactive personality, the above quotes both illustrate how individual behaviour may be influenced by the family environment, Belinda through her need to not stay for too long in one place, and Joyce through her taking advantage of her place within the family to get the best for herself out of any situation. The extent to which the healthy participants described

a positive and close-knit family dynamic, in tandem with the presence of well-developed socioemotional selectivity, which was not observed among the lonely participant subgroup, serves to reinforce this proposed assertion.

Among the full cohort of participants who were interviewed, a positive family dynamic was described by 13 participants: six outliers, two lonely, and five healthy. Those who were classified as healthy were more than twice as likely as their lonely counterparts to describe having a positive family dynamic[25]:

> *We all get on really well. It was my husband's 80th birthday a few days ago, so we had a lovely family party. (Jeannie; healthy)*

> *Yes, we're a pretty gregarious family…we were allowed to have our say…my mum joined in everything. My mum loved it. If all our friends came to our house, she thought that was brilliant and she really enjoyed it. (Edith; healthy)*

Although a positive family dynamic was described by two of the lonely participant subgroup, this appeared to be reliant upon the participant reaching out for support, rather than it being naturally available to them through their family:

> *The one that lives here is the one who'll come and do jobs for me and drive me anywhere, that sort of thing. (Jeanie; lonely)*

> *Yes, but if I ever need them, they're here like a shot. (Richard; lonely)*

Beyond the individual family group, an individual's social network may encompass a broad variety of other groups and members. Overall, the various types of social network were discussed equally by the healthy and lonely participants, which served to highlight the continued relevance and importance of the social network

[25] Negative family dynamic is considered in section 6.4

throughout later life. In contrast to the happy participant subgroup, who appeared not to be conscious of, or affected by a shrinking social network, this phenomenon was discussed by five of each of the lonely and outlier participant subgroups:

> *All of a sudden my contacts have gone. (Irene; lonely)*
>
> *Everyone either has a partner or someone living with them or dependent on them. I don't have that. (Shirley; outlier)*

A lack of individual awareness of their social network shrinking was interpreted as potential evidence of the presence of adequately developed socioemotional selectivity among the healthy participants, who were less reliant on being part of a large network.

The positive influence of social media, as a part of the social network, to health has been shown repeatedly throughout the academic literature (Chang et al., 2015; Ellwardt et al., 2015; Holmes & Joseph, 2011), and was discussed by 16 of the 41 interviewed participants. Of this small cohort, eight participants, half of whom were classified as healthy, voiced a positive opinion of social media, particularly within the context of maintaining contact with close friends and family:

> *…they are exceptionally good and the fact that people can now talk to one another so easily is wonderful… (Noel; healthy)*
>
> *I think Facebook is brilliant. I'm on about ten clubs… (Sylvia; healthy)*
>
> *I think it really is brilliant, especially if you've got family dotted all over the place. (Edith; healthy)*

Of the four healthy participants who believed social media to be a positive force, Edith (healthy) held both positive (above) and negative views, suggesting a greater

degree of complexity to the use and/or perception of social media. However, her negative opinion related solely to the use of social media by younger generations:

> *What I find really disquieting…terrifying really, is the way they're so hateful to each other. Yes, it's caused a lot of problems.*

Except for Edith, none of the healthy participants viewed social media negatively. In contrast, negative views of social media were voiced by four lonely participants and three outlier participants:

> *I don't do Facebook, Twitter, YouTube, or any of it. It's unsocial media (Marjorie; lonely)*

> *…if I was e-mailing people it would probably make me more lonely actually… (Jeannie; lonely)*

It was interesting to note, that of the eight participants who described social media negatively, four did so within the context of its detrimental effect on younger generations:

> *I could get up and walk out and they wouldn't notice because they're all on their phones (Marjorie; lonely)*

> *I think it's wicked what's happening through social media. The fact that someone, some child can be upset because…apparently no-one likes you in the world, I think it's awful. (Tim; outlier)*

> *I think sometimes that all this social media-based activity is draining the brain function for the younger generation. (Reginald; lonely)*

6.3.3 Section summary

Using Sylvia's and Noel's narratives to provide specific examples of socioemotional selectivity, stress buffering, and a proactive/preventive personality or approach to life, this review of the data generated by the 14 healthy participants facilitates the investigation of factors believed to mitigate the negative association between loneliness and poor health among retired older adults (aim 5). These factors, broadly classified as personally acquired potentials, include a proactive personality, and the ability to prioritise the relationships most likely to be beneficial to them. Also arising from the data was the finding that, although the social network has a tendency to shrink throughout the life course, its relevance to health and wellbeing in later life does not dwindle. This finding was also perceived as evidence of the development, and importance, of socioemotional selectivity. Also supported is the notion that the development of personally acquired potentials may be directly attributable to the sequence of events and circumstances an individual experiences during their childhood. To continue to develop these arguments, the influence of a negative family dynamic and childhood adversity are considered further in the next section.

In terms of the wider phase 2 participant cohort, personality factors, such as determination and self-reliance were reported most frequently among the lonely participants. However, in contrast to the healthy participants, in whom these sorts of trends were perceived to serve as a preventive approach to adversity, for the lonely participants, self-reliance and determination were more often considered to present as a perceived necessary response to adversity. In terms of social networks, while the healthy participants spoke more of their close family relationships when discussing their social networks, the lonely participants spoke more frequently of a negative family dynamic, and seemed to be far more reliant on friends and the wider community. This was apparent through their perception that their networks were shrinking. This also suggests a lack of close support and/or intimacy available

to them. Furthermore, the lonely participants discussed no examples of socioemotional selectivity as compared to their healthy counterparts. The position of outlier participants within the relationship between loneliness and health will be considered in section 6.5.

6.4 Factors which may aggravate the loneliness-health relationship

Having outlined examples of personality traits, behaviours, and other factors believed to mitigate the effects of detrimental loneliness on health, through examination of the narratives of the 14 healthy participants, this section focusses on the 15 lonely participants. The intention of this section is to explore the second theme which arose from the analyses: aggravating factors. These are the factors which are perceived to exacerbate the negative influence of loneliness on individual health, and include negative life events, or adversity, and evidence of social breakdown syndrome. This exploration addresses the fourth aim of this research – to identify what common factors, over the life course, may be associated with the detrimental effects of loneliness on health. This section also seeks to identify factors which may influence the development of personally acquired potentials over the life course (aim 6).

As with section 6.3, this section takes a life course approach. In this case, the focus will be on the narratives of the lonely participants subgroups. It examines both the similarities and differences observed among the lonely participants, with key concepts illustrated through the extended narratives of Cathy (§ 6.4.1) and Albert (§ 6.4.2). These narratives are supplemented with examples from other lonely participants. The key concepts explored through these narratives are those which are perceived to aggravate or exacerbate the detrimental influence of loneliness on individual health outcomes. These include perceived evidence of adversity over the life course (§ 2.3). Also considered is the influence of a negative family dynamic, which represents the second half of the consideration of family dynamics which

began in the previous section. Perceived evidence of social breakdown syndrome (§ 3.5.3), which represents a significant aggravating factor and key aspect of the proposed theoretical framework, among the lonely participant subgroup, is also considered.

6.4.1 Cathy's narrative

Cathy is a 66-year-old woman, with one daughter and two grandsons. She lives alone and considers herself to be lonely all the time. This assertion is supported by her loneliness score (6/6). Cathy has one brother and, as the daughter of a military man, moved around a lot throughout her childhood. She estimated that, by the age of nine, her family had moved more than 20 times. Consequently, Cathy does not have a lot of friends from her childhood. Cathy recounted a time when, based in Cyprus with her family (aged six), she was kidnapped. Besides its actual occurrence, she has little recall of the details of this event.

During her adult, working life, Cathy spent 28 years working as a teacher, before taking on several advisory roles within the county's education department. This was a particularly stressful time for Cathy because, in addition to the natural stresses associated with her career, she was experiencing significant emotional problems, within her marriage. Throughout this period, Cathy used her job as a "prop" to preserve the façade that all was well:

> *There were times I went into school and I could be the most professional person, suited and booted, by the time I got to the car, because of the way my life was then, I'd be crying about what was happening to me in my own home and then having to go home to it again. So I lived like that for years and that must have taken a toll on me I suppose*

In 2012, Cathy both retired and divorced. Since this time, Cathy has been a "social organiser", and tries to make an effort to go out and meet people. She attributed this to her years spent within the education sector, however, she has not retained any of the members of her social network from this time and has not developed any lasting relationships since. She has her two grandsons over to stay with her once a week, however, explains that she has no one she can truly confide in:

> *She [daughter] doesn't know how I feel and she wouldn't understand how I feel, she's not at that stage in her life.*

Following her divorce, Cathy lost a substantial number of friends, primarily those who were still married. This loss was exacerbated by her retirement, which left her feeling robbed of her identity, "like an empty shell", and that she did not really know herself. She strongly believed, and still does, that "everyone thinks I'm having a wonderful time", and she attempts to live up to this expectation by organising trips and events for others. However, despite her keen sense of determination, Cathy remains acutely aware of her own vulnerabilities and, following a minor fall, often finds herself wondering how long it would take for anybody to notice her lying on the floor if it happened again.

The first and most obvious point to consider is Cathy's experience of abduction as a six-year-old. Cathy felt this may have impacted on her development and later experiences of health and wellbeing. Additionally, as noted above, Cathy and her family frequently moved home during her childhood. She felt this deprived her of the opportunity to form any lasting, long-term friendship, resulting in her feeling like an outsider. It is not clear the extent to which this lack of friendship was influenced by her kidnap, but it appears to have left her without the presence, or experience, of a strong and stable social network. It is proposed that this lack of social interaction throughout her younger years may have significantly hindered her

ability to develop socioemotional selectivity (§3.5.5) throughout her life. This may be evident through the perceived lack of a reciprocal social network:

> *People don't come round, people don't knock at the door, people don't phone me and I'm a social person, I think it's because everybody thinks I'm having a wonderful time.*

This quote may also be perceived as an example of a form of learned helplessness and victim mentality, which is often associated with social breakdown syndrome. Also notable within this syndrome is the perceived loss of self, which Cathy perhaps fell victim to both when she divorced, and upon retirement:

> *you're married, you're doing well, a good job, I lived the role and work for me was a great coverup and so that was my identity. So when I left work and was divorced, retired and divorced, my identity went as well, so I wasn't that person*

Furthermore, the loss of friends, and associated loss of individual identity, following her divorce, combined with her poorly developed socioemotional selectivity, may be perceived to have left her more vulnerable to the negative consequences of ageing on her health. This notion is consolidated by Cathy's own recent experiences of health:

> *I've probably been more ill since I retired*

It is proposed that this vulnerability may be representative of aspects of both social breakdown syndrome (§ 3.5.3) and the loneliness model (§3.5.2), which lies at the heart of the proposed theoretical framework (§ 3.7). Cathy went on to highlight a series of blackouts and experiences of sciatica and heart palpitations, which may further support the perceived detrimental influence of loneliness over individual health outcomes. Furthermore, the perceived symptoms of learned helplessness

and the cycle of both social breakdown syndrome and the loneliness model are potentially supported by Cathy's self-confessed fear of rejection:

> *It's literally the fear factor…the fear of asking if anybody would like to do anything for fear of getting rejected*

Cathy's narrative, while extreme, does provide clear evidence of adversity in both childhood and adulthood, and how this may have impacted upon her current health status. Also notable is the perceived evidence of both social breakdown syndrome and the loneliness model. This was perceived through her loss of purpose and identity following retirement, and the loss of her social networks following both retirement and her divorce.

Over the course of the 41 qualitative interviews, a total of 42 negative events were described, 25 of which occurred during childhood, and the remaining 17 during adulthood. Overall, negative experiences were discussed more numerously among the lonely participants, and the majority of these events occurred during childhood. In Cathy's case, these adverse events included her constant moving from place to place, and her kidnap at the age of six. However, other childhood events and situations were described among the lonely participant cohort:

> *Probably a lot of it is going back to childhood. You know, "you're useless, you can't do anything, you're…" (Susan; lonely)*

> *I didn't have a normal upbringing. I was brought up in a children's home. (Marjorie; lonely)*

In contrast, there were eight healthy participants for whom an adverse childhood event, rather than precipitating poor health in later life, was perceived to instil a sense of determination, and a proactive approach to life:

Yes, I didn't have a terribly happy adolescence. My mother was ill…but I had school…so that was my anchor. (Jessie; healthy)

…I wasn't allowed to have friends come home with me, they didn't want any noise in the house. (Bill; healthy)

One point to note, which is highlighted by Jessie's comment, and also evident in Bill's narrative, is the role of school as an anchor in their lives. Jessie's adverse events do not appear to have occurred until she was in her adolescent years. This may be interpreted as evidence that personally acquired potentials, which are sufficient to mitigate negative life events may begin to evolve prior to adolescence, and that a strong personality and/or supportive network – in this case school - can serve to alleviate the detrimental effects of adverse childhood events, and their subsequent impact on an individual's ability to cope with loneliness in later life.

As noted above, 17 participants outlined negative events occurring during their adult years. While these negative events were distributed evenly across the healthy, lonely, and outlier participant subgroups, it was only the six lonely participants who had spoken of these events negatively:

Then, I had an accident so I can't play golf and I can't play badminton anymore. (Marjorie; lonely)

I was, er, fiddling about with my car, and somebody drove past and threw an egg at me. (Christine; lonely)

This is suggestive of the proposition that the early life experiences of adversity may well have inhibited the development of sufficient personally acquired potentials, or coping mechanisms, to enable them to cope with adversity during adulthood and their later years.

It is interesting to note that all six of the lonely participants who described these negative events, had also experienced, and spoken negatively of an adverse childhood event. In contrast, only one of the five healthy participants who experienced negative events during adulthood had been subject to an adverse event during childhood. It may be argued that this lack of adversity during childhood is one of the reasons that these healthy participants possessed the resilience to withstand the potentially injurious events which occurred during their adulthood:

> *When I was three months pregnant, my mother died. When I was six months pregnant, my mother-in-law died. When the baby was eight weeks old, I walked in and found Daddy dead on the floor. (Matilda; healthy)*

> *I broke into places, stole food, didn't know how to live without doing silly things, ended up in prison at 21. Ended up being raped half a dozen times. (Bill; healthy)*

It may perhaps be asserted then that these five healthy participants had developed enough personally acquired potential prior to these events to allow them to cope with them. Coping mechanisms discussed with these participants included resilience, or the ability to "bounce back", along with the recognition of the need to prioritise their children, or to try to change their circumstances for the better. It may also be proposed that, the experience of adversity prior to adolescence may initiate a dose-response effect with further experiences of adversity and loneliness (Umberson & Montez, 2010, Victor, 2022). This is perhaps illustrated by the observation that, while divorce was present in both healthy and lonely participants, this only served as a lasting source of distress when discussed by the lonely participants. These examples also lend further support to the ethos of the life course approach, more specifically, the proposition that adverse childhood events

may predispose an individual to poorer health in adulthood (Blane, 2005; Kuh et al., 2003; Nurius et al., 2015).

6.4.2 Albert's narrative

Albert is a 77-year-old man who has been living on his own for the past 12 to 14 years and considers himself to be lonely some of the time. He has one brother who lives locally, and two daughters, one of whom is disabled, who both live in the north of England. He lives in a holiday home within a country club but is only allowed to stay there for eight months of the year. For the remaining four months, Albert visits his daughters or travels. Until recently he owned a camper van and used to travel a lot.

Albert considers himself to be a bit of a loner and has lived a fairly nomadic life. His family were "fairground people" and he was raised, primarily, by his grandmother. Albert was:

> *…born into an era where you did as you were told…*

He claims to have inherited his mother's "siege mentality":

> *…during the war, if food was available, you bought it, and you bought as much as you could…*

This was manifest through his stockpiling and hoarding large quantities of tinned goods and bottled soft drinks. This may be perceived to represent the hypervigilance and negative cognitive biases associated with the loneliness model (§ 3.5.2)

When he was aged 11, Albert was sent away to boarding school, which he loved. However, he left with no academic qualifications. On one occasion, he returned home for the holiday to discover that his family had "upped and moved" without

telling him. Following school, Albert chose to follow in the footsteps of his great-grandfather and joined the Navy, where he got used to moving around every two or three years. He felt that this constant moving may have affected his social network:

> *You make friends, you make acquaintances you don't make, necessarily, lifelong friends, because you're not with them that long.*

After 25 years in the Navy, he worked for several medical companies as a sales representative but retired early as he had difficulty working for a younger manager. His retirement began with three years in Spain, followed by 18 months in France, before returning to England, where he has remained. He believes that loneliness is associated with diminishing community spirit and claims only to be lonely when the weather is bad. He states that living alone does not worry him, however, he did voice concern over what might happen if he had an accident or heart attack while at home alone.

Much like Cathy, Albert lacked stability during his childhood, which both attributed to their continuously moving from place to place. Furthermore, Albert's family did attempt to abandon him once while he was away at school. However, he did not view this as a rejection at the time, choosing instead to track them down. While this may have instilled Albert with a degree of personal strength and tenacity, his survey data still suggest that he lacks the wherewithal to cope with the adverse effects of detrimental loneliness on his health. Like Cathy, the constant moving served to hinder Albert's ability to develop and maintain a significant network of friends. One key issue specifically raised by both Cathy and Albert is the concern over what might happen if they were to suffer a fall, or significant health problem. This is perceived as evidence of their heightened awareness of their own frailty and vulnerability and may be viewed as a symptom of social breakdown syndrome (§ 3.5.3), through their doubting their own competence and abilities to take care of

themselves. It may also be reflective of the cognitive biases associated with the loneliness model (§ 3.5.2), which develop through a heightened hypervigilance to their own vulnerabilities and poor health outcomes. This, and other signs of social breakdown, were perceived among the narratives of ten of the fifteen lonely participants, seven outliers, and one healthy participant. In seven of the lonely participants, this was perhaps evident through their perceived learned helplessness:

> *I do look for volunteering activities to do, but a lot of what's out there is not anything that I could cope with. (Marjorie; lonely)*

> *And after I reached retirement age I gave up. If you drop dead now it doesn't really make any difference. And nobody wants me, nobody is going to miss me so it's dead easy for me. I don't have to do anything I can just sit back. (Dave; lonely)*

Social breakdown was also seemingly apparent in the narratives of seven lonely, one healthy, and four outlier participants through signs of victim mentality:

> *And as if there's a… Excuse me if I cry, but as if there's nobody who, you know, cares in the world, and- (Christine; lonely)*

> *Yes, I wonder why people don't visit me…I've got quite a lot of friends, but not anyone that drops in. (Richard; lonely)*

> *My middle son, again his father isn't here, so he doesn't bother (Carole; outlier)*

Both the learned helplessness and victim mentality noted here could demonstrate elements of social breakdown by way of the individual's perceptions of helplessness and incompetence, and dependence on others. These perceptions may well also leave the individual vulnerable to the cognitive biases which form a constituent part of the loneliness model, as well as the continued perpetuation of behaviour akin to both the loneliness model and social breakdown.

One final salient factor, observed within eight of the 15 lonely participants' narratives was a negative family dynamic, which may have hindered the development of sufficient personally acquired potential and the ability to successfully confront the demands of life and, in particular, the detrimental influence of loneliness over individual health outcomes:

> *I came from a pretty dysfunctional family though. (Richard; lonely)*

> *I was brought up by my uncle and aunt, who then had two children…he died and she concentrated on their children. (Eric; lonely)*

In terms of the wider study population, this investigation highlights the lack of a stable reciprocal social network among the lonely participants when compared to their healthy counterparts. This may well be seen as evidence of the inability to develop the skill of socioemotional selectivity (§ 3.5.5) during their earlier years. Also proffered was the apparent association between childhood adversity and the initiation of the social breakdown syndrome (§ 3.5.3), as well as the development of the negative cognitive biases associated with the loneliness model (§ 3.5.2). Furthermore, the review of the lonely participants' narratives suggested that the incidence of adversity prior to adolescence may initiate a dose-response impact of adversity on both the development of personally acquired potentials and the ability to cope with the detrimental effects of loneliness in later life. In contrast, the healthy participants displayed that, having developed sufficient potential earlier in their lives allowed them to adequately cope with the adversity both during, and after adolescence.

6.4.3 Section summary

Using the narratives of Cathy and Albert as illustrative examples, this section has reviewed the data perceived within the individual narratives of the 14 lonely participants, and the factors considered to aggravate, or exacerbate, individual vulnerability to the negative impact of loneliness on their health (aim 4). Common factors observed among these narratives included adverse events during child- and adulthood, social breakdown syndrome[26], and a negative family dynamic. These factors are here believed to be responsible, both for hindering the development of sufficient personally acquired potential to mitigate, and to directly exacerbate the effects of detrimental loneliness on individual health and wellbeing in later life. Also perceived was the absence of socioemotional selectivity among the lonely participants.

6.5 Outlier participants

This section focuses on the analyses of the data from the narratives of the 12 outlier participants. These were the participants who, contrary to the correlational analyses, were either lonely and healthy (phase 1, n = 17; phase 2, n = 8), or not lonely and unhealthy (phase 1, n = 11; phase 2, n = 4). In contrast to the preceding two sections, which explored participant narratives for the patterns of behaviours and factors which were perceived to either mitigate (aim 5), or exacerbate (aim 4), the influence of loneliness on health and wellbeing, this section seeks to understand how these outlier participants may, or may not, fit within the proposed theoretical framework, despite their quantitative data not supporting the observed correlation between scores of loneliness and health. It also seeks to tackle the overarching research question:

[26] Social breakdown syndrome implies that an individual's sense of self, their ability to mediate between themselves and society, and their orientation to personal mastery are functions of the kinds of social labelling they experience and subscribe to.

What is it that allows loneliness to be detrimental to the health of some, but not all retired older adults?

With this in mind, the two narratives here have been selected on the basis of whether or not the participants considered themselves to be lonely (Elsie; §6.5.2), or not (Belinda; § 6.5.1), rather than gender, or other attributes or behavioural patterns. This serves to illustrate the relevance and importance of individual perceptions and conceptualisations of loneliness to inform the research question and the theoretical framework, as well as the overall association between loneliness and health within the study cohort. It also allows for the further investigation of how older adults conceptualise health (aim 3).

6.5.1 Belinda's narrative

Belinda is a 68-year-old woman who, although aware of loneliness, does not feel it is an issue for her, and claims to never be lonely. She has two children and spoke of two grandchildren. She was married for 33 years but has been divorced for the past 13 years. Consequently, she misses having someone to share her grandchildren with. However, it could be argued that it is through her own choice that she does not discuss them with others:

> *If you're married you can bore each other rigid with stories about the grandchildren, but you can't, anybody else I religiously limit myself.*

She is part of a small group of friends, all of whom are women who live on their own, and she has no trouble filling her time, in fact, as chair of the local parish council, she is very busy.

Belinda's daughter, along with two grandchildren, lives in China, and she visits them at least once a year. She is used to not having her family live close by, and recognised the need to be proactive:

> *As a grandparent, you have got to work at it.*

Belinda describes herself as a pragmatic and resilient character and is not frightened of being on her own. The oldest of three children, as a child she moved quite a lot until she was ten years old, when her father died. When she was first married, due to her husband's work, she moved around the south of England, moving to West Sussex in 1981, where she has remained. Although she and her husband divorced in 2005, Belinda does not feel that this had a significant impact on her social network, as she had already lost most of her network as a consequence of her then husband's infidelity:

> *That wasn't as big an issue, because in the past we had lost the social network because my husband had an affair…So, I didn't have that to lose, really, and the friends I had were my friends.*

Prior to her divorce, she had never lived alone, but she likes it:

> *I have an innate independence, or coping, and that's partially because my father died when I was a child, when I was 10, and I was the oldest.*

Throughout her life, Belinda has suffered several bouts of depression, however, she currently takes antidepressant medication and considers her depression to be well-managed. That being said, she believes herself to be competent rather than robust:

> *I've had serious bouts of depression through my life, which are now managed and fine...my mental health has not always been*

> *robust at all. There is a very competent bit of me, "I can organise anything"*

Following her divorce, Belinda took up gardening and has an allotment, which she feels is a huge help in maintaining her health and alleviating loneliness:

> *…we have allotments in the village, and I have one of them, and that's a huge thing…I only took up gardening when I got divorced, and discovered that I love it…I find digging incredibly therapeutic.*

She is also engaged with social media:

> *I use it to communicate with the family…*

and feels that the company of animals is important, and has a cat and a dog:

> *…the lonely times can be Saturdays, when people are doing family things…but I can spend a happy afternoon in my allotment with the dog, and it's grand.*

In keeping with her perception of herself as never lonely, Belinda appears to share many traits and characteristics with those observed among the healthy participants (§ 6.2). She has always had her own circle of friends and recognises the need to be busy and proactive, however, she is also happy in her own company:

> *Yes, I'm not frightened of being on my own*

This suggests that the subgroup classification, which has been based upon self-reported measures of loneliness, health, and wellbeing, may, in some cases, be overcome by individual perceptions, as well as their conceptualisation of the key concepts of loneliness and health. This notion was thought to garner support from other members of the outlier subgroup who considered themselves to never be

lonely. This was notable through the narratives of several of the outlier participants, who stated that they were happy in their own company:

> *It doesn't worry me at all. I'm quite happy with my own company (Joyce; outlier)*

> *I'm very happy in my own company. (Thomas; outlier)*

Support was also perceived through various aspects of the proactive personality/approach, both through engagement in physical activity, and in the willingness to talk to people:

> *I'm very lucky in that I'm not slow in coming forward. I will talk to people…You just have to make yourself go out. (Carole; outlier)*

> *I walk every day. I walk along the seafront. I'm perfectly happy here. (Thomas; outlier)*

Furthermore, like many of the healthy participants, some of the outlier participants displayed signs of what has here been perceived as an example of well-developed socioemotional selectivity:

> *Yes, there's Sue around the corner, she's younger. I am trying to develop younger friends, because they're useful as well as good friends (Joyce; outlier)*

6.5.2 Elsie's narrative

Elsie is an 84-year-old widow. She has only been lonely for the past four years, having lost her husband of nearly 60 years to cancer. However, she does claim to be lonely all the time, following the death of her husband. She has two sons, four grandchildren, and four great-grandchildren. Her eldest son left home at 17 and, following careers in both the Royal Air Force and the police force, now lives nearly

three hours away from Elsie, with his wife, whom Elsie does not get on with. While Elsie freely admits that her eldest son will be there for her if she needs or asks for help and/or support, she is reluctant to "bother" him, which may reflect both her desire to not be a nuisance or a burden but may also be indicative of a lack of stability in her close social network as she does not feel readily able to contact her son. As such, this could reflect a lack of well-developed socioemotional selectivity (§ 3.5.5).

> *My son, he's always active. He's always doing something. He's got a wife, who works, but he's never got time for anything. We've always had to be fitted in. But he's a loving son, and caring.*
>
> *My son knows that, because I said, "If you tell [daughter-in-law] I'm going to live up there, she won't make me welcome or anything, and I will feel uncomfortable."*

Elsie's younger son lives relatively close by (18 miles), however, 18 years ago, he took the decision to completely "cut himself out of the family". Combined with her unwillingness to "bother" her other son, this has left Elsie feeling deprived of close familial support, as well as an important social reference point. It could also be proposed that this has deprived her of access to a buffer for the stressful events in her life (§ 3.5.4), as well as leaving her vulnerable to the development of social breakdown syndrome (§ 3.5.3) through both her vulnerability and subsequent induced dependency. As a result, she feels inconsequential, and robbed of her roles of mother, grandmother, and great-grandmother. Elsie volunteers at a local school during term time, listening to children reading. This is a regular highlight for her and may represent a need to replace her "lost" family network. Although Elsie is in contact with her older son and his family, she believes that they would soon lose interest in her if she were to move to live closer to them:

> *But I know very well, if I did, at first, it's a bit of a novelty. They've got their own lives haven't they?*

This negative self-belief, it seems, has caused her to expect to be lonely, and to expect people to lose interest in her, and stop caring:

> *I know people have got to get on with their lives, and then you find they can't keep on caring about you*

Returning to Elsie's early years, she was one of four children, with one older brother, and two younger sisters. She and her brother were particularly close and were evacuees together during the Second World War. Despite leaving home at 18, Elsie has never lived alone. She went straight from home to training as a nurse, where she lived in the nurses' home, which she likened to living at boarding school. Throughout her career, Elsie worked for the NHS, both as a children's nurse, and in her final 15 years, as a community midwife. She loved her job and did not relinquish this role through choice when she turned 60. Throughout her career, she was used to a busy day, and still enjoys bumping into previous patients and mothers.

In contrast to Belinda, Elsie claims to be lonely all the time. However, it is noteworthy that, in common with Belinda, Elsie's traits and behaviours appear to be driven by her self-assigned loneliness status rather than her actual observed loneliness score. Consequently, her behaviours more closely reflect those observed among the narratives of the lonely participants (§ 6.4). She describes a negative family dynamic and displays what have been perceived to be several of the signs and symptoms of social breakdown syndrome, including negative self-belief and lack of confidence. The rejection Elsie feels because of her negative family dynamic has, it seems, resulted in the development of what may be acknowledged as a form

of learned helplessness[27], where she does not wish to bother people, and feels as though nobody cares about her. Like many of the lonely participants, these negative beliefs are thought to be self-perpetuating, and tend to heighten the individual's feelings of vulnerability, and uselessness (Gruenberg et al., 1966; Kuypers & Bengtson, 1973; Zeytinoglu et al., 2021). These feelings of uselessness were also perceived through Pam's age-related loss of confidence:

> *As I've got older, I'm losing confidence. I drive around town, but I mean, I couldn't drive now…(Pam; outlier)*

These, in turn, may initiate, and sustain, the development of social breakdown syndrome (§ 3.5.3). Other conditions which were noted among the lonely participants, and mirrored by those outliers who perceived themselves to be lonely included a lack of a close reciprocal social network:

> *Well, I had friends at school, but then afterwards…it was isolation again. (Pam; outlier)*

and a negative view of social media:

> *Well, if you think about it, in my era, I prefer to phone up somebody and talk to somebody. I don't want to tap in and go through emails, or text messages. I prefer to talk to somebody at the other end. That helps. I think if you're just tapping away, I think it's going to make it worse. (Margaret; outlier)*

> *…as for spending days gazing at a screen and surfing the internet, that's not for me…The immediacy of the internet I think can be very dangerous. (Tim; outlier)*

[27] Learned helplessness may be defined as occurring when a person who has experienced repeated challenges comes to believe that they have no control over their circumstances.

6.5.3 Section summary

This section has, through the in-depth consideration of two outlier participant narratives, along with examples from other participants, explored individual perceptions of loneliness (aim 3) and how this may influence the association between loneliness and health among retired older adults. While classified as neither healthy, nor lonely, the patterns of behaviours observed through the narratives of the outlier participants, were perceived to have been driven by the individuals' self-classification as either healthy or lonely. Those who identified as never lonely displayed patterns of behaviour and traits which mirrored those who had been formally classified as healthy (§ 6.2). Similarly, the patterns of traits and behaviours observed among those who self-classified as lonely, closely reflected those noted among those who were formally categorised as lonely (§ 6.4).

6.6 Chapter summary

This chapter presented the findings from the data gathered from the 41 participants who were interviewed. Beginning with a consideration of individual conceptualisations and perceptions of loneliness and older age, this chapter highlighted the subjective nature of loneliness, both in terms of definition, and the life stage at which participants feel loneliness is most difficult to cope with. Also notable, was the number of participants, the majority of whom were lonely, who believed loneliness to be the same as being alone. Loneliness was also viewed by some, as something they experienced following bereavement. Old age was explored through the investigation of individual perceptions of both the process and experiences of retirement. Overall, this investigation highlighted that a positive view of retirement may be associated with less loneliness in later life.

Participant narratives were employed to assist in the exploration of the behaviours and traits exhibited by the participants and highlighted distinct characteristics and

patterns of behaviour observed between the healthy and lonely participant subgroups. Participants who, based on their survey data, were classified as healthy (not lonely), were more likely to display evidence of a proactive and preventive personality, along with well-developed socioemotional selectivity. Evidence of stress buffering was also perceived through the observed importance of the social network. However, while the healthy participants displayed a positive family dynamic, the lonely participants were far more reliant on friends and the community. The lonely subgroup were also the only participants to comment on the shrinking nature of their social network. In contrast, participants who were classified as lonely (not healthy), based on their survey data, displayed less evidence of adequately developed personally acquired potentials. Instead, symptoms of social breakdown syndrome were observed. These included a negative self-belief and the expectation of loneliness. Health behaviours were also shown to influence the overall health of both lonely and healthy participant subgroups.

The remaining, outlier, participants served to demonstrate the relevance and importance of perception to the theoretical framework underpinning this study. This framework has been proposed to underlie, and begin to explain, the complex relationship between loneliness and health over the life course. Those outlier participants who perceived themselves to be always lonely demonstrated similar behaviours and characteristics to those observed among the lonely participant subgroup. Conversely, outlier participants who perceived themselves to never be lonely shared similar behaviours and characteristics with the healthy participant subgroup. This supports the idea that, in some cases, the influence of loneliness over individual health and wellbeing may be overcome by strong enough positive perceptions of loneliness and old age.

From a life course perspective, the experiences of adversity in childhood, particularly prior to adolescence, were here shown as examples of factors which may aggravate the impact of detrimental loneliness. This is because the presence

of adversity is believed to impede individual ability to cope with adversity in later life, through both the failure to develop adequate socioemotional selectivity, and the later development of social breakdown syndrome. This also supports the proposed assertion that the ability to cope with adversity may be directly related to childhood experiences and parental influence. Furthermore, this highlights the importance of the pre-adolescent development of personally acquired potential to mediate the negative association between loneliness and health in later life. such considerations are further developed in the next chapter.

Chapter 7. Discussion

7.1 Introduction

This study explored the relationship between loneliness and health among a cohort of retired older adults. A survey which included measures of health, wellbeing and loneliness found a statistically significant inverse correlation between loneliness and all measures of health and wellbeing demonstrating that scores of loneliness may be used to predict individual health scores. Narrative interviews with a subsample of participants highlighted a pattern of well-developed personally acquired potentials, and a strong and enduring reciprocal social network among healthy participants. In contrast, lonely participants exhibited less personally acquired potential, instead displaying signs of learned helplessness, victim mentality and social breakdown syndrome. The interviews also highlighted, through the interpretation of outlier participants' data, the importance and relevance of individual perception to the relationship between loneliness and health.

A comprehensive review of the academic literature identified the Meikirch model of health, which underpins this study, as well as several models and theories pertaining to the long-established association between detrimental loneliness and poor health outcomes. These models and theories have been drawn together,

within the context of the life course approach, to produce a novel theoretical framework. In addition to informing the aims, outcomes, and methods used in this research, the proposed theoretical framework provides an overview of the changing nature, both of loneliness and its relationship with health, over the life course.

This chapter will explore both the quantitative and qualitative findings through the context of the Meikirch model, the proposed theoretical framework, and the academic literature. Unexpected findings will also be considered. This is followed by a discussion of the original contributions this study makes to knowledge and theory, including the critique of the Meikirch model and the unique theoretical framework proposed in chapter 3. Consideration is then given to the limitations of the study, and how they may be overcome in future work. The chapter concludes with an examination of the implications and recommendations arising from this work.

7.2 Consideration of quantitative findings

A key finding from the quantitative analyses was the statistically significant inverse correlations between loneliness and the three measures of health and wellbeing. This inverse correlation was particularly strong between scores of loneliness and the personal wellbeing scale. Consequently, this correlation was successfully employed to separate the participants into three distinct groups: healthy (and not lonely), lonely (and not healthy), and outliers. This would suggest that the De Jong Gierveld 6-item loneliness scale, when used in combination with the R-Outcomes Personal Wellbeing Scale, may be reliably employed to identify individuals who are most at risk from the effects of detrimental loneliness on their health outcomes. The existence of outliers may also be useful, as later analyses highlighted the greater reliance of these individuals on their own perceptions of loneliness to determine its effect on their health.

In addition to the statistically significant inverse correlations reported between loneliness and all measures of health and wellbeing, the quantitative analyses highlighted a greater prevalence of loneliness among the male, rather than female participants. This is consistent with the work of Kim & Lee (2022), who found loneliness to be more prevalent among Korean men than women. The BBC Loneliness Experiment also reported similar results among a UK-based study (Barreto et al., 2021). However, studies among older adults in Norway (Nicolaisen et al., 2023) and Germany (Pagan, 2020) found the reverse; that loneliness was more prevalent among older women than men. These differences may be a product of cultural differences; however, previous research has noted the relationship between gender and loneliness to be inconsistent (Victor et al., 2006).

7.3 Consideration of themes

7.3.1 Individual perceptions of loneliness and old age

As noted above, qualitative data were used to classify participants as healthy, lonely, or outlier, prior to recruitment to the qualitative stage of this research. Overall, the healthy participants described themselves as never lonely and held positive perceptions of old age, and specifically retirement. Conversely, the lonely participants believed themselves to be always lonely and considered ageing and retirement to represent negative processes. Representing around ten percent of the full sample population were the outlier participants. In contrast to both the healthy and the lonely participant subgroups, the outliers' health and loneliness scores did not fit in with the observed pattern of correlation. However, as noted in section 6.2, when these individuals' perceptions of loneliness and health were considered, two patterns of behaviours were observed, leading the outlier participants to conform more closely to their healthy or lonely counterparts, despite their survey scores. As already reported (§ 6.2), all 41 individuals participating in the qualitative phase of this study were asked if loneliness was an

issue for them, with responses including always, never, and some of the time. However, owing to the nature of the interview technique employed, this information was missing from four participants, two of whom were classified as outliers. Qualitative analyses highlighted that, rather than being shaped by their individual life experiences, the outlier participants displayed much greater reliance on, or susceptibility to, their own personal perceptions and conceptualisations of loneliness. Assuming that participants completed their surveys honestly, these findings may suggest that, in some individuals, perception of their own loneliness may represent a significant confounding factor in the association between loneliness and health within the study cohort. It is not clear what it is about these individuals that renders them more susceptible to the influence of their beliefs and perceptions than those classified as healthy or lonely, however, these findings certainly lend weight to the assertion that there is greater complexity within the loneliness-health relationship than previously anticipated within this study. Alternatively, the presence of outliers within this study may highlight a flaw within the tool used to classify participants, and further testing of this classification approach is certainly recommended. However, owing to the subjective nature of both loneliness and health, it was decided that the outliers represented a distinct group, and it is these very individuals who allowed for the investigation of why the influence of detrimental loneliness may show so much variation throughout the study population.

Beyond these findings among the outlier participants, individual perceptions of old age and loneliness may have influenced individual narratives through the manner in which events and circumstances have been interpreted and reported by the participants themselves. A significant review of the academic literature was undertaken to establish the choice of definition of loneliness employed within this present research project (*the perceived discrepancy between desired and realised social interactions* (Peplau & Perlman, 1982)), several conceptualisations of

loneliness were perceived among the participant cohort. These included the feeling of rejection, depression, and bereavement. Furthermore, despite the assertion that, while being alone represents a significant risk factor for loneliness (Grenade & Boldy, 2008; Holt-Lunstad, 2017; Routasalo, Savikko, Tilvis, Strandberg, & Pitkälä, 2006), the two are not the same, several participants perceived loneliness to be the same as being alone. It could therefore be argued that the perception of both loneliness and being alone as the same thing may impede the ability of the individual to truly experience loneliness. It could be that this is due to their misattributing their aloneness to feelings of loneliness, and vice versa. Alternatively, it could be argued that the participants were unclear regarding what they were being asked, resulting in them speaking at crossed purposes with the researcher. Accepting the assertion that loneliness lies at the heart of any life experience (§ 1.2; De Jong Gierveld, Van Tilburg, & Dykstra, 2006; Ozawa-de Silva & Parsons, 2020; Rokach, 1988), the inability to truly experience loneliness may be viewed as a deficiency in some form of personally acquired potential.

This line of argument may be considered to garner support from the finding that the majority of participants who conceptualised loneliness as being alone were classified as lonely. While the inability to fully experience loneliness may, superficially, appear to be a good thing, one could argue that it may complicate the relationship between loneliness and health. As such, because of the inability to experience loneliness, an individual may struggle to recognise, and address such loneliness. This may well leave them more vulnerable to the impact of loneliness on their health and, consequently, make good health harder to maintain within the context of ill-defined loneliness.

The conflicting views on the definition of loneliness are important to consider, and this is not a novel conundrum to debate, indeed, during their work on the ageing process, Jeste, Depp, and Vahia (2010) noted that:

There is a great gulf between researcher and lay definition (p82)

On this basis, it could be argued that, without the presence of an explicit and universal understanding of the key concepts under investigation, by both the researcher, and the study participants, when discussing the nature of, and relationship between loneliness and health, there is no guarantee that both parties are discussing the same concepts. Furthermore, it is possible that is it the differing views of loneliness, rather than perceptions and experiences which are responsible for the patterns of traits and behaviours perceived among the outlier participants. This issue could be rectified by issuing a universal definition of loneliness to all the participants. However, it was felt that, defining loneliness for the participants, would limit the potential to explore individual conceptualisations and perceptions of it.

7.3.2 Factors which may mitigate the loneliness-health relationship

Over the course of the 14 interviews with healthy participants, a clear pattern was observed, which has here been interpreted as evidence of well-developed personally acquired potential, more specifically potential, or factors which may be considered to mitigate the negative effects of loneliness on individual health and wellbeing. These factors, and potentials, included a happy childhood, a proactive or preventive personality, and a positive outlook, or perception, of life and the ageing process. Taken together, it is argued that these factors provide a lived experience through which personally acquired potentials may successfully develop and be nurtured, through the co-development of human and social capitals via close parental involvement. In the face of declining biologically given potential (§ 2.2.2), these personally acquired potentials, including social capital (§ 2.2.2.2), socioemotional selectivity (§ 3.5.5), and coping mechanisms, are believed to allow for an individual to maintain good levels of health throughout their life course, and also serve to protect them from adverse events, including detrimental loneliness in later life (Bircher, 2005, 2020; Card, 2017; Meier-Abt, 2014).

As discussed in chapter two (§ 2.2), all individuals are born with biologically given potential, which gradually declines over the life course. The speed of this decline may be influenced by inherited conditions and adverse life events and circumstances. Under ideal circumstances, which may include a happy childhood and the possession of a proactive and preventive personality, personally acquired potentials develop to compensate for the lost biologically given potential. Consequently, over the course of an individual's life, the combined value of their biologically and personally acquired potential will be sufficient to meet the demands of life. This pattern of fluctuating potentials is illustrated in Figure 7-1.

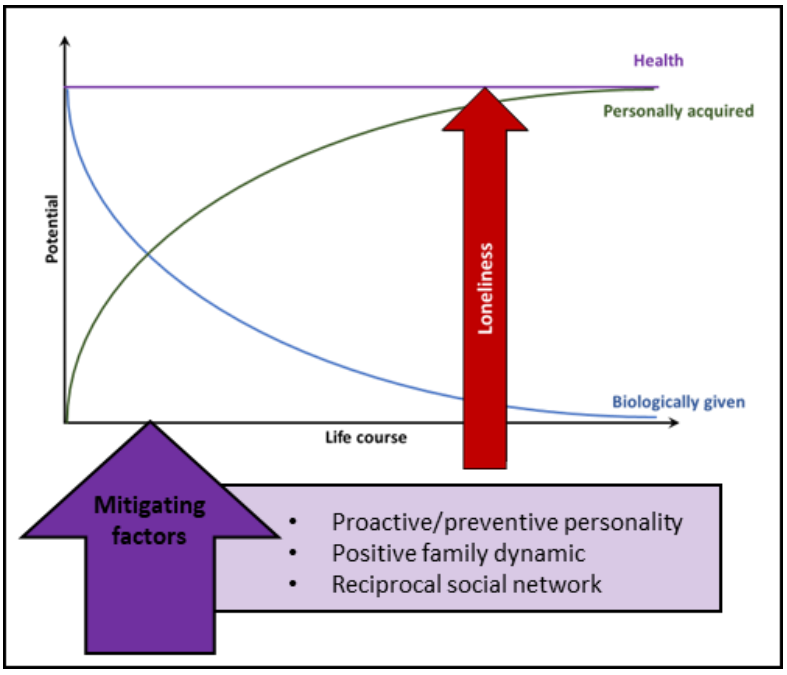


Figure 7-1: Mitigating factors and personally acquired potential

The impacts of a significant negative life event, or adverse conditions, appear to be mitigated by the possession of sufficient personally acquired potentials (Bircher & Kuruvilla, 2014; Frenk & Gomez-Dantes, 2014; Meier-Abt, 2014), thus reinforcing the relevance of this potential to the life course and, more specifically, the ability

conferred upon the individual to withstand the impact of detrimental loneliness on their health. Figure 7-1 further illustrates that, through the context of mitigating factors, such as a positive family dynamic, reciprocal social network, and a proactive personality, an individual may cultivate sufficient personally acquired potential, over the course of their life, to overcome the detrimental impact of loneliness on their health. It is worth noting at this point that, although the development of personally acquired potential may be tied to critical periods during an individual's lifetime, their significance remains throughout the life course.

The relevance and importance of a positive family dynamic in childhood to the successful development of personally acquired potential conceivably finds support from the literature surrounding both human and social capitals. As previously noted, the discourse pertaining to social capital places it within the bounds of human capital (§ 2.2.2.2; Becker, 1993; Coleman, 1988; Goldin, 2016). According to Coleman (1988), if an individual does not experience a close relationship with their parents, their acquisition of both human and social capitals may have been hindered. Having established the importance of social capital as a personally acquired potential and mitigating factor within both the Meikirch model and the proposed theoretical framework, it is argued that any hindrance to its successful acquisition will impact negatively on overall health and wellbeing, particularly where loneliness is an issue. Although a subjective matter, varying from one individual to the next, the negative impact of insufficient personally acquired potential was notable among the narratives of the lonely participants through their lower scores on the quantitative measures of health and wellbeing, which suggested that the greater the degree of loneliness score, the poorer the individual health outcomes. As a consequence of unsettled circumstances, or adverse events, during childhood, these lonely participants seem to have failed to acquire sufficient capital. In addition to hindering the acquisition of further personally acquired potential, this apparent deficit appears to impact their ability to develop a strong or

stable social network in their later years. Furthermore, the failure to adequately develop both human and social capital, may also adversely impact the acquisition of other personally acquired potentials, including socioemotional selectivity (Coleman, 1988; Goldin, 2016; Hauberer, 2010). Such an example of this was reported by many of the lonely participants through their lack of any long-term friendships. This argument serves to reinforce the importance of social capital and, indirectly, the continued relevance of developing and maintaining the social network throughout the life course in order to cope with the demands of life (Bircher, 2005, 2020). Moreover, the presence of personally acquired potentials, such as socioemotional selectivity, and a proactive personality, were predominantly perceived among the narratives of the healthy participants. A proactive personality was considered evident here through the development and maintenance of individual interests and hobbies (§ 6.3.1), and the presence of a small, yet close-knit family and social network (§ 6.3.2).

It has already been noted that social capital is a resource (Bourdieu, 1986; Chappell & Funk, 2010), which may be generated through social relations and the presence of a close social network (Coleman, 1988; Goldin, 2016; Lavalle et al., 2015; O'Rand, 2006), and, as such, was perceived in the narratives of the healthy participants. Two concepts linked to and discussed within the context of social networks and capital are social breakdown syndrome (§ 3.5.3) and socioemotional selectivity theory (§ 3.5.5). So far, in light of the findings of this study, these two concepts have been considered with regards to the theoretical framework (Figure 3-2) as opposing forces, predominantly due to the finding that only the lonely participants displayed signs of social breakdown syndrome (§ 6.4). Conversely, socioemotional selectivity was predominantly perceived among the healthy participant group (§ 6.2). It is proposed that socioemotional selectivity operates as a mediating, or preventive, factor in the development of social breakdown syndrome. This seems to occur through the individual choosing to surround themselves, and engage with,

the friends, family, and other social contacts who are most likely to offer them support when they find themselves experiencing negative circumstances (Carstensen, 1992; Heylen, 2010; Lang et al., 1998; Rico-Uribe et al., 2016). Consequently, it would be perceived that they possess greater potential to cope with adversity (Bircher, 2020; Card, 2017; Frenk & Gomez-Dantes, 2014). With this in mind, it could be argued that, in the case of healthy participants, as the social network shrinks, the emergence of socioemotional selectivity enables the individual to make more effective use of their remaining network members. This argument garners support from a significant proportion of the healthy participants, who reported that they are happy in their own company; while also reporting low scores on the loneliness scale (§ 6.3). Moreover, it is argued that, the capital acquired from the smaller network, may be of greater value than that obtained at a younger age, from a larger social group, due to increased levels of personal engagement with fellow network members. This suggestion is reinforced by the notion that social capital develops through the presence of a closer social network, rather than simple social contact (Coleman, 1988; Goldin, 2016; Hauberer, 2010).

7.3.3 Factors which may aggravate the loneliness-health relationship

The 14 lonely participants also discussed the events of the life course. These were interpreted and perceived to demonstrate a clear pattern of traits and behaviours. However, in contrast to their healthy counterparts, the traits and behaviours exhibited by the lonely participants were perceived to be those which may aggravate, or exacerbate, the effects of detrimental loneliness on individual health and wellbeing. These included significant adverse childhood events, a negative family dynamic, and negative perceptions of life and the processes commonly associated with ageing. Illustrated in Figure 7-2, the impact of an adverse childhood event is perceived to have the ability to inhibit the adequate development of personally acquired potential over subsequent years. Consequently, over the course of this individual's life, the sum of their combined biologically given, and

personally acquired, potential, may never be as great as that of someone who has not experienced an adverse event during their childhood. It is also worth considering the potential cumulative nature of multiple experiences of adversity on individual vulnerability to further adversity, including loneliness. As noted previously (§ 2.2), the maintenance of health and wellbeing is reportedly reliant upon the sum of an individual's biologically given, and personally acquired, potentials being equal to, or greater than the demands of life (Bircher & Kuruvilla, 2014). This means that those with less personally acquired potential, such as those who have sufficient negative experience of adversity in their childhood, may be less able to cope with the demands of life. If an individual's ability to cope declines to such an extent that the demands of life overcome the combined total value of their biologically given and personally acquired potentials, this may result in a decline in overall health and wellbeing, leaving the individual increasingly susceptible to the negative consequences of detrimental loneliness on their health and wellbeing in subsequent years (Bircher & Wehkamp, 2011; Huber et al., 2011; Meier-Abt, 2014).

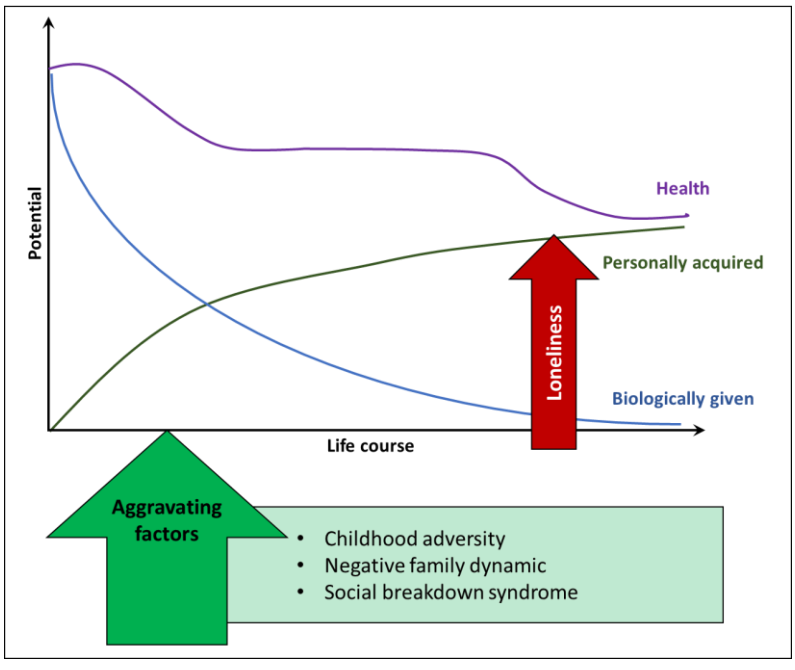


Figure 7-2: Aggravating factors and personally acquired potential

In line with the life course approach employed by the researcher within this study, the decision to focus on the influence of adverse childhood events is based on the discourse which states that an individual's life course is both shaped, and defined, by the sequence, timing, and duration of early life experiences, and the accumulation of the negative impact of such individual events and choices (Elder & Shanahan, 2006; Jacob, 2017; Nurius, Green, Logan-Greene, & Borja, 2015). These adverse childhood events may involve, neglect, maltreatment, abuse, violence, and/or general dysfunction (Kirkpatrick & Hazan, 1994; P. S. Nurius et al., 2015; Widom, 1998). The lack of close parental involvement and the associated human and social capital may impact negatively on the individual's ability to successfully develop personally acquired potentials, such as coping mechanisms. In turn, these adverse events may impact negatively on early childhood attachment, and subsequent ability to adapt to changes in their physical and social environment. Although critical developmental periods have been identified throughout childhood, qualitative findings within this study (§ 6.4) indicated that those experiencing adversity during adolescence were far less negatively affected by it in the longer term. This was interpreted as an indication that many of the key personally acquired potentials developed earlier in childhood. Within the context of the proposed theoretical framework, and accompanying thesis, where adjustment has been impacted, it is proffered that the development of skills such as socioemotional selectivity, along with the development of both human and social capitals, will also be adversely affected. Based on the data gathered within this study, it is argued that, among the lonely participant cohort, early childhood experiences of adverse events and circumstances have inhibited each individual's ability to develop adequate personally acquired potential. Consequently, factors such as stress buffering, and socioemotional selectivity, are likely to be less well developed, or accessible, for these individuals and, therefore, cease to provide suitable mitigation for the lonely participants, to the detrimental effects of loneliness on their health and wellbeing.

However, not all participants seemed to experience long-term detriment following their negative experiences during childhood. This may reflect both the nature, and individual perception of these experiences. It may also be indicative of a required severity threshold of adversity, or the cumulative nature of adversity which was discussed above. Those who continued to thrive, despite adversity, were reported to experience these negative events later in their childhood than those who did not thrive. For example, Jessie experienced separation from her mother during her teenage years, however, she felt her schooling offered her the "anchor" she required. While this represents an interesting, and potentially important finding, the lack of a consideration of the literature pertaining to childhood psychology places it beyond the bounds of this particular study, though it may be something to consider in future research.

The differences in long-term response to childhood adversity may be reflective, and supportive of the assertion that ageing is typically an agentic process in that, in some ways, individuals possess the ability to alter the trajectory of their life course (Baltes et at., 2006). This may be evidenced through the differing responses to loneliness observed between the healthy and lonely participant subgroups. For example, while the healthy participants were likely to act proactively, through engagement in healthy and social activities, the lonely participants were, more often than not, found to succumb to the detrimental spirals of both loneliness and social breakdown syndrome. Furthermore, taken within the context of the theoretical framework (§ 3.7), which demonstrates the influence of mitigating factors on the potential development of detrimental loneliness, it may be argued that the healthy participants, who have successfully developed the required personally acquired potential have, as a consequence, entered into a typically agentic, or what might be perceived as a successful and healthy ageing process, with the ability to change their circumstances in response to loneliness. Conversely, in the same vein, it would be proffered that the participants who have failed to

develop adequate personally acquired potential may also, as a result, lack the ability to alter the trajectory of their life course in response to loneliness.

Another factor perceived most commonly among the lonely participant subgroup, and considered throughout the academic literature to lie at the heart of many of the declining and detrimental health issues associated with advancing age is social breakdown syndrome (Brown & Moschis, 2006; Gruenberg & Zusman, 1964; Kuypers & Bengtson, 1973). Social breakdown syndrome refers to the dependence of some individuals on the kinds of social labelling they experience and subscribe to. This was noted among several of the lonely participants' narratives. Although initially developed within the context of mental health issues and institutionalisation (Gruenberg & Zusman, 1964; Zusman, 1966), social breakdown syndrome (§ 3.5.3) has since been associated with other concepts and experiences observed throughout the interviews, including ageism and victim mentality (Gruenberg & Zusman, 1964; Myers, 1993; Zusman, 1966). Perceived evidence of social breakdown syndrome was predominantly noted among the lonely participants, through the guises of both learned helplessness, and victim mentality. Together, these behaviours associated with social breakdown syndrome appeared to represent a form of community-based institutionalisation, whereby the individuals lacked the confidence, initiative, or motivation to make changes to their circumstances, instead relying on others to tell them what to do. This was notable among several of the lonely participants who were simply waiting for friends to call on them, rather than making contact themselves. Moreover, these participants were perceived to have chosen to adopt a pattern of behaviours and lifestyles, which were in keeping with their negative stereotype and expectations of the ageing process. These patterns of traits and behaviours were perceived to be evident through the narratives of lonely participants who either considered loneliness to represent a normal aspect of the ageing process or expected to encounter it through the passage of time. This is a finding typically associated with

cases of social breakdown syndrome (Brown & Moschis, 2006; Gruenberg, 1967; Kuypers & Bengtson, 1973; Radebaugh et al., 1987; Segel-Karpas & Ayalon, 2020). It is here argued that this individual 'choice' to conform to the negative stereotypes associated with ageing, embodies the stage in the cycle of social breakdown, whereby the individual becomes reliant on the negative beliefs, and expectations of others regarding their capabilities and competence. Considering this line of reasoning through the lens of the proposed theoretical framework, it is asserted that, in addition to lacking sufficient personally acquired potential due to childhood adversity, these lonely participants have also been robbed of the agency to effectively respond to negative situations, including loneliness, in later life.

7.4 Integrating the findings with the theoretical framework

The key question arising at this point pertains to the fit with the gathered data and the relevance of the theoretical framework as a tool to aid in understanding and addressing the association between loneliness and health. Figure 7-3 demonstrates how the three overarching themes identified through this research – mitigating factors, aggravating factors, and individual perceptions and conceptualisations – interact, not only with the component parts of the framework, but also with each other, to impede, or hasten the path from detrimental loneliness to ill health throughout the life course.

The key focal point of this study is the association between detrimental loneliness and health, and this lies at the heart of the theoretical framework. Driven primarily by the loneliness model (§ 3.5.2), which demonstrates the perpetual cycle from loneliness to negative cognitive biases (Christiansen et al., 2016; Segel-Karpas & Ayalon, 2020; Zeytinoglu et al., 2021), this association illustrates the interaction of health behaviours, stress, and various physiological wear and tear processes (§ 3.5.1), with loneliness, to cause detriment to health ((Berkman et al., 2000; Litalien et al., 2021; Shankar et al., 2011; Umberson & Montez, 2010). The framework

demonstrates how the pathway from loneliness to detrimental health may be alleviated by the acquisition of personally acquired potentials over the life course (§ 2.2.2.2). In addition, the framework illustrates the influence of aggravating factors, which may initiate, or hasten, the negative association between loneliness and health (§ 2.3.1 & 3.5.3). Also notable within the framework is the acknowledgement that individual perception has a role to play in both exacerbating or mitigating the pernicious effects of loneliness on individual health and wellbeing.

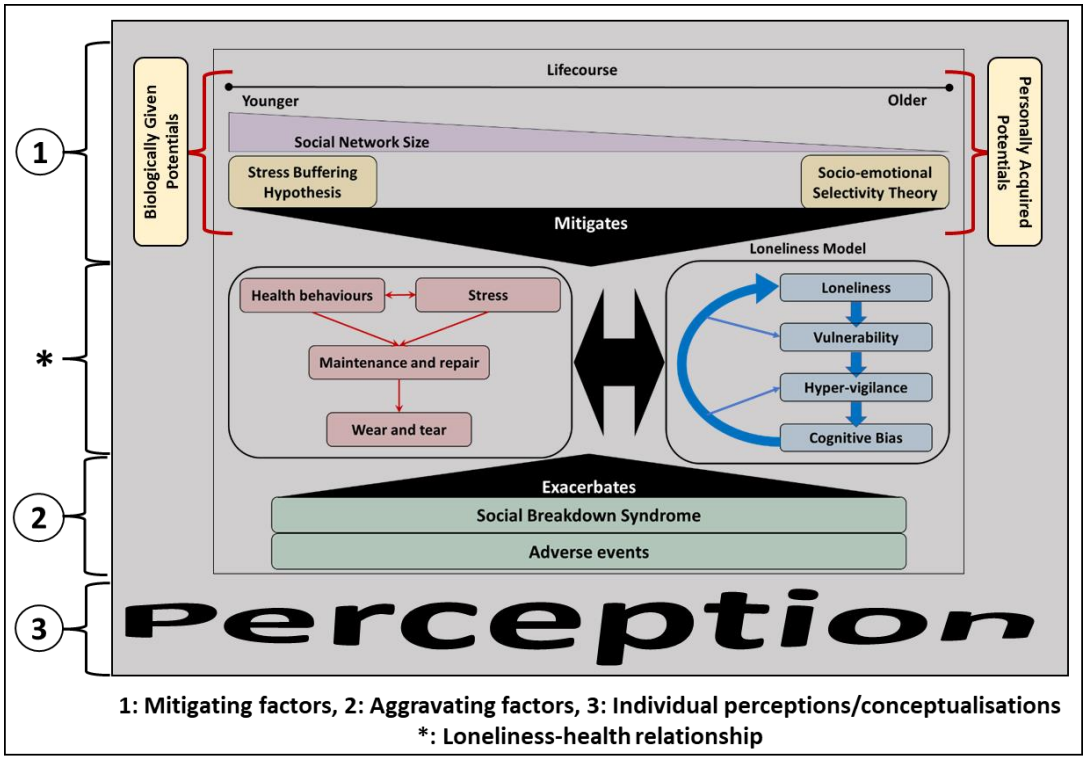


Figure 7-3: Integrating the findings with the framework

7.4.1 Mitigating factors

Beginning with the mitigating factors, identified throughout both the academic literature, and the data gathered from this study (§ 7.3.2), these correspond to section one of the theoretical framework (Figure 7-3). This section of the

framework represents the differing factors which mitigate the negative influence of loneliness on health, and reflects the shifting predominance from biologically given (§ 2.2.2.1), to personally acquired potential (§ 2.2.2.2) over the life course. Concerning the social network, the framework suggests that, with advancing age, the social network shrinks and becomes less relevant as a tool to alleviate the potentially negative repercussions of loneliness on health and wellbeing. While evidence of social network shrinkage was certainly considered apparent among the participant narratives, the importance of the social network does not appear to wane as predicted. While the shrinking nature of the network (Carstensen, 1992) remains undisputed by this study, its significance as a key mitigating factor in the relationship between detrimental health and loneliness, particularly among the healthy participants, remains unchanged. It is argued that, rather than directly contradicting the framework, this finding may be evidential of the significance of socioemotional selectivity as a mitigating factor against loneliness in later life. Here this would be because, while the network may dwindle, the remaining members of the network represent the more valuable and supportive relationships to the individual. This certainly appears to be the case among the healthy participants (§ 6.3). Conversely, participants who had been classified as lonely were found to rely less on, and garner less support from, their network. It is argued that this is a consequence of their failure to have developed the skill of socioemotional selectivity over their lives.

Using the proposed framework in conjunction with the participant classification approach used within this study may prove a valuable tool in considering approaches to mitigating the effects of detrimental loneliness. To recap, individual scores from the De Jong Gierveld 6-item Loneliness Scale were correlated with their R-Outcomes Personal Wellbeing Scale score. Except for outliers, this allowed for the identification of participants as healthy or lonely and could be employed as a quick and simple screening tool. The proposed theoretical framework adds to the

academic research field through raised awareness that healthy people are likely to rely more on, and garner greater support from, their social networks when they are lonely. It also highlights the importance of the need to further study the nature of social networks to identify the characteristics of those which are most beneficial in later life, despite their dwindling size.

7.4.2 Aggravating factors

Section two of the theoretical framework corresponds with the factors which are believed to aggravate, or exacerbate, the negative influence of loneliness over individual health and wellbeing (§ 7.3.3). These aggravating factors predominantly include social breakdown syndrome (§ 3.5.3), and the experience of adverse events, or circumstances, during childhood (§ 2.3.1). Within the theoretical framework, individual belief in negative stereotypical views of ageing, including the expectation of loneliness, as well as declining competence and capability, drives the development of social breakdown syndrome, resulting in negative self-belief and learned helplessness. This was certainly apparent among the narratives of many of the lonely participants (§ 6.4), and was often verbalised as feelings of incompetence, that nobody cared, and no one ever bothered to visit them.

Together, the experience of adverse childhood events, and consequent symptoms of social breakdown syndrome, such as negative views of ageing and retirement, may serve to perpetuate the downward spiral of detrimental loneliness. As the symptoms of social breakdown syndrome progress and self-perpetuate, they may be seen to drive the loneliness model. This occurs first through the development of hypervigilance and the associated belief that the people and circumstances surrounding them may represent a threat to them. Subsequently, the beliefs held by the participants with regard to their circumstances become negatively biased and may be expressed through a belief in the negative stereotypes of ageing and older people. As the individuals become increasingly hypervigilant, they become

more dependent on the negative views of others, which may result in them no longer wanting to go out or interact with others. The reduction in social interactions perpetuated by the loneliness model may well limit the individual's access to information regarding healthy norms and behaviours. Consequently, a reduction in engagement with healthy behaviours could be observed, causing stress, and natural physiological wear and tear (§ 3.5.1). This results in increasing detriment to health and wellbeing.

It is further proposed that, this negative cycle may be self-perpetuating and could result in increasing detriment to individual health and, therefore, serves as a causal factor in the negative association between loneliness and health among lonely participants. This notion is very much supported by the assertion that negative age-related stereotypes are universally internalised throughout the life course (Boyd & Dowd, 1988; Meisner & Levy, 2016; Settersten & Godlewski, 2016), as it is these negative stereotypes that may cause an individual to begin to doubt their competence as they age. The internalisation of these negative stereotypes may be embodied by the cycle of social breakdown (§ 3.5.3), whereby the individual becomes susceptible to, and latterly dependent and reliant on the negative stereotypes and beliefs of others, regarding their capabilities and usefulness in later life.

Using the framework in conjunction with the screening tools outlined above (§ 7.3.2) would suggest the need for greater and easier access to information regarding social norms and healthy behaviours for people identified as lonely. Also of note is the increased likelihood of lived experience of childhood adversity, and greater susceptibility to negative age-based stereotypes among those identified as lonely. It could be that this susceptibility may indicate that interventions aimed at challenging these perceptions may be effective in challenging these perceptions and, consequently, slow the progression of detrimental loneliness. Also indicative through the presence of childhood adversity may be the requirement for greater

support in developing and maintaining personally acquired potential. Possible tools for this support may include support in developing interpersonal skills, or greater preparation for retirement, through signposting to social networks and healthy behaviours.

7.4.3 Perceptions of loneliness and old age

The final theme reflected in the theoretical framework at section three concerns the importance of individual perceptions of old age and loneliness, and the influence these may hold over the association between detrimental loneliness and health outcomes. Individual perceptions of life circumstances and events are important to consider within the context of health management. They are believed to influence the development and expression of both depression and psychoses (Burholt & Scharf, 2014; Losada et al., 2012; Stessman et al., 2014). Individual perceptions of life circumstances have also been found to influence both emotional, mental, and physical wellbeing (Holt-Lunstad, 2017; Holt-Lunstad et al., 2015; Lauder et al., 2006). This point was illustrated by the differing views of loneliness discussed by the participants (§ 6.2). For example, it could be theorised that, in the case of participants who believed loneliness to be most problematic for younger generations, loneliness may prove less detrimental to their health in later life, because it is perceived and internalised to be not problematic to older people. Or this may be due to the individual believing that they are better equipped to deal with loneliness than the younger generations, simply because they perceive loneliness to epitomize the natural ageing process (Ayalon & Shiovitz-Ezea, 2011; Yu et al., 2020), and this would certainly seem to be the case in those aged over 80 years (Brandts et al., 2021; Dykstra et al., 2005; Pinquart & Sorensen, 2001). By the same token, those who believe loneliness to be more challenging for older adults to cope with, may, ipso facto given the discourse proffered by this study, be more vulnerable to declines in their mental, emotional, and physical health as a consequence of the influence of detrimental loneliness. It is worth noting that the

expectation of detrimental loneliness in old age likely represents one of the negative stereotypes which are internalised over the life course (Pikhartova et al., 2016), and serves to sustain the development of social breakdown syndrome (§ 3.5.3).

The influence of individual perceptions of loneliness and old age were most notable among the interpreted narratives of the 12 outlier participants. As noted above (§ 6.5), these were the participants who did not conform to the inverse correlation found between scores of loneliness and personal wellbeing. Overall, the outliers represented around 10% of the entire study population. In this small subgroup of participants, the quantitative tools may not be used to identify those most vulnerable to detrimental loneliness. Instead, the behaviours and traits of these participants were more likely to reflect whether or not they perceived themselves to be lonely. Those who perceived themselves to be lonely behaved similarly to those who were classified as lonely, and vice-versa with those who perceived themselves to not be lonely. This reinforces the assertion that perception plays a key role in individual health and wellbeing. Moreover, this being the case, this lends further support to the adoption of approaches targeting individual perceptions to address detrimental loneliness.

7.4.4 Section summary

Overall, the results from this study, as laid out to this point, are perceived to lend support to the validity of the proposed theoretical framework, which was used to underpin and guide the exploration of the aims of this study. Support for this framework was perceived through the predominance of aggravating factors, such as childhood adversity, and social breakdown, among the narratives of the lonely participants (§ 6.4). Further support is gathered from the discussion of presented mitigating factors, such as personally acquired potential, and a positive family dynamic primarily among the narratives of the healthy participants (§ 6.3). The

importance of perception as a key element in the framework was demonstrated by the outlier participants (§ 6.5). Although their loneliness and health scores did not fit in with the pattern of correlation observed among the healthy and lonely participants, their individual embodiment of the mitigating or aggravating factors was believed to be closely linked to whether they perceived themselves to be lonely or not.

The integration of the findings within the context of both the Meikirch model and the proposed theoretical framework has served to highlight the validity of the framework as a tool to drive both future research and the development of interventions to address the influence of detrimental loneliness on health outcomes. The framework lends support to the need to ensure the healthy development of personally acquired potentials over the life course, and their maintenance as individuals prepare for the loss of the social network associated with retirement. Also, the relevance of the social network, and its continued importance throughout the life course, indicates the potential for further investigation into the characteristics of an effective social network. Implications and recommendations for policy, practice, and future research are further considered below in section 7.8.

7.5 Unexpected findings

Throughout the initial phase of this research, quantitative data were gathered, including measures of health, wellbeing, and loneliness, as well as age, gender, and postcode. Postcode data were employed, using the index of multiple deprivation to identify the quintile of deprivation in which each participant lived. There was one important question arising from the initial quantitative analyses. Based on much of the academic literature, it was anticipated that individual quintile of deprivation would display a significant association with all measures of loneliness, and health and wellbeing (Marmot, 2010; World Health Organisation, 2016). However,

correlational analyses of the full data set (n = 266), data from the 187 participants who volunteered to be interviewed, as well as analyses of data from the 41 interviewees, indicated no statistically significant correlation between deprivation and any of the other variables, even though there was a good spread of deprivation scores among each of these three data sets. Consequently, the decision was made to discount deprivation as a criterion for participant classification and sampling, despite its relevance as a risk factor for loneliness and poor health throughout the academic literature.

The cause of this unexpected finding is not clear; perhaps the study cohort, or even West Sussex represents a population with particular characteristics which are distinct from the remainder of the population of the United Kingdom. However, exploration of the data gathered as part of the Office for National Statistics Health Index for England[28] may provide an explanation. Developed in response to the 2018 Chief Medical Officers report (Davies, 2018), the Health Index provides a single measure for health, and allows for the observation of changes over time. The index considers all factors relevant to health, on both an individual, and societal level. Of particular interest within the context of this study is the personal wellbeing subdomain, which is comprised of measures of life satisfaction, life worthwhileness, happiness, and anxiety. Within West Sussex, the overall subdomain score, as well as the four constituent indicators, are well above the England average. It is proposed that these above average scores on the indicators of personal wellbeing may have ameliorated the link between deprivation and both health and loneliness as measured by and noted within this study.

7.6 Contributions to knowledge and theory

The doctoral research presented adds to the existing knowledge base surrounding loneliness and health in retired older adults through the adoption of the Meikirch

[28] https://healthindex.lcp.uk.com/map

model of health and the introduction of a novel theoretical framework representing the underlying mechanisms involved in the relationship between detrimental loneliness and health outcomes. This research also offers novel methodological and theoretical contributions, through the application of a mixed methods approach, and the identification of a simple screening tool to identify lonely people.

7.6.1 Life course approach

Research into loneliness and health has been widespread since Julianne Holt-Lunstad and her team highlighted the detrimental influence of loneliness over individual health outcomes (Holt-Lunstad, 2017; Holt-Lunstad et al., 2010; Holt-Lunstad et al., 2015), and many theories and models have been advanced, both prior to and since, to explain this association. These have included the loneliness model (Cacioppo & Cacioppo, 2014; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006; Quadt et al., 2020), socioemotional selectivity theory (Carstensen, 1992; Heylen, 2010; Lang et al., 1998; Rico-Uribe et al., 2016), and social breakdown syndrome (Gruenberg, 1967; Kuypers & Bengtson, 1973; Zusman, 1966). However, there has been a paucity of research associated with the changing nature of the mechanisms underlying the relationship between loneliness and health over the life course. In addition to offering a snapshot of the influence of loneliness on health within a cohort of retired older adults, this study employed a life course approach through the discussion of narrative events from the whole of each participant's life up to the point their surveys were administered. The adoption of a life course approach within the present study has presented an invaluable opportunity to consider a longer-term historical narrative view of the association between loneliness and health. At the time this research was conducted, this was perceived as a unique approach. However, the value of this type of approach can now be seen over time with other research implementing the same type of design (Ayalon & Segel-Karpas, 2024; DeDonder, Dierckx, Dury, Heylen, Stegen & Switsers, 2023; Victor et al., 2022).

7.6.2 Use of mixed methods in loneliness research

Historically, quantitative methods have been employed to gauge both the size of the loneliness problem, and to establish its prevalence among different sub-populations and age cohorts (Holt-Lunstad, 2017; Holt-Lunstad et al., 2010; Holt-Lunstad et al., 2015). In parallel, qualitative methods have been utilised to understand the different types and characteristics of loneliness (Weiss, 1973, 1974). In contrast to prior, single-method approaches, this study has offered insight into the application of a more holistic approach through the consideration of the changing nature of both health and loneliness throughout the life course. The inclusion of both quantitative and qualitative methods has allowed for a greater depth and breadth of understanding than may otherwise have been possible. For example, while the quantitative data have allowed for the identification and quantification of a significant relationship between loneliness and health, the qualitative stage has facilitated a more in-depth investigation of the factors underlying this association. Moreover, the mixed method approach significantly enhanced the ability of this study to begin the process of addressing some of the gaps in the existing research in relation to loneliness, and its association with poor health outcomes in retired older adults.

7.6.3 Quantitative screening tools

As reported in chapter four, the quantitative survey comprised four well-validated measures which, combined, provided a snapshot of individual loneliness (De Jong Gieveld 6-item Loneliness Scale), quality of life (R-Outcomes HowRU), wellbeing (R-Outcomes Personal Wellbeing Scale), and health confidence (R-Outcomes Health Confidence Scale). Quantitative analyses highlighted statistically significant inverse correlations between loneliness and all three measures of health, such that scores of loneliness may be used to predict individual health outcomes. This inverse correlation was particularly strong between scores of loneliness and wellbeing. This

would suggest that, taken together, the quantitative measures employed here may represent a useful and accurate screening tool to identify individuals who are most at risk from the effects of detrimental loneliness on their health outcomes. This approach was perceived to successfully classify almost 90% of the participants as either healthy or lonely. Together with the proposed theoretical framework, these classifications may indicate common traits among healthy and lonely people.

7.6.4 Meikirch Model of Health

In addition to considering the mechanisms underlying the relationship between loneliness and health, this study has adopted a relatively new approach to the definition of health – the Meikirch model. This study is the first to offer a thorough consideration and critique of the Meikirch model within the context of other models of health, including the biomedical model, the biopsychosocial model, and the wider determinants (§ 2.2). Furthermore, this study has introduced the Meikirch model to the academic study of loneliness and has been employed to critique various hypotheses and models of loneliness (§ 3.6). This approach to health has proven to be the driving force in the creation of the novel theoretical framework (§ 3.7) which has underpinned the design and conduct of this research.

7.6.5 Unique theoretical framework

Although several models have been forwarded to address the loneliness-health relationship (§ 3.5), this study adds to existing work on health and loneliness by drawing prior models and themes together in a coherent framework (§3.7) which, in partnership with the Meikirch model of health and wellbeing, and the Life course approach, seeks to provide an understanding of the changing nature of the relationship between loneliness and health over the life course (§ 3.7). Through the lens of the Meikirch model (§ 2.2), this study has identified personally acquired potentials, from the interpretation of data from a cohort of retired older adults, which may be considered to be significant, to the mitigation of the influence of

detrimental loneliness on individual health and wellbeing. Moreover, this research has also highlighted the significance of individual perceptions and conceptualisations to the sway loneliness may hold over personal health outcomes, and the value of social networks in later life, particularly to individuals who have been classified as lonely.

7.7 Study limitations

As well as the contributions to the loneliness-health discourse, it is important here to reflect on the limitations of this research.

7.7.1 Literature search tools – PICO vs SPIDER

Central to any doctoral thesis dissertation is some form of review of the academic literature pertaining to the chosen research topic. Within the field of health research, there are several tools available to assist in the identification of relevant literature to include within a review such as those offered in chapters one to three of this dissertation. As a public health scientist with a background in systematic review, the decision was taken to adopt the PICO approach. This seeks to identify papers relating to a specific Population, Intervention, Comparator and Outcome. The PICO approach is typically employed when looking to explore data from quantitative clinical trials, which investigate cause and effect, and test hypotheses (Methley et al., 2014). However, when it comes to qualitative studies, which seek to generate hypotheses, the PICO approach may not adequately capture all aspects of qualitative research (Feizi & Soheili, 2021; Tucker, Edmonds, Cullen, Hanrahan & Laures, 2023). Consequently, qualitative studies may be missed. This can lead to biased results and misinterpretations of the research when conducting a review.

Within the present study, the PICO approach was supplemented with recommendations and citation chaining. However, an alternative search tool is available for qualitative research. This is the SPIDER tool, which seeks to identify

relevant papers based on the Sample, Phenomenon of Interest, Design, Evaluation, and Research. While the SPIDER tool is designed specifically for qualitative research, when compared to the PICO tool in an evaluation of these two approaches, Methley and her team (2014) reported that they missed some of the papers identified by the PICO tool. However, the Methley study found that, although the SPIDER search showed greater specificity, it lacked the sensitivity offered by the PICO approach (*ibid*). This suggests that, even though the SPIDER approach would more accurately identify relevant papers, therefore reducing the time needed to screen the abstracts and papers, it would not provide such a comprehensive search of the available literature regarding loneliness and health. Within the present study, the PICO approach was supplemented with citation chaining and recommendations. Consequently, the literature search phase of this study took longer than may have been the case if the SPIDER tool had been employed.

7.7.2 Study sample

As with the majority of research studied, a sampling frame was employed, to limit the recruitment pool available to the present study. In this case, the frame employed limited the recruitment pool to retired adults, aged 65 years or older, residing within the community in West Sussex. When compared to other regions within England, West Sussex is less ethnically diverse. This resulted in a predominantly white sample population (265/266). Furthermore, while there are significant pockets of deprivation across West Sussex, the population is predominantly middle class. These factors suggest the need for a broader sampling frame, which encompasses greater ethnic and class diversity.

7.7.3 Risk factors

As the purpose of this study was to explore the mechanisms underlying the relationship between loneliness and health, rather than the nature of loneliness or

its aetiology, the decision was taken to collect only basic demographic data – age, gender, and postcode. However, in retrospect, it is acknowledged that the collection of data relating to living situation and/or marital status alone (Grenade & Boldy, 2008; Hawkley et al., 2005; Holt-Lunstad, 2017; Novak et al., 2020) would have allowed for further in-depth quantitative analyses and, potentially resulted in the development of a more accurate and sophisticated screening tool for the identification of participant subgroups. Notwithstanding the above acknowledged limitation, data regarding whether participants were living alone were gathered from the 41 phase two participants. When these data were added to the correlational analyses and regression modelling, they were found to have no bearing on scores of either health, wellbeing, or loneliness. It is hoped that this in some way partly addressed the above acknowledged limitation.

7.8 Implications and recommendations

This section presents and discusses the implications, and recommendations, for policy, practice, and future research which have arisen from this study.

7.8.1 Policy

This research has explored and confirmed the complexity of the relationship between loneliness and health, as well as its changing nature over the life course. One key element in protecting health from detrimental loneliness was found to be the social network, despite its diminishing size. This suggests that recent declines in funding for social clubs and groups designed for older people need to be reversed. The need for social contact among older adults is vital to the maintenance of health and wellbeing within this demographic group, and work needs to be done to ensure access, availability, and affordability of lunch clubs and social groups is maintained. Without these services, the health costs associated with detrimental loneliness can only spiral, particularly within the context of an ageing population where the

presence of pre-existing chronic illness becomes increasingly likely. With an estimated 20% of public spending already allocated to health and social care annually (§ 2.4.7), if the issue of detrimental loneliness is not addressed, the costs of health and social care will rapidly exceed the available resources. By comparison, the financial implications of helping older people to maintain and even expand their social networks will represent a fraction of the costs encountered if such services are not provided.

Also apparent, throughout both this research and the academic literature, is the significance of retirement, not only financially, but also to the nature of an individual's social network. Although, for many, retirement comes as no surprise, it still marks a point in the life course where the individual is very likely to lose a significant and well-developed social network, as well as the support mechanisms and resources associated with this network. Unless access to some form of social network is offered and maintained, the potential for detrimental loneliness to begin impacting on individual health may be significant. This suggests that attention should be paid to ensuring that all older individuals are properly prepared for their retirement, not just in terms of financial planning, but also regarding their awareness of the importance of, and opportunities for, continued social interaction with those individuals who are the most important to, and supportive of them. This loss of social contacts and the potential cost to health and social care associated with it represents a justified call for the design and implementation of universally accessible *readiness for retirement* programmes, along similar lines to the readiness for school programmes which are currently widespread throughout the UK.

This research has highlighted the need for far greater emphasis to be placed upon understanding and addressing both detrimental, and compassionate ageism. While both forms of ageism arise from, and are perpetuated through, the negative stereotypes of older adults and the ageing process, compassionate ageism is often overlooked. Defined as the belief that older adults are needy and deserving of

special policies to help them (Eastman, 2019), compassionate ageism can be just as harmful as detrimental ageism, as it too serves to erode the self-perception of competence among older adults. These negative self-perceptions have been associated with the development of social breakdown syndrome, which is believed to aggravate the impact of detrimental loneliness on health outcomes. As one of nine protected characteristics covered by the Equality Act 2010, it is against the law to discriminate against people simply based on their age. However, in contrast to other protected characteristics, such as gender, race, and sexual orientation, discrimination against age seems to be poorly monitored, if at all. By improving the monitoring of legislation pertaining to age discrimination, it may be possible to significantly reduce ageism. Subsequently, this may help to reverse or prevent, individual reliance on, and belief in, negative stereotypes and external labelling as helpless or incompetent. Moreover, by eliminating ageism, the development of social breakdown syndrome may also be paused, thereby protecting the individual from the influence of detrimental loneliness.

Identified, through the implementation of a life course approach, was the need to explore more proactive, or "upstream" approaches, which seek to address the factors behind an individual's failure to cope with loneliness in later life. This could include the development or expansion of current readiness for school programmes to find ways to prevent, or reduce, the incidence of adverse childhood events, or programmes to support the acquisition, and development, of personally acquired potential and interpersonal skills over the life course. Consideration must also be given to ways of retrospectively developing, enhancing, and maintaining personally acquired potential among retired older adults, as a way of enabling them to better protect themselves against the detrimental effects of loneliness on their health as they continue to age. These skills may be developed through the provision of social and community groups, or the implementation of readiness for retirement programmes. Intergenerational interventions, which bring together older adults

with younger cohorts, such as the 'Old Peoples Home for 4 Year Olds' scheme, may serve as a useful vehicle in this respect. In addition to providing older adults with much needed social interaction, the older adults may, in turn, provide the nurturing and supportive environments the young children need to develop their personally acquired potentials.

7.8.2 Practice

In terms of public health and general practice, the proposed theoretical framework offers an invaluable tool to deepen understanding of the influence of loneliness on individual health and wellbeing across the life course. Using the framework, it is possible to identify common traits among both lonely and healthy individuals and raise awareness of key factors which may mitigate or aggravate the influence of detrimental loneliness on health outcomes. The framework also highlights the importance of perception to the impact of detrimental loneliness. Using a life course approach in conjunction with the Meikirch model, the proposed framework may inform the design of both interventions and referral pathways, which are better suited to each individual's age, life experiences, and loneliness status. This type of patient-focussed approach is likely to be more acceptable and effective, as well as better value for money.

7.8.3 Future research

The theoretical framework created to guide this work, as well as the results emerging from it, offer numerous opportunities for further research. Most apparent among these is the need to further test, and validate, the proposed theoretical framework, to bolster its generalisability beyond the bounds of the study cohort. This may be achieved through the implementation of a series of longitudinal cohort studies. These would allow for the identification and plotting of life trajectories, and how they may be influenced by adversity, family dynamic, and different social and environmental circumstances. In addition to monitoring the

changing nature of health and loneliness over each participant's life course, the development of personally acquired potentials during childhood, and social breakdown syndrome during late adulthood, could be observed and tracked. This would enable the review of the establishment of developmental patterns, and potentially be used to highlight where, and when, interventions may be best placed over the life course to maximise individual ability to respond to loneliness in later life. This approach may also be employed to track the development of both loneliness and poor health outcomes and, subsequently, study the direction of causality in the association between loneliness and health.

Alternatively, and perhaps less costly than the longitudinal approach, would be to conduct a study similar to that employed within this research, but involving multiple age cohorts. However, although this may generate a swifter conclusion to the research questions, care would need to be taken to ensure that each of the age cohorts are matched for sociodemographic factors, such as educational attainment, class, and levels of deprivation. If the cohorts are not matched, it is unlikely that it will be possible to plot a coherent life course. Furthermore, the use of a cohort study such as this may not allow for a close study of the direction of causality in the relationship between detrimental loneliness and health, such as a longitudinal study may.

There is also a need, arising from this study, to broaden the generalisability of the proposed theoretical framework and any associated research. This necessitates a series of comparative studies, involving participants from different demographic groups. This would allow for the comparison of data, for example, between different age cohorts and ethnicities. Furthermore, comparison of data on a county-by-county basis could be used alongside the Health Index for England to explore the effects of the factors used to inform the Health Index of each county (§ 7.3.1). From a commissioning perspective, this form of comparative analysis may

allow for better tailoring of services and interventions to the residents and service users.

Throughout this research, a key focal point has been the importance of personally acquired potential to the preservation of health and wellbeing in the face of both perceived, and measured, loneliness. Through this, the continued importance of the social network was highlighted, despite its possible dwindling size, across the ageing process. The changing nature of the social network, and how it interacts with, and complements, other processes, such as socioemotional selectivity, therefore, requires further exploration. This may be achieved through the use of narrative approaches or social network analysis. It may also be useful to add questions regarding the social network to the quantitative study. In addition to enabling statistical analyses to highlight any significant associations between network characteristics and the various measures of health and wellbeing, information regarding social networks may also prove useful in more detailed participant classification. The outcomes of this type of research may then be used to inform the development of more effective interventions for those experiencing loneliness.

The interpretation of data arising from the narrative interviews has indicated a greater need to investigate and understand the role of personality in mitigating or aggravating the impact of detrimental loneliness on health and wellbeing. This exploration could involve the addition of psychometric testing to the quantitative survey, or the addition of some form of motivational interviewing to the narrative approach. The identification of personality traits associated with greater vulnerability to, or resilience against, detrimental loneliness may represent an important element in the screening of individuals to identify those most in need of support in managing and coping with detrimental loneliness. It may also assist in identifying what types of intervention a person is likely to be most receptive to.

Finally, the adoption of a life course approach has highlighted the importance of both adverse childhood events, and the early life course development of personally acquired potential, on an individual's perceived capacity to cope with loneliness. However, it is not clear, from this research, whether there are critical periods over the life course for the development of personally acquired potential, thus suggesting the need for continued investigation. The culmination of such further research into the development of this potential, along with the identification of its critical periods, may be used to inform the development of policies and interventions aimed at early childhood development, for example, to ensure robust health in later life.

7.9 Conclusion

This research has explored the nature of the relationship between loneliness and health in retired older adults, underpinned by both the Meikirch model of health and wellbeing, and the Life Course approach. This study has highlighted the importance of both the acquisition of sufficient personally acquired potential, and the experience of adverse childhood events in driving individual responses to loneliness, and its subsequent impact on health in retired older adults. These findings have facilitated the development of a novel theoretical framework, to aid the understanding of the changing nature of loneliness and health, as well as the mechanisms underlying the association between the two, over the course of a life time.

Addendum - COVID-19

Before finally concluding this work, brief consideration must be given to the recent COVID-19 pandemic. Initially declared a public health emergency of international concern by the World Health Organisation at the end of January 2020, the COVID-19 outbreak was officially declared a pandemic in March of the same year. This resulted in an initial three-month period of strict lockdown within the UK, which was followed by a series of tight restrictions placed on all forms of face-to-face social engagement. Since the pandemic began, it has taken two years for all restrictions to be fully lifted, but the effects of the isolation caused by the pandemic have been significant, and many remain (Bartrés-Faz et al., 2021; Cihan & Gokgoz Durmaz, 2021; Luchetti et al., 2020). Despite this, the decision was made not to actively consider the impact of the pandemic within this study. There were two main reasons for this, first, while the initial lockdown occurred prior to the final submission of this manuscript, the active, data gathering phase had been concluded 16 months prior to this. Second, while the extended period of enforced isolation that accompanied this lockdown has been found to have had mixed effects on measures of health, wellbeing, loneliness, and social exclusion, it has been suggested that this may represent a different form of loneliness to that which has been explored within this study (Bartrés-Faz et al., 2021; Cihan & Gokgoz Durmaz, 2021; Luchetti, Lee, et al., 2020). This notion that the presence of COVID-19 as impacting on social networks and the need to isolate, influences the nature and perception of loneliness has subsequently been supported by a series of 76 interviews with older adults conducted by Fuller & Huseth-Zosel (2021). They found that those who reported increased levels of loneliness as a consequence of the isolation associated with the pandemic, tended to report feelings of loss, or lack of control. Similar discoveries were reported (Cihan & Gokgoz Durmaz, 2021), wherein the term *coronaphobia* has been used to describe this state of fear of the loss, or lack of control, associated with COVID-related loneliness.

The occurrence of loneliness within the context of the COVID-19 pandemic offers clear scope for further investigation. Indeed, the wealth of studies relating to the psychological, emotional, and physical consequences of the pandemic have brough the issue of loneliness to the forefront of people's minds, particularly in terms of its ramifications on public health. Consequently, in May 2020, the British Government launched a £5 million fund to tackle COVID-related loneliness. As such, further research surrounding this topic and reporting the success of such programmes will be paramount.

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Appendices

1. Papers identified in the literature search

Reference	Mechanism(s) identified	Country	Summary of methods	Definition of loneliness employed
(Adams et al., 2004)	Socioemotional selectivity	USA	Survey questionnaires – Luben Social Network Scale, UCLA Loneliness Scale, Geriatric Depression Scale n = 234, aged 60-98 Residents at two church affiliated retirement communities	"An unpleasant subjective state of sensing a discrepancy between the desired amount of companionship or emotional support and that which is available from the person's environment" (pp476)
(Berkman et al., 2000)	Health behaviours		Literature review	None given
(Brown & Moschis, 2006)	Social breakdown syndrome	USA	US national mail survey assessing the impact of life transitions on the development of social breakdown syndrome n = 314, aged 60+	None given
(Cacioppo & Cacioppo, 2014)	Loneliness model		Literature review	"Perceived absence of social connection" (pp 5)
(Cacioppo & Hawkley, 2003)	Health behaviours Repair and maintenance		Literature review	"Perceived social isolation" (pp s41)
(Cacioppo, Hawkley, Crawford, et al., 2002)	Health behaviours Repair and maintenance	USA	Two studies reported Participants assessed as lonely/not lonely based on the UCLA-R prior to recruitment Health behaviours were assessed in all participants, along with a battery of physiological tests Study 1: n = 89, aged 18-24	"Feelings of social isolation due, in part, to the discrepancy between an individual's desired and actual relationships" (pp 407)

			Study 2: n = 25, aged 53-78	
(Carstensen, 1992)	Socioemotional selectivity	USA	Secondary analysis of data gathered over 34 years as part of the Child Guidance Study 50 interview transcripts were reviewed and rated for interaction frequency, relationship satisfaction, and emotional closeness in 6 types of relationship	None given
(Carstensen, 2006)	Socioemotional selectivity		Literature review	None given
(Carstensen et al., 1999)	Socioemotional selectivity		Literature review	None given
(Chang et al., 2015)	Socioemotional selectivity	USA	National telephone survey of Facebook users, recruiting via random digit dialling n = 577, aged 18-93 Participants asked about internet use, social network use, network size and quality, and physical and mental health Loneliness was measured using the UCLA scale	None given
(Christiansen et al., 2016)	Health behaviours Loneliness model	Denmark	Danish Public Health Survey n = 8593, aged 65-102 Participants asked about health behaviours, selected diseases, and asked to complete the three-item loneliness scale, and the Perceived Stress Scale	"An unpleasant emotional state and a result of a discrepancy between desired and achieved levels of social contact" (pp 80)
(Cohen & Wills, 1985)	Stress buffering hypothesis		Literature review	None given
(Duck et al., 1994)	Loneliness model	USA	Two-part study with participants engaging in, and then asked to rate conversations n = 64 (32 same-sex pairs)	"The distinguishing feature of loneliness is not the absence of friends but the way in which lonely persons view and experience

			Participants also asked to complete UCLA-R, and the Iowa Communications Record	relationships" (pp254)
(Ferreira-Valente et al., 2019)	Stress buffering hypothesis		Systematic review	None given
(Gruenberg, 1967)	Social breakdown syndrome	USA	Theoretical overview following six years of patient observation and professional discussion	None given
(Gruenberg et al., 1966)	Social breakdown syndrome	USA	Randomly selected mental hospital staff over the course of 21 shifts, were interviewed regarding the behaviour of randomly selected patients within the hospital Sample size is unclear	None given
(Gruenberg et al., 1972)	Social breakdown syndrome	USA	Cohort study of patients displaying signs of social breakdown syndrome n = 136, aged 16-64 Data prospectively gathered regarding patient attitudes and expectations, patient psychiatric symptoms, staff attitudes and expectations, and patterns of communication	None given
(Hawkley & Cacioppo, 2003)	Health behaviours Repair and maintenance		Literature review	"Perceived social isolation" (pp S98)
(Hawkley & Cacioppo, 2010)	Health behaviours Loneliness model		Literature review	"Loneliness is defined as a distressing feeling that accompanies the perception that one's social needs are not being met by the quantity or especially the quality of one's social relationships" (pp 1)
(Hawkley et	Health	USA	Participants drawn from the Chicago Health,	"The distressing feeling that occurs when one's

al., 2009)	behaviours		Ageing and Social Relations Study n = 229, aged 50-68 Participants were tested annually for three years. Assessments included psychological surveys, an exercise behaviour survey, interviews, and a cardiovascular protocol	social relationships are perceived as being less than satisfying that what is desired" (pp 2)
(Heinrich & Gullone, 2006)	Health behaviours Loneliness model		Literature review	"The aversive state experienced when a discrepancy exists between the interpersonal relationships one wishes to have, and those that one perceives they currently have" (pp 698)
(Heylen, 2010)	Socioemotional selectivity	Belgium	Secondary analysis of data drawn from wave 9 (2000) of the Panel Study of Belgian Households n = 1414, aged 55+ Data included the De Jong Gierveld Loneliness Scale, along with questions about social relationships and relationship standards	"The negative subjective feeling that results from a lack of or the poor quality of social relationships" (pp 1178)
(Kuypers & Bengtson, 1973)	Social breakdown syndrome		Literature review	None given
(Lang et al., 1998)	Socioemotional selectivity	Germany	Berlin Ageing Study n = 516, aged 70-104 Intensive, 14-session interview, covering family status, social network size, emotional closeness, and personality measures	None given
(Lauder et al., 2006)	Health behaviours	Australia	Cross-sectional study of randomly selected participants n = 1289 adults Computer-assisted telephone interview Participants completed the De Jong Gierveld	"Perceived social isolation" (pp 233)

			Loneliness Scale, items from the Active Australia survey, questions about health behaviours, and demographic questions	
(Leigh-Hunt et al., 2017)	Health behaviours		Overview of systematic reviews	"The subjective feeling of the absence of a social network or a companion" (pp 158)
(Litalien et al., 2021)	Health behaviours Stress buffering hypothesis		Systematic review	None given
(Lockenhoff & Carstensen, 2004)	Socioemotional selectivity		Literature review	None given
(Luchetti, Terracciano, et al., 2020)	Health behaviours	28 European countries and Israel	Survey of Health, Ageing and Retirement in Europe n = 14114, aged 50+ Assessed for a period of 11 years for cognitive impairment and asked to complete a single item on loneliness	"The negative feeling that arises when there is a discrepancy between one's desired and perceived quality of social relationships" (pp 1)
(Ong et al., 2016)	Health behaviours		Literature review	"The discrepancy between a person's preferred and actual level of social contact" (pp 443)
(Quadt et al., 2020)	Loneliness model		Literature review	"The actual or perceived absence of those social relationships that serve to meet basic emotional needs" (pp 115)
(Radebaugh et al., 1987)	Social breakdown syndrome	USA	Eastern Baltimore Mental Health Survey n = 228, aged 65+ Elderly psychiatric interview with a close friend or relative	None given
(Rico-Uribe et al., 2016)	Socioemotional selectivity	Finland, Poland and Spain	Collaborative Research on Ageing in Europe n = 10800, aged 18+ Face to face interviews including the 3-item UCLA,	"Loneliness is a subjective feeling" (pp 3)

			questions based on the Berkman-Syme Social Network Index, health status, depressive episodes, and socio-demographic questions	
(Segel-Karpas & Ayalon, 2020)	Loneliness model Social breakdown syndrome	USA	Secondary analysis of data derived from two waves of the Health and Retirement Study (2008 and 2012) n = 7500, mean age 68 Measures included the UCLA-R, and the Cook Medley Hostility Scale	"The perception of inadequate social relationships" (pp 169)
(Segrin & Passalacqua, 2010)	Health behaviours	USA	Survey gathering data on social network size, stress, social support, general health, health behaviours, and the UCLA	"A discrepancy between desired and achieved levels of social contact" (pp 312)
(Shankar et al., 2011)	Health behaviours	England	Secondary analysis of data from the English Longitudinal Study of Ageing n = 8688, aged 50+ Data gathered on physiological measures, UCLA-R, social isolation index	"Perceived social isolation" (pp 377)
(Sherman et al., 2016)	Stress buffering hypothesis	USA	n = 41, right-handed older adults, aged 60-78 stress questionnaire, social network interview, structural MRI	None given
(Sluzki, 2010)	Stress buffering hypothesis		Literature review	None given
(Solmi et al., 2020)	Health behaviours		Systematic review	"A perceived deficit between actual and desired quality or quantity of relationship" (pp 132)
(Stokes & Barooah, 2021)	Stress buffering hypothesis	USA	Health and Retirement Study (2008/12 or 2010/14) n = 1854, aged 50+ Physiological measures,	"A subjective measure of the between the desired and perceived quantity and quality of one's social relationships" (pp 2)

			UCLA-R, marital support Actor-partner interdependence models	
(Umberson & Montez, 2010)	Health behaviours Maintenance and repair		Literature review	None given
(Van Tilburg & Van Groenou, 2002)	Stress buffering hypothesis	Netherlands	Four waves of the Living Arrangements and Social Networks of Older Adults study n = 2302, aged 60-85 Telephone interviews – social networks, capacity to perform activities in daily life, health-related limitations in functioning, self-rated health in general, presence of chronic diseases, cognitive functioning	None given
(Wootton et al., 2021)	Health behaviours	Europe	Secondary analysis of genome-wide association studies of loneliness (n = 511280), smoking (n = 249171), alcohol dependence (n = 46568) Regression modelling	None given
(Zeytinoglu et al., 2021)	Loneliness model	USA	National Social Life, Health, and Ageing Project – three waves separated by five years n = 2337, aged 57-85 UCLA, incidence of falls	"A discrepancy between desired and achieved social relationships that is experienced as unpleasant and distressing" (pp 2)
(Zusman, 1966)	Social breakdown syndrome		Literature review	None given

2. Quantitative survey

University of Hertfordshire UH

Please indicate for each of the 6 statements, the extent to which they apply to your situation, the way you feel now. Please, circle the appropriate answer.

I experience a general sense of emptiness	Yes	More or less	No
There are plenty of people I can lean on when I have problems	Yes	More or less	No
There are many people I can trust completely	Yes	More or less	No
There are enough people I feel close to	Yes	More or less	No
I miss having people around me	Yes	More or less	No
I often feel rejected	Yes	More or less	No

Your age: Your gender: Your postcode:

If you are willing to participate in the second phase of this study, please complete the enclosed consent form.

R-Outcomes

How are you today? (past 24 hours)	*How do you feel and how much can you do?*			
	None	A little	Quite a lot	Extreme
Pain or discomfort				
Feeling low or worried				
Limited in what I can do				
Require help from others				
Personal Wellbeing	*How are you feeling in general?*			
	Strongly agree	Agree	Neutral	Disagree
I am satisfied with my life				
What I do in my life is worthwhile				
I was happy yesterday				
I was NOT anxious yesterday				
Health Confidence	*How do you feel about caring for your health?*			
	Strongly agree	Agree	Neutral	Disagree
I know enough about my health				
I can look after my health				
I can get the right help if I need it				
I am involved in decisions about me				

3. Recruitment advertisement

HSK/PGR/UH/03285

Understanding the lived experiences of health and loneliness in retired adults in West Sussex

I'm currently conducting this study as part of my university research degree...

Are you:

- Fully retired from paid employment?
- Aged 65 years or older?
- Living independently in West Sussex?

If you've answered yes to these questions, then I'd love to hear from you!!

(You don't need to feel lonely to take part!)

If you'd like to participate please get in touch...

Clare D. Toon—07803 939373; clare@thtoon.com; or log onto

https://www.surveymonkey.co.uk/r/Loneliness-and-health

4. Consent form

UNIVERSITY OF HERTFORDSHIRE
ETHICS COMMITTEE FOR STUDIES INVOLVING THE USE OF HUMAN PARTICIPANTS
('ETHICS COMMITTEE')

CONSENT FORM FOR STUDIES INVOLVING HUMAN PARTICIPANTS

I, the undersigned *[please give your name here*, *in BLOCK CAPITALS]*

……
of *[please give contact details here, sufficient to enable the investigator to get in touch with you, such as a postal or email address]*

……
hereby freely agree to take part in the study entitled *[Is it just me, or am I lonely? The lived experiences of older adults in West Sussex]*

(UH Protocol number ……)

1 I confirm that I have been given a Participant Information Sheet (a copy of which is attached to this form) giving particulars of the study, including its aim(s), methods and design, the names and contact details of key people and, as appropriate, the risks and potential benefits, how the information collected will be stored and for how long, and any plans for follow-up studies that might involve further approaches to participants. I have also been informed of how my personal information on this form will be stored and for how long. I have been given details of my involvement in the study. I have been told that in the event of any significant change to the aim(s) or design of the study I will be informed, and asked to renew my consent to participate in it.

2 I have been assured that I may withdraw from the study at any time without disadvantage or having to give a reason.

3 In giving my consent to participate in this study, I understand that voice-recording will take place.

4 I have been given information about the risks of my suffering harm or adverse effects.

5 I have been told how information relating to me (data obtained in the course of the study, and data provided by me about myself) will be handled: how it will be kept secure, who will have access to it, and how it will or may be used.

7 I understand that if there is any revelation of unlawful activity or any indication of non-medical circumstances that would or has put others at risk, the University may refer the matter to the appropriate authorities.

Signature of participant……Date……

Signature of (principal) investigator……Date……

Name of (principal) investigator *[in BLOCK CAPITALS please]*

5. Interview topic guide

- Personal definitions of the loneliness
- Family structure
  - Siblings
  - Marital status (bereavement)
  - Children
- Personality/resilience
  - Sense of self
  - Personal role
  - Identity
  - Flexibility
- Religion/spirituality
- Barriers to social engagement (mobility; pride; finance)

6. NVivo codebook

Name	Description
biographical disruption	**lifelong expectation versus reality**
Concepts - age	**participants conceptualisations of old age**
age - negative	negative views of ageing/old age
youth - negative	negative views of younger people
Concepts - Loneliness	**Participant's conceptualisations of loneliness**
alone as loneliness	loneliness is being alone
bereavement	impact of bereavement
rejection	loneliness is rejection
subjective	differences over the life course and between people
lonely	experiences of loneliness
lonely not alone	alone and lonely as distinct concepts
Event	**significant past event**
negative adult	negative events in adulthood
negative childhood	negative events in childhood/unhappy
unhappy marriage	unhappy marriage
family	**family**
family dynamic	family interactions
left home	*left home in teens*
negative	*negative family dynamic*
positive	*positive family dynamic*
family structure	structure of the family
no children	childless
health	**does loneliness influence your health?**
Depression	experiences of depression

potentials	**personally acquired potentials**
acceptance	Accepting things as they are
ready to die	*ready to die*
determination	the ability to continue trying to do something
distraction	distraction to avoid loneliness
learning	learning throughout life
Locus of control	degree to which people believe they have control over the outcome of events in their lives
external	*belief that life is controlled by outside factors*
internal	*belief that one can control one's own life*
self-reliance	an inner state of knowing that you are robust, resilient and resourceful enough to tackle the challenges and difficulties that life will inevitably throw at you
SBH	**stress buffering hypothesis**
community	sense of community
buffer	*community as a buffer*
loss	*loss of community*
neighbour support	*positive experiences with neighbours*
pets	pets as a buffer
social networks	social networks
friends	relationships with friends
organised	organised events/clubs
shrinking	shrinking social networks
SBS	**Social breakdown syndrome**
learned helplessness	a condition in which a person suffered from a sense of powerlessness, arising from a traumatic event or persistent failure to succeed...thought to be an underlying cause of depression
apathy	*can't be bothered*
Fear	*fear*
burden	*Asking for help/being beholden*

fear of dying	*afraid of dying*
Fear of going out	*afraid to go out*
falls	
Night	*won't go out at night*
judgement fear	*fear of being judged or rejected*
denial	*refusal to admit loneliness to family*
external facade	*show put on for others to hide/cover true self/feelings*
resentment	*resentful of others*
victim mentality	acquired personality trait in which a person tends to recognise themselves as a victim of the negative actions of others
envy	*a feeling of discontentment or resentful longing aroused by someone else's possessions, qualities, or luck*
SES	**socioemotional selectivity**
alone	experiences of living alone throughout the life course
no	*this is the first time being alone*
want to be alone	*need to be alone*
yes	*been alone before*
individual activities	*separate interests from partner*
stoicism	the endurance of pain or hardship without the display of feelings and without complaint
Social capital	**Connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them**
confidante	someone to confide in?
avoid	*avoid confiding*
no one	*no one to confide in*
yes	*have someone to confide in*
religion and spirituality	influence of religion in life
negative	*negative influence of religion/spirituality*
positive	*positive influence of religion/spirituality*

retirement	retirement
negative	*negative impacts of retirement*
positive	*positive impacts of retirement*
social media	influence of social media on loneliness
negative	*negative view of SM*
positive	*positive views of SM*
volunteer	volunteering

7. Coded transcript

Clare: Is that something that stems from personality or upbringing? There are quite a few people out there who think, "If they're not going to call me I'm not going to call," do you know what I mean?

Wendy: Yes, I know what you mean, it's not that little stubbornness streak in there at all, it's literally the fear factor. If I don't and I don't hear from people I'm fearful of that, I had to get over the fear of asking if anybody would like to do anything for fear of getting rejected so I think I've managed that one now, my daughter has been quite good at helping me with that. It's just simply I think I'll be frightened not to do anything so it's never crossed my mind about, "No, I'm not going to contact."

Clare: So is it a fear of becoming that helpless person?

Wendy: I don't want to be just there. I suppose it's part of the Buddhist work as well, it's like the karma, what you give out will come back as it were, so it's trying to think, "How can I give out and then I'll be a part of what happens as a result?"

Literally if I didn't do anything now, if I didn't text or contact people I don't think I would hear. It's not because they don't like me or things like that, they just don't do things unless somebody organises it. They're nice people, they're not being horrible to me, but they've got lives to live and I'm not part of their lives, a lot of my friends are married people so they think very differently to some of the things that I think about. So no, I don't think badly about anybody, I just think it's me that's

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Literally if I didn't do anything now, if I didn't text or contact people I don't think I would hear. It's not because they don't like me or things like that, they just don't do things unless somebody organises it. They're nice people, they're not being horrible to me, but they've got lives to live and I'm not part of their lives, a lot of my friends are married people so they think very differently to some of the things that I think about. So no, I don't think badly about anybody, I just think it's me that's

8. Participant information

UNIVERSITY OF HERTFORDSHIRE

PARTICIPANT INFORMATION SHEET

1 **Title of study:** Is it just me, or am I lonely? The lived experiences of older adults in West Sussex

2 **Introduction:** You are being invited to take part in a study. Before you decide whether to do so, it is important that you understand the study that is being undertaken and what your involvement will include. Please take the time to read the following information carefully and discuss it with others if you wish. Do not hesitate to ask us anything that is not clear or for any further information you would like to help you make your decision. Please do take your time to decide whether or not you wish to take part. The University's regulations governing the conduct of studies involving human participants can be accessed via this link:

http://sitem.herts.ac.uk/secreg/upr/RE01.htm

Thank you for reading this.

3 **What is the purpose of this study?** This study seeks to explore and understand the relationship between loneliness, isolation and health, with the following aims:

- To understand the lived experiences of loneliness and its impact on the health and wellbeing of older adults living in their own homes in West Sussex;
- To understand which factors may be responsible for the precipitation of the loneliness-health relationship; and,
- To explore the mechanism(s) through which differing perceptions and constructions of involuntary social isolation and loneliness may influence health outcomes in older adults.

4 **Do I have to take part?** It is completely up to you whether or not you decide to take part in this study. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. Agreeing to join the study does not mean that you have to complete it. You are free to withdraw at any stage without giving a reason. A decision to withdraw at any time, or a decision not to take part at all, will not affect any services that you may receive.

5 **Are there any age or other restrictions that may prevent me from participating?** Participation is limited to those who have fully retired from paid employment and live in their own home.

6 **How long will my part in the study take?** If you decide to take part in this study, you will be involved in it for just an hour or two.

7 **What will happen to me if I take part?** The first thing to happen is that you will be asked to complete a simple questionnaire. If you're willing to continue beyond this point, you may be asked to take part in a face-to-face interview. This will be based on the answers you have given to the questionnaire and will allow you to share your thoughts and feelings on health and loneliness.

8 **What are the possible disadvantages, risks or side effects of taking part?** No disadvantages, risks or side effects have been identified but, if you feel differently, all you need to do is tell the researcher, who will address your concerns at any stage during the questionnaire or interview process.

9 **What are the possible benefits of taking part?** It is hoped that, by talking to you and understanding your experiences of health and loneliness, I will be able to gain a greater understanding of these issues and how they may be addressed in the longer term. Not only may this research inform greater efficacy in approaches to prevent or reduce loneliness and illness in later life, it may also reduce the consequent reliance on health and social care that many older adults experience.

10 **How will my taking part in this study be kept confidential?** Beyond this study, anything you choose to share will be kept confidential and not shared with anyone, without your prior consent.11 **Audio-visual material:** With your consent, I'd like to record our interview. This recording will not be shared with anyone, but will allow me to review our conversation and, perhaps, identify where you feel we can better address loneliness and health in later life.

12 **What will happen to the data collected within this study?** Any information collected will be stored electronically, in a password-protected environment, for 24 months, after which time it will be destroyed under secure conditions. As long as the data is held, your anonymity will be protected.

13 **Who has reviewed this study?** This study has been reviewed by the University of Hertfordshire Health, Science, Engineering and Technology Ethics Committee with Delegated Authority

The UH protocol number is <*enter*>

14 **Who can I contact if I have any questions?** If you would like further information or would like to discuss any details personally, please get in touch by phone or by email: Clare D. Toon: 07803 939373; clare@thtoon.com or Dr Charles M. Simpson: 01707 285927; c.m.simpson@herts.ac.uk

Although we hope it is not the case, if you have any complaints or concerns about any aspect of the way you have been approached or treated during the course of this study, please write to the University's Secretary and Registrar.

Thank you very much for reading this information and giving consideration to taking part in this study.

9. Conference posters

British society of Gerontology 2017

University of Hertfordshire UH 25

Is it just me, or am I lonely?

The experience of older adults in West Sussex

Social isolation and loneliness

Isolation: "The action of isolating; the fact or condition of being isolated or standing alone; separation from other things or persons" (Oxford English Dictionary)

Involuntary Social Isolation: An involuntary state in which the individual lacks a sense of belonging, where their social network is shrinking, both in terms of quality and quantity, and the individual experiences a need or desire for contact with others but is unable for some reason to engage

Loneliness: "The perceived discrepancy between desired and realised social interaction" (Peplau & Perlman, 1982)

Loneliness and involuntary social isolation form opposing sides of the same coin (Hawkley & Cacioppo, 2003)

Connections to health and older age

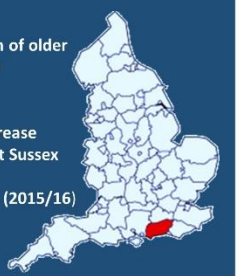
"Being isolated and living alone shortens the life and increases disability. It is equivalent to smoking 15 cigarettes a day" (Duncan Selbie, Chief Executive, PHE; 2013)

The "Forgotten Million" (Jeremy Hunt, Secretary of State for Health; 2013)

- Around 800,000 elderly people are chronically lonely (Campaign to End Loneliness)
- 46% of people aged 80 or over report feeling lonely at some time or often
- Around 10% of the population (5 million) say television is their main form of company
- Lonely people have poorer function in daily activities
- Lonely people are more likely to undergo early admission into residential or nursing care

Why West Sussex?

- Total population ≈ 840,000
- Disproportionately large proportion of older adults compared to England overall
- Over 65s ≈ 22.2%
- Over 85s ≈ 3.5%
- Life expectancy is continuing to increase
- 1200 older adults migrate into West Sussex every year
- Health & Social Care = £283 million (2015/16)



Research aims & objectives

- To understand the lived experiences of loneliness, and its impact on the health and wellbeing of older adults living in supported accommodation in West Sussex
- To understand the mechanism(s) through which differing perceptions and constructions of involuntary social isolation may influence health outcomes in older adults

Philosophical approach

Paradigm:
- Naturalistic
- Inductive

Ontology:
- Pragmatism
- Critical realism

Epistemology:
- Social Constructionism

Methodology

Hermeneutic Phenomenology

- Methodology of interpretation
- From the identification of phenomena, a deeper understanding of the meaning of that experience is sought (Smith, 1997)
- Meaning must be found within its cultural, historical and literary context
- Meaningfulness grows out of a relation of a part to the whole that is grounded in the nature of living experience

Methods and tools

- Qualitative research methods
- Semi-structured/unstructured interviews
- De Jong Giervald Loneliness Scale
- Digitally recorded and transcribed
- Thematic analysis

Contacts & References

Clare D Toon, MSC, BSc (Hons):
Email: clare@thtoon.com
Phone: 07803 939373

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Clare D Toon; Dr Charles M Simpson; Dr Zoe Aslanpour

Health & Social Work 2017

Loneliness and Health: A Proposed Conceptual Framework

Loneliness, defined as the discrepancy between desired and realised social interactions, or the state of perceived social isolation, is known to be a detriment to wellbeing and physical and mental health. As a health risk factor, it is frequently compared to smoking, obesity, and sedentary behaviours. In terms of health detriment it is considered on an equal footing with these conditions. While loneliness may prove problematic at all stages of the lifecourse, the Secretary of State for Health has, in his "Forgotten Million" speech, identified older and elderly adults as a particular cause for concern. In order to address and understand the mechanisms involved in the links between loneliness and health, we conducted a literature search and review. Over the course of 31 papers, four models purporting to explain the detrimental impact of loneliness were identified. These are the loneliness model, wear and tear, socio-emotional selectivity, and the stress buffering hypothesis. Although these models have been presented throughout these papers as individual entities, we conducted further literature searches to ascertain the whether these four models may coalesce to form part of a broader conceptual framework; one which takes into account factors such as age, comorbidities and social network size when explaining the link(s) between poor health and loneliness. This paper presents this conceptual framework, and draws together these four models while identifying gaps in the explanation of the loneliness-health phenomenon.

"Being isolated and living alone shortens life and increases disability. It is equivalent to 15 cigarettes a day"

(Duncan Selbie, Chief Executive, PHE; 2013)

Loneliness model

(Burholt & Scharf, 2014; Christiansen et al., 2016; Hawkley & Cacioppo, 2010; Heinrich & Gullone, 2006).

According to this approach, loneliness causes vulnerability within the individual. This vulnerability may precipitate hypervigilance which, in turn, leads to the development of negative or dysfunctional cognitive biases. These cognitive biases may lead an individual to perceive the world to be a threatening place.

Wear & Tear

(Losada et al., 2012; Umberson & Montez, 2010; Christakis & Fowler, 2007)

Health behaviours are responsible for around 40% of all premature mortality, mostly due to poor lifestyle choices. The presence of close social relationships serves to exert control over behaviour.

Depending on an individual's stage in the lifecourse, the Stress Buffering hypothesis and Social-emotional Selectivity theory may influence health. As adults age, their social networks tend to diminish.

Stress Buffering Hypothesis

Cohen & Wills, 1985)

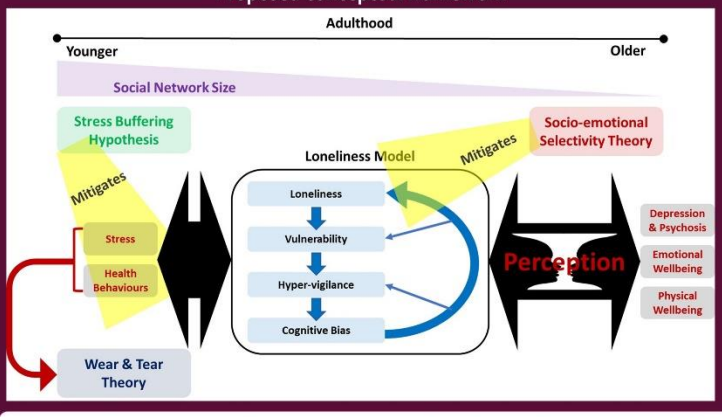
The presence of social support/networks "buffer" or mitigate stress

Socio-emotional Selectivity Theory

(Carstensen, 1993, 2006; Carsetnsen et al., 1999)

With increasing age, people become increasingly selective, investing greater resources in more rewarding relationships

Proposed conceptual framework



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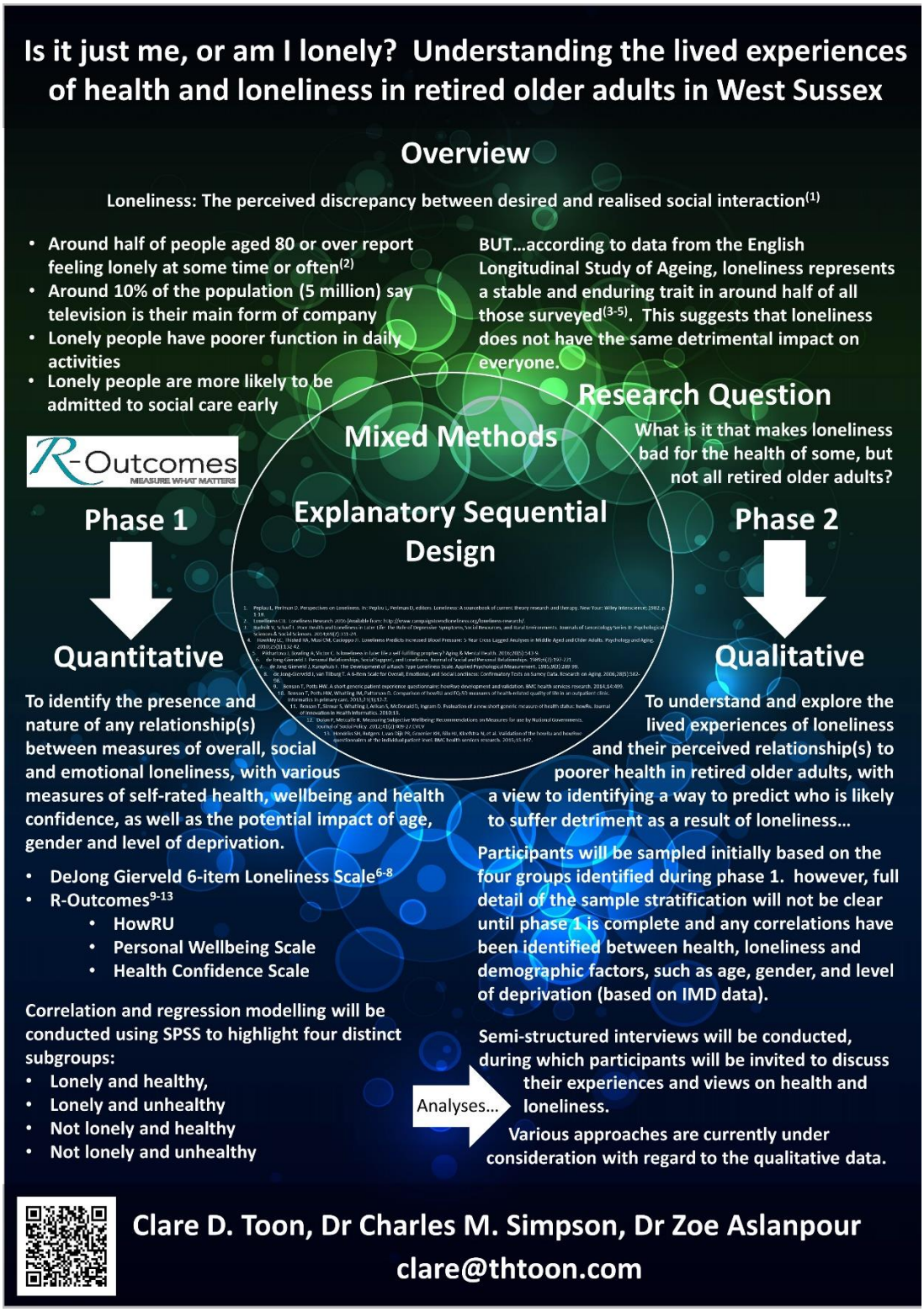
Health & Social Work Conference & Research Methods Festival 2018



British Geriatrics Society 2018

Loneliness and Health…Understanding the conundrum

Overview:

Loneliness, defined as the discrepancy between desired and realised social interactions[1], or the state of perceived social isolation, has long been considered detrimental to physical and mental health and wellbeing. However, the mechanisms through which loneliness may impact on health and wellbeing are not entirely clear. A literature search identified 31 papers which, in turn, highlighted several distinct models and theories claiming to explain the association(s) between loneliness and health. This study presents a new conceptual framework, which aims to draw together five existing models and theories into a single holistic approach to the health-isolation conundrum, which addresses the gaps in each of the theories and explains the disparities throughout the lifecourse

Health Behaviours Model:

Health behaviours are believed to account for 40 % to 70% of all premature mortality[2, 3]. The presence of close social relationships may influence these behaviours through the creation and reinforcement of "social norms" , and the instillation of a sense of responsibility[4, 5]. If strong social networks lead to healthy behaviours, the converse may also be true – isolation may result in poorer health behaviours and their consequent outcomes[5]. It has been suggested that this is because lonely individuals experience weaker pressures to engage in healthy behaviours[6].

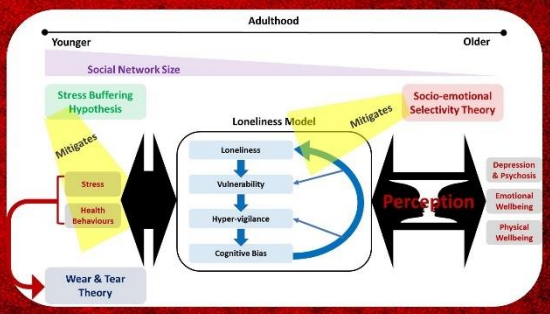
Wear and Tear Model:

These approaches are associated with health behaviours[7, 8], and identify later life as the stage at which loneliness is most prevalent[4, 7, 9]. Many also suggest that "wear and tear" forms a part of the natural ageing process[4, 7, 9]. This theory shows a degree of synergy with the disengagement theory of ageing[4, 9-12]. An alternative view is that of "repair and maintenance"[4, 6], which suggests that loneliness and isolation weaken the body's anabolic processes, which are instrumental in the repair and maintenance of physical and physiological functioning[4, 6].

Both Health Behaviours and Wear and Tear offer reinforcement to the current concern over the detrimental effects of loneliness in older adults. Both approaches have also been show to display a "dose-effect" response[5, 13-15].

Stress Buffering Hypothesis:

Life's stresses may be "buffered" by the presence of a social network[2, 4, 14-16]. This sits well with the health behaviours perspective[4, 17, 20, 21], and is supported by the notion that lonely individuals perceive stressful events more severely and positive events less intensely than those who are not lonely[2, 4, 22].



Socio-emotional Selectivity Theory:

This theory rests on the assumptions that, as an individual ages:

- Their social network will shrink
- The prevalence of loneliness decreases[7, 23-27]

This apparent contradiction is explained by the development of socio-emotional selectivity. This is the theory that, with increasing age, individuals become increasingly selective, investing greater resources in more rewarding relationships[7, 23-29].

Loneliness Model:

According to this model, loneliness causes vulnerability within the individual. This vulnerability may perpetuate hypervigilance which, in turn, leads to the development of negative or dysfunctional cognitive biases[2, 13, 16, 30, 31]. These maladaptive cognitive biases may lead an individual to perceive the world as a threatening place[2, 13]. This may serve to perpetuate the loneliness, thus forming a self-reinforcing loop. Or self-fulfilling prophecy[13, 31].

Discussion:

The figure above represents a proposed framework through which all of the five outlined theories may operated in conjunction with each other. It therefore offers a more comprehensive view of the association(s) between health and loneliness. It extends a response to these models and proposes a route through which they may coalesce and interact throughout the lifecourse, to both exacerbate and mitigate the loneliness-health phenomenon. Due consideration is also given to the influences of both age and social network size, and how these may affect resilience against the detrimental consequences of loneliness throughout the lifecourse.

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10. Conference presentation abstracts

Health & Social Work 2018: Social isolation and health in older adults: A simple question of definition?

Social isolation and loneliness, often confused and ill-defined, are frequently implicated in the poor health of older adults. Current trends of thought have compared them to both smoking and obesity in terms of health risk factors. However, the causal processes and mechanisms linking health and isolation, if they are indeed linked, remain as vague as the concepts themselves. There is also significant debate suggesting that social isolation and loneliness are, in fact, distinct concepts. While loneliness has enjoyed greater success in receiving a clear and concise definition, when it comes to social isolation, there would seem to be almost as many characterisations as there are papers on the topic, and that's without even considering similar concepts, such as solitude and aloneness. This is a particularly pertinent issue when considering the changing nature of our population in terms of increasing life expectancy, coupled with the notion that loneliness and isolation pose an acute and problematic issue in around half of all older adults. As the population continues to age, and health and social care budgets continue to shrink, the need to protect the health and wellbeing of older adults, through an understand the various factors detrimental to it is becoming increasingly important. With that in mind, this paper seeks to offer a clear and functional definition of social isolation, with a view to achieving greater clarity of the processes involve in the link(s) between it and health.

Health & Social Work 2019: Loneliness, health and the Meikirch model

Loneliness, defined as the perceived discrepancy between desired and actual social contact, is frequently blamed for poor emotional, mental and physical health. However, the causal pathways remain unclear. A mixed-methods study was conducted to identify what it is that causes loneliness to detrimentally impact the health of some, but not all, retired older adults. Initial analyses, combined with ongoing stakeholder and participant involvement, have highlighted a number of key themes, including attachment, resilience, and victim mentality. Building on previous work, this paper seeks to draw together several proposed explanations for the apparent relationship between loneliness and health. Focus will also be given to theories arising from this research, with particular reference made to the synergies between these theories and the Meikirch model of Health.

Manchester Institute for Collaborative Research on Ageing 2019: Loneliness and health...Understanding the conundrum

Purpose: Loneliness, defined as the discrepancy between desired and realised social interactions, or the state of perceived social isolation, is known to be a detriment to wellbeing and physical and mental health. This review seeks to understand the mechanism(s) through which loneliness may impact on individual health and wellbeing.

Method: A literature search identified 31 papers, which offered several approaches to the loneliness-health conundrum.

Results: The literature search identified several theories claiming to explain the association(s) between loneliness and health. Between them, these theories address specific aspects of the isolation-health link. However, none offer a comprehensive approach, which provides a solution to all the issues associated with loneliness.

Conclusion: This paper presents a new conceptual framework, which aims to draw together existing models and theories into a single holistic approach to the health-isolation conundrum, which addresses the gaps in each of the theories and explains the disparities throughout the life course.

British Society of Gerontology 2019: Understanding the relationship between, and experiences of health and loneliness in retired older adults in West Sussex…preliminary findings

Loneliness has long been considered detrimental to health, particularly in older adults. However, little is understood regarding the causal mechanisms behind this supposed link. There is also a paucity of literature regarding why there is such variation in the way different individuals react to and are affected by loneliness in their later years. This research seeks to move forward our understanding of what it is that allows loneliness to detrimentally impact the health of some, but not all, retired older adults.

This is a mixed methods study, involving both quantitative and qualitative techniques. Participants were recruited from within West Sussex, with sampling restricted to those aged 65 or over, who were living independently and fully retired from paid employment. In total, 266 individuals were recruited (70% female; mean age 75 years), all of whom completed the 6-item De-Jong Gierveld Loneliness Scale, and the HowRU, Personal Wellbeing, and Health Confidence Scales from the R-Outcomes suite of patient-reported outcome measures. Of this group, 40 were selected to participate in a follow-on in-depth semi-structured interview.

Initial analyses have confirmed a significant, negative correlation between loneliness and wellbeing ($r = -0.62$; $p < 0.01$ (2 tailed)). Initial qualitative analyses currently indicate that factors such as childhood attachment, resilience, and sense of self, offer protection against the harmful consequences of loneliness, suggesting a need for a more proactive and preventive approach to loneliness.

British Society of Gerontology 2021: Loneliness, health, and the Meikirch Model

Loneliness, defined as the perceived discrepancy between desired and actual social contact, is frequently blamed for poor emotional, mental and physical health. However, the causal pathways remain unclear. A mixed-methods study was conducted to identify what it is that causes loneliness to detrimentally impact the health of some, but not all, retired older adults. Initial analyses, combined with ongoing stakeholder and participant involvement, have highlighted a number of key themes, including attachment, resilience, and victim mentality. Building on previous work, this paper seeks to draw together several proposed explanations for the apparent relationship between loneliness and health. Focus will also be given to theories arising from this research, with particular reference made to the synergies between these theories and the Meirkirch Model of Health. The Meikirch model is based on systems thinking and defines health as a dynamic state for which each individual and the society share responsibility.